

Burnout in human service work - causes and consequences

**Results of 3-years followup of the PUMA-study
among human service workers in Denmark**

**Ph.d thesis
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Preface

This thesis is a synopsis of results from four publications submitted to international peer reviewed journals. The manuscripts are enclosed in Annex I-IV in the versions submitted February 28, 2005 to the Faculty of Health Science, University of Copenhagen, Denmark, in order to obtain the PhD degree. The project was performed in the "Research Group on Sickness Absence and Early Retirement" at the National Institute of Occupational Health (AMI), Denmark, from March 2003 to February 2005.

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Marianne Borritz, February 26, 2005

Summary

This thesis summarizes the results of the PhD-project “Burnout in human service work – causes and consequences” carried out during the period March 2003 to February 2005 at the National Institute of Occupational Health, Copenhagen, Denmark. The project had two major aims: 1) to investigate possible causes for burnout, and 2) to evaluate burnout as a predictor for sickness absence. Burnout is a "grassroots" concept introduced in the 1970's as a particular type of prolonged occupational stress that seemed to occur most prominently among human services professionals, with emotional exhaustion as its core symptom. Until start of the new millennium, little was known about causes and consequences for burnout because most studies were cross-sectional. Further, many burnout questionnaires can only be used in the human service sector and the measure of exhaustion is confounded with measures of potential causes and consequences of exhaustion. These problems limit the usefulness of existing questionnaires. For these reasons, a new instrument, the Copenhagen Burnout Inventory (CBI), was developed and its psychometric properties were evaluated as part of this study. Data for the PhD-project are based on questionnaire data and stems from baseline (n=1,914) and 3-years follow-up (n=1,024) of the PUMA study, an ongoing six-year prospective intervention study in the human services sector. Burnout was measured with a new instrument, the Copenhagen Burnout Inventory (CBI), whose psychometric properties are evaluated as part of the study. As potential causes of burnout, the study evaluated psychosocial work environment factors, which were measured with the Copenhagen Psychosocial Questionnaire (COPSOQ) and with some additional items on client-related work. Sickness absence was measured by self-reported number of sickness absence days and spells during the last 12 months before the baseline and the follow-up survey. Linear regression models and Poisson regression models were used for the analyses.

The major prospective findings regarding causes for burnout were that high possibilities for development, high predictability, high role-clarity, and low role-conflicts at baseline had a protective effect against subsequent burnout (at three years follow-up), after adjusting for several potential confounders and for burnout level at baseline.

The analyses showed that burnout measured at baseline predicted both sickness absence days and spells at 3-year follow-up. In addition, increase in burnout levels predicted increases in sickness absence, and decrease in burnout predicted decrease in sickness absence. These associations remained after controlling for several potential confounders, including socio-demographics, type of workplace, socio-economic status, health-related lifestyle, family status, and prevalence of disease.

It can be concluded that the analyses for this PhD thesis have shown that specific factors in the work environment protect against burnout and that burnout increases the likelihood of sickness absence. This suggests that burnout is preventable and that burnout prevention is of importance for the reduction of sickness absence.

It is suggested that these observational findings on causal associations between work environment, burnout, and sickness absence are further investigated in experimental or quasi-experimental designs such as intervention studies, including analyses of the workplace intervention conducted in PUMA.

Resumé (in Danish)

Formålet med denne afhandling er at sammenfatte resultaterne fra ph.d.-projektet 'Udbrændthed og arbejde med mennesker – årsager og konsekvenser' udført i perioden marts 2003 til februar 2005 ved Arbejdsmiljøinstituttet, København, Danmark. De to overordnede mål med ph.d.-projektet har været: 1) at identificere risikofaktorer for udbrændthed (engelsk: burnout), og 2) at analysere sammenhæng mellem udbrændthed og sygefravær. Udbrændthed er et "græsrodsbegreb" som blev introduceret i 1970'erne og betegner en særlig form for arbejdsrelateret stress. Udbrændthed har traditionelt taget udgangspunkt i ansatte der arbejder med mennesker, og det primære symptom er emotionel udmattelse.

For at opnå viden om årsager til og konsekvenser af udbrændthed anvender denne afhandling prospektive data i modsætning til hovedparten af den tidligere empiriske forskning, som overvejende har været tværsnitstudier. Ph.d.-projektet anvender spørgeskemadata fra baseline (n=1,914) og 3-års opfølgning (lukket kohorte, n=1,024) fra PUMA-undersøgelsen (Projekt Udbrændthed, Motivation og Arbejdsglæde). PUMA er en igangværende interventionsundersøgelse som løber over seks år og omfatter forskellige områder indenfor kriminalforsorg, social- og sundhedssektor. Udbrændthed måles med et nyt spørgeskema, the Copenhagen Burnout Inventory (CBI), hvis psykometriske egenskaber evalueres som en del af ph.d.-projektet. Psykosocialt arbejdsmiljø er målt med Arbejdsmiljøinstituttets Spørgeskema om Psykisk Arbejdsmiljø (Copenhagen Psychosocial Questionnaire, COPSQ), suppleret med 'klient'-specifikke spørgsmål. Sygefravær opgøres som selvrapporterede fraværsdage og fraværsperioder de sidste 12 måneder før besvarelsen af spørgeskema ved henholdsvis baseline og 3-års opfølgning. Analyserne er gennemført ved hjælp af lineær regression og Poisson regression.

De prospektive analyser har indikeret årsagssammenhænge mellem ringe grad af udviklingsmuligheder, ringe grad af forudsigelighed (information), ringe grad af rolleklarhed, høj grad af rollekonflikter og udbændthed (kontrolleret for potentielle confoundere og for udbændthed målt ved baseline).

Udbændthed ved baseline havde positiv sammenhæng med både antal sygedage og antal sygeperioder ved 3-års opfølgning. Vi fandt desuden at stigning i udbændthed mellem baseline og 3-års opfølgning havde sammenhæng med stigning i sygefravær, og omvendt, at fald i udbændthed hang sammen med fald i sygefravær. Disse sammenhænge var statistisk signifikante efter kontrol for potentielle confoundere som socio-demografiske faktorer, type af arbejdsplads, socioøkonomisk status, helbredsrelateret livsstil, familiær status og selvrapporteret sygdom.

På baggrund af analyserne i ph.d.-afhandlingen kan det konkluderes, at specifikke psykosociale arbejdsmiljøfaktorer har sammenhæng med udbændthed, samt at øget udbændthed medfører øget sygefravær. Disse resultater peger på muligheden for, at forbedring af det psykosociale arbejdsmiljø vil kunne forebygge graden af udbændthed, og at man ved at forebygge udbændthed vil kunne forvente lavere sygefravær.

I relation til fremtidig forskning foreslås, at disse observationelle fund om årsagssammenhænge mellem arbejdsmiljø, udbændthed og sygefravær bliver genstand for yderligere undersøgelser i eksperimentale eller kvasi-eksperimentale studier. Det kunne for eksempel være interventionsstudier, hvilket blandt andet vil kunne lade sig gøre ved yderligere analyser i PUMA-undersøgelsen.

Introduction

The concept and research history of burnout

The concept of burnout (in Danish 'udbrændthed') started as a "grassroots" description of prolonged occupational stress among human service workers, where former engaged employees gradually get overwhelmed of emotional exhaustion, loss of energy, and withdrawal from work. This description was introduced in the mid 1970's by two American researchers, Herbert Freudenberger and Christina Maslach, who independently of each other described the phenomenon.^{1;2} Thus, the burnout concept was developed from field observations – not from theory. Since the 1970's, more than 5500 studies and books on burnout have been published.^{3;4} In a comprehensive review from 1998 Schaufeli and Enzmann conclude: "Burnout is not a new phenomenon – it has its root in the past. However, because of a unique constellation of several factors it was 'discovered' in the early 1970's as a particular type of prolonged occupational stress that seemed to occur most prominently among human services professionals".⁴

The history of burnout research can be divided into three different stages. At the first stage, which lasted from the 1970's to the mid 1980's, case-stories were reported, from which several 'theories' of causes of burnout were proposed. These causes included individual (e.g., over-commitment, unrealistic job expectations),^{1;5-7} and interpersonal factors (e.g., imbalance between employees' resources and client's demands),^{8;9} result of emotional labour (e.g., quantitative and qualitative of emotional work)¹⁰⁻¹² and organizational factors (e.g., quantitative job demands, lack of control, lack of support).¹³⁻¹⁵

The second stage of burnout research history lasted from the mid 1980's to the end of the 1990's. During this period, more than 1000 studies on burnout were conducted. However, most studies, were cross-sectional in design and therefore did not allow causal inference.^{4:16} In a meta-analysis of these studies, Zapf found that emotional work combined with organizational problems were associated with high levels of burnout.¹⁷

At the third stage from the late 1990's until today, an increasing number of longitudinal studies were conducted. In literature searches made for the papers in this thesis, 38 longitudinal studies were found.¹⁸⁻⁵⁵ Only 13 of these studies focused on risk factors for burnout and involved participants from more than one specific occupational group (thus providing a variation of the exposure), or covered a follow-up period of more than one year, or had response rates over 50%.^{19;21;23;25;26;31;33;37;40;41;43;53;54} The main findings of those studies were that high workload, high level of emotional demands, and imbalance in job demands, control and support predict emotional exhaustion.

Two representative population studies have been conducted in Sweden and Finland, from the general population and from the workforce, respectively.^{3:56} In Sweden, the highest level of burnout was found in persons on long-term sickness-leaves and on early retirement. Among employees not on sick leave, teachers, office assistants, and employees in the service sector had the highest level of burnout. In Finland, the most conspicuous result was that employees in forestry had the highest level of burnout.

One can conclude that research on burnout has developed from mostly case studies and theoretical considerations in the 1970's to hypothesis-testing prospective studies. At the current stage it is widely agreed that burnout is a complex phenomenon with multi-factorial causation. It is assumed

that chronic exposure to adverse conditions (stressors) causes stress reactions in the individual and that these stress reactions result into burnout as shown in Figure 1 (in the Figures & Tables section).⁵⁷ Identification of the types of stressors (e.g., work environment, demands in private life etc.) that induce this process has become the major goal in burnout research. Research on the consequences of burnout is relatively rare.⁴

The measurement of burnout

Burnout is usually measured with questionnaires. The most widely used instrument is the Maslach Burnout Inventory (MBI) developed by Maslach and Jackson. The MBI includes three components of burnout: emotional exhaustion (to be overworked and drained of emotional resources), depersonalisation (a negative attitude towards the individuals who should receive care), personal accomplishment (a feeling of reduced competence and success in work).^{9:58} The instrument can only be used among employees who work with people. Later, Maslach and co-workers developed a general version of the MBI, the MBI-General Survey (MBI-GS),⁵⁹ which also includes three components (exhaustion, cynicism, personal efficacy) similar to those in the MBI, but formulated in a way that allows everyone in the workforce to participate.

Another burnout instrument is the Burnout Measure (BM), developed by Pines and Aronson.⁶⁰ This instrument measures physical, emotional and mental exhaustion. The BM can be used by all persons within or without the workforce.

After an extensive review of the literature on the theoretical assumptions and empirical results of the MBI, MBI-GS and the BM, and the testing of these three instruments in a Danish pilot study (see paper IV for details), we decided to develop a new instrument for measuring burnout, the Copenhagen Burnout Inventory. In accordance with the historical development of the burnout

concept, the CBI focuses on exhaustion. The key feature is the attribution of exhaustion to three specific domains in the person's life - that is general exhaustion, exhaustion attributed to work in general and exhaustion attributed to work with clients. Consequently, the CBI has three different scales: 1) A scale on general exhaustion, called personal burnout, which corresponds to the general exhaustion concept of the BM and applies to everyone in and out of the workforce. The six items of this scale were derived from the 21 items of the BM that showed the best psychometric properties. 2) A scale on work-related burnout, which corresponds to the MBI-GS and applies to everyone in the workforce. Six of the seven items of this scale were derived from the emotional exhaustion parts of the MBI and the MBI-GS. 3) A scale on client-related burnout, which corresponds to the MBI and applies to employees doing "people work". This scale was designed specifically for client-work. Compared with the above-mentioned burnout measurements that have seven response-categories, the CBI-scales have five. A detailed description of the CBI is given in the material and methods section.

Human service work

Historically the burnout concept emerged in human services. Human service work, or emotional work, requires face-to-face or voice-to-voice contact with the public to produce emotional state in another person.^{10-12;61;62} According to Hasenfeld, the professional in human service organizations has the mandate to protect, maintain, or enhance the personal well-being of individuals by defining, shaping, or altering their personal attributes.⁶² Hasenfeld distinguishes between normal- and mal-functioning clients (e.g. pupils vs. patients), and categorizes the type of work into three service-categories: 1) "people processing" (e.g. visitation office, taxation office), 2) "people sustaining" (e.g. social security service), and 3) "people changing" (e.g. school, hospital, prison).

This results in six categories of client-work; of which working with mal-functioning clients in "people changing" work has the highest workload.

The core of the job in human service work is professional and constitutes of the relation between the employee and the client¹, meaning that the employee is acting on behalf of society in order to bring about a change in the client (to become healthy, more educated, less criminal, etc).

According to Hasenfeld, human service work often is characterized by un-clarity regarding roles, goals and the contents of work. Moreover, human service work can be complicated if the client is not voluntary in contact with the organization,⁶² and when the professional not only has to help but also to control the client (for example in a prison).

Morris and Feldman distinguish between four characteristics of emotional work: 1) frequency of emotional display (number of clients per time), 2) attentiveness of emotional display – to be divided into duration (short- or long-time contacts) and intensity of emotional display (surface- or deep-acting where the latter means more involvement), 3) variety of emotion to be expressed (the greater variety the greater the emotional labour), and 4) emotional dissonance (the emotion felt is not allowed to be displayed).¹¹

PUMA

During the mid-1990s, Danish unions in the human service sector recognised that an increasing number of their members took long-term sick leave, or applied for re-training or early retirement because of burnout symptoms. At that time, no proper research had been accomplished in Denmark, and consequently the PUMA study was designed. PUMA is a Danish acronym for Projekt Udbændthed, Motivation og Arbejdsglæde, (in English: Study on Burnout, Motivation

¹ Clients can be social service recipients, patients, elderly citizens, pupils, inmates etc.

and Job satisfaction). The study is conducted at the Danish National Institute of Occupational Health and is designed as a 3-wave prospective intervention study over 6 years (1999-2005) in different organisations in the human service sector.

Aims of this thesis

The aims of this thesis are closely related to the aims of the PUMA study.

- 1) To present baseline findings from the PUMA study, including an analysis of the psychometric properties of the main instruments (CBI and COPSOQ) and a description of the distribution of burnout across occupational groups at baseline (paper I)
- 2) To analyse the prospective impact of the psychosocial work environment on burnout (paper II)
- 3) To analyse the impact of burnout on sickness absence days and spells (paper III)
- 4) To discuss the burnout concept of the MBI and to show the rationale for creating the CBI as a new instrument for measuring burnout (paper IV)

Figure 2 (see in the Figures & Tables section) illustrates our a priori assumptions regarding aims 2 and 3. We assumed that problematic client factors, high demands at work, poor work organization and job content, and poor interpersonal relations and leadership increases burnout. We further assumed that high burnout increases the number of sickness absence days and spells. It has to be noted that the factors shown in figure 2 are the ones used for the analyses in this thesis. Therefore, figure 2 does not imply that there are no other causes and consequences of burnout. Other potential causes (such as demands outside the workplace or health-related behaviours) and consequences (such as job turnover, morbidity and mortality), which are not addressed in this thesis, will be analysed in later phases of the PUMA project.

Material and methods

Study design and population

PUMA is a 3-wave prospective intervention study with 6 years of follow-up in the human service sector. The participating organizations were self-selected to the study after meetings between representatives from employers' and employees' organisations and the PUMA project group. Inclusion-criteria were: a) different areas within the human service work should be represented; b) the organisation should have a total of 200 to 500 employees; 3) all occupational groups within each organisation should be willing to participate; 4) the organisations should commit themselves to the whole study period and 5) personal registration numbers (national identity numbers) of the employees could be collected and used in later record-linkages by The Danish Institute of Occupational Health, including linkages to Danish registries for hospitalisation, retirement, and mortality.

Seven organisations, representing different parts of the human service sector in Denmark, were recruited for the PUMA project: 1) a social security service in an urban area; 2) a state psychiatric prison; 3) institutions for severely disabled adults in a county; 4) a somatic hospital; 5) a psychiatric hospital; 6) a homecare service in a rural area, 7) a homecare service in an urban area. Data were collected in 1999-2000 (baseline) and in 2002-2003 (three-year follow-up). A third round of data collection will be conducted in 2005 (six-year follow-up).

Figure 3 (see in the Figures & Tables section) illustrates how the PhD-project is embedded in the PUMA study. Data for the PhD-project are derived from the self-reported questionnaires from baseline and 3-years follow-up of PUMA.

At baseline 1,914 out of 2,391 eligible employees participated in the survey (response-rate 80.1). At follow up 1,759 out of 2,335 responded (response-rate 75.3). Of the 1,914 responders from the baseline survey, 1,463 were still employed in the same organization at follow-up. Of these 1,463 employees, 1,024 responded to the follow-up questionnaire (response-rate 70.0). Thus, the data for the PhD-project comprises two samples: a cross-sectional sample at baseline of 1,914 participants and a follow-up sample of 1,024. See figure 4 in the Figures & Tables section.

Measurements

Burnout was measured with the Copenhagen Burnout Inventory (CBI), an instrument specifically developed for PUMA. The CBI focuses on exhaustion and is divided into three scales. Personal burnout contains six items on general symptoms of exhaustion and is applicable to every person, regardless of whether the person is a member of the workforce or not. Work-related burnout comprises seven items on symptoms of exhaustion related to work and applies to every person in the workforce. Client-related burnout is based on six items on symptoms of exhaustion related to working with recipients in human services and is applicable only to people who work with clients. All items have five response categories. The responses are rescaled to a 0-100 metric (the values being 0-25-50-75-100). Scale scores are calculated by taking the mean of the items in that scale. Information on the psychometric properties of the CBI is given in the result section. See Appendix A for an overview of the CBI-scales. A full list of all burnout items - together with the response frequencies and Cronbach's alphas for the scales - is provided in paper I (Table II).

Psychosocial work environment included both non-client-related factors and client-related factors. *Non-client related psychosocial work environment factors* were measured with scales from the Copenhagen Psychosocial Questionnaire (COPSOQ). The COPSOQ is a comprehensive and

validated instrument that covers a wide range of psychosocial workplace conditions, including scales on demands at work, work organization and job content, and interpersonal relations and leadership. An overview of the COPSOQ scales used in the PUMA are given in Appendix B.⁶³⁻⁶⁵

Client-related psychosocial work environment factors were assessed with two COPSOQ-scales (emotional demands, demands for hiding emotions), five single items on working with clients (frequency of client contact, demands from clients, increasing demands from clients, rewards from clients, and violence and threats) and one proxy measure about types of client (type of organisation, e.g. social security office, psychiatric prison etc.). The five single items were developed de novo for the PUMA study to obtain more detailed information on the daily work with clients. The exact wording of the items can be found in the method section of paper I.

Sickness absence days and *sickness absence spell* per year were measured by asking the participants in both the baseline and the follow-up questionnaire to state their sickness absence during the last 12 months. The two questions were "How many days of sickness absence did you have in the last 12 months?" and "How many spells of sickness absence did you have in the last 12 months?". This means, at baseline, we assessed sickness absence for the 12 months period before the baseline survey and at the 3-year follow-up, we assessed sickness absence for the 12 months period before the follow-up survey.

Covariates used for analyses in this thesis included socio-demographic factors (age, gender, socio-economic status (SES), family status, children living at home), health related behaviours (smoking, alcohol consumption, leisure time physical activity, body mass index), self-rated health from the Short-Form (SF) 36 questionnaire⁶⁶⁻⁶⁸ (vitality, mental health, self-rated health) and the

prevalence of disease (e.g., diabetes, mental disorder, hypertension, gastric ulcers etc. measured at follow-up). All covariates were self-reported.

Data analysis

The following gives an overview of the different statistical analyses calculated for the four papers in the PhD thesis.

Paper I: This paper describes the design of the PUMA study and shows selected baseline findings. Analyses presented in this paper are Cronbach's alphas on the burnout scales and the COPSOQ scales. Work- and client-related burnout scores were plotted to identify occupational groups with co-occurrence of both high work burnout and high client burnout.

Paper II: In this paper we analysed the impact of the psychosocial work environment on burnout. The cross-sectional association between psychosocial work characteristics and burnout at baseline was analysed using linear regression analysis. All psychosocial work characteristics were adjusted for each other as well as for age, gender, SES, organization, family status, having children below the age of 7, smoking, and exercise. The predictive effect of each psychosocial work factor on burnout at follow-up was also analysed with linear regression models. These analyses were successively adjusted: In Model 1 psychosocial work factors were adjusted for age, gender, SES, organization, family status, having children below the age of 7, smoking, and exercise at baseline; in Model 2, we additionally adjusted the psychosocial work environment factors for each other; in Model 3 we additionally adjusted for burnout at baseline (for personal burnout at baseline, when personal burnout was the outcome, for work-related burnout at baseline, when work-related burnout was the outcome, for client-related burnout at baseline, when client-related burnout was the outcome).

Paper III: In this paper we examined the impact of burnout on sickness absence. We analysed 1) cross-sectional associations between burnout and sickness absence at baseline, 2) prospective associations between burnout at baseline and sickness absence at follow-up, and 3) prospective associations between changes in burnout and changes in absence from baseline to follow-up. For the cross-sectional analyses and the analyses on the impact of burnout at baseline on absence at follow-up, we calculated Rate Ratios (RR) and 95% confidence intervals (CI) using Poisson regression models with a scale parameter to account for over dispersion. For the analyses on associations between changes in burnout and changes in sickness absence from baseline to follow-up, we used linear regression models. The analyses were adjusted successively for different covariates: Model I was adjusted for age and gender; Model II was additionally adjusted for type of organisation and SES; Model III was additionally adjusted for BMI, smoking, alcohol consumption and leisure time physical activity; Model IV was additionally adjusted for family status and having children below the age of seven; and Model V was additionally adjusted for prevalence of disease. Because prevalence of disease was only measured at follow-up, the cross-sectional analyses included Models I to IV only, whereas the prospective analyses included all five models. To illustrate the findings on the impact of changes in burnout on changes in absence, we further dichotomised burnout into low (<50 points) and high burnout (\geq 50 points) and built four groups: 1) participants with constant low burnout levels at both rounds (low-low), 2) participants who had low burnout at baseline and high burnout at follow-up (low-high), 3) participants with constant high levels of burnout at both rounds (high-high), 4) participants who had high burnout at baseline and low burnout at follow-up (high-low). For each of these groups we created figures, showing means and 95% confidence intervals of absence days at baseline and follow-up.

Paper IV: This paper is foremost a theoretical paper. It discusses in detail the limitations of the MBI and provides the rationale for developing the CBI as a new instrument to measure burnout. In addition to this, paper IV gives a general overview about the most important findings from the PUMA study to date. This includes a summary of the psychometric properties of the CBI, an overview about the distribution of burnout across occupational groups, and correlation of the CBI with mental health, general health, vitality, job satisfaction and proportion of participants who would choose the same job again. Further, the paper presents a multivariate linear regression analyses on the impact of a one quartile increase on the work-related burnout scale (measured at baseline) on a number of variables at follow-up, including sickness absence, sleep problems, use of pain killers and intention to quit the workplace.

All analyses were performed using SAS 8.2.

Presentations of results of the papers

This section summarizes the results of the papers for the PhD-project. The order will be as this: 1) Psychometrics of the CBI and the COPSOQ and distribution of burnout across occupational groups (paper I), 2) Psychosocial work environment factors as predictors for burnout (paper II), 3) Burnout as predictor for sickness absence (paper III), and 4) Rationale for the development of the CBI (paper IV).

Psychometrics of the CBI and the COPSOQ and distribution of burnout across occupational groups (paper I)

The internal reliability was high for the three CBI scales with Cronbach's alphas of 0.87 for both personal and work-related burnout and 0.85 for client related burnout. The correlations between

the three scales were 0.73 for personal and work burnout, 0.46 for personal and client burnout and 0.61 for work and client burnout. For the COPSOQ, Cronbach's alphas were satisfactory for 12 of 18 scales. Correlation coefficients between the COPSOQ and the CBI scales were highest for job satisfaction (-0.51), quantitative demands (0.48), role-conflict (0.44), and emotional demands (0.42) and lowest for job insecurity (0.11) and cognitive demands (0.14).

We found variations (discriminate validity) between the occupational groups in the PUMA study: the highest burnout levels was found among midwives and home helpers in the capital, whereas low levels were found among senior doctors and head nurses. Some occupational groups have high values on one or two scales and low values on one or two scales. For example, hospital doctors had high work- and low client-related burnout, whereas prison wards had high client- and low work-related burnout. There was an overall tendency that the jobs in the hospital sector had relatively higher scores on work-related burnout than on client-related burnout. A co-occurrence of both high client and high work burnout was found in midwives, urban home care workers, social workers in the social security service, and social care workers in the institutions for the chronically disabled.

Psychosocial work environment factors as predictors for burnout (paper II)

This paper presents cross-sectional and prospective associations between work characteristics at baseline and burnout at baseline and at 3-years of follow-up.

The cross-sectional analyses showed that emotional demands, quantitative demands, and role-conflicts were positively associated with all three scales of the CBI, whereas meaning of work was negatively associated with the scales, after adjustments for potential confounding variables. In addition, some of the psychosocial work environment factors were associated with different

burnout scales: predictability was associated with personal and work-related burnout only; demands for hiding emotions and low role-clarity were associated with high work-related and client-related burnout only; work pace, possibilities for development and quality of leadership were associated with high work-related burnout only; and controlling clients at work was associated with client-related burnout only.

The impact of the psychosocial work environment factors at baseline on burnout at 3-year follow-up are shown in Table 1 (see in the Figures & Tables section). This table gives an overview of the significant associations of the second model, in which psychosocial variables are adjusted for each other and also adjusted for age, gender, SES, organization, family status, having children below the age of 7, smoking, and exercise.

High emotional demands and high role-conflicts had an impact on all three CBI scales. High quantitative demands and low possibilities for development were associated with personal - and work-related burnout, whereas low role-clarity was associated with personal and client-related burnout. High work pace and low predictability had an impact on work-related burnout, whereas high demands for hiding emotions and low meaning of work predicted client-related burnout.

Table 2 (see in the Figures & Tables section) shows an overview of the significant associations for the third model (the second model plus adjustment for burnout-levels at baseline). Poor possibility for development, poor role-clarity, high level of role-conflicts, as well as high level of meaning of work and high level of good leadership were associated with personal burnout at 3-year follow-up. Work-related burnout was only associated with low predictability, whereas client-related burnout was only associated with poor role-clarity.

Burnout as predictor of sickness absence (paper III)

This paper presents cross-sectional and prospective associations between burnout at baseline and sickness absence at baseline and at 3-years of follow-up.

In the cross-sectional analyses all three burnout scales of the CBI were associated with both sickness absence days and sickness absence spells. An increment of one standard deviation on the work burnout scale was associated with 38% (CI 30-46%) more sickness absence days and with 22% (17-28%) more sickness absence spells, when adjusted for a wide range of potential confounders.

The analyses of the prospective impact of burnout on sickness absence at 3-year follow-up showed that a higher level of the three burnout scales at baseline predicted higher sickness absence days at follow-up. The rate ratios for the three burnout scales are shown in table 3 (see in the Figures & Tables section). All scales were associated with an increase in absence at 3-year follow-up. For work-related burnout, this means that an increment of one standard deviation (17.7 points) on the work burnout scale at baseline predicted 21% (11-32%) more sickness absence days and 9% (2-17%) more sickness absence spells per year at follow-up in the full model.

Regarding co-variates, we found that being a woman increased sickness absence days by 41% (CI 5-89%) in the full model, but had no significant influence on sickness absence spells. Higher age predicted a lower number of sickness absence spells, but was not associated with sickness absence days. Regarding socio-economic status the lowest status group had more annual sickness days than the two other groups, but showed no difference regarding spells. Heavy smokers had more sickness absence days than ex-smokers, and more absences spells than non- and light-

smokers. Participants doing light weekly exercise had more absence days than the heavily exercising groups and the passive group; but showed no difference regarding spells.

Analysing the impact of change in work-related burnout on change in absence between baseline and 3-year follow-up showed that a one standard deviation change in work burnout from baseline to follow-up predicted a change of 1.94 sickness absence day per year (se 0.63, $p < 0.005$). Thus, an increase in work burnout from baseline to follow-up predicted an increase in sickness absence, and a decrease in work burnout from baseline to follow-up predicted a decrease in sickness absence days, after adjustment for several confounders. Changes on the client-related and the personal burnout scales showed the same patterns.

When stratifying respondents into groups with high or low burnout at baseline and follow-up, we found that participants that had low burnout both at baseline and at follow-up (low-low group) had a mean increase of 1.3 absence days from baseline to follow-up. Participants with increasing burnout (low-high) had an increase of 4.5 days, and participants with constant high burnout levels (high-high) had 3.8 more days of sickness absence days from baseline to follow-up. Participants with decreasing burnout level from baseline to follow-up, though, showed a mean decrease of 2.8 absence days at follow-up compared with absence days at baseline.

Rationale for the development of the CBI (paper IV)

This paper gives the rationale for the development of the CBI and presents some additional empirical findings of the instrument.

The MBI has been applied in more than 90% of all empirical burnout studies in the world,⁴ so it would have been naturally to use the MBI in the PUMA. However, after an extensive review of

the literature and after we used the MBI in a Danish pilot study, we found several problematic features in the conceptualisation and operationalisation of the instrument:

1. The questions of the MBI are formulated in such way that only employees in the human service sector can answer them. This means that we end up in a circular argument: The basic assumption (the restriction of burnout to individuals who do people work) cannot be challenged, and the basic hypothesis (that the emotional demands inherent in “people work” increases the risk of burnout) cannot be tested, since the questionnaire cannot be used in an “unexposed” group.
2. The MBI assumes one burnout concept but contains three independent dimensions (emotional exhaustion, depersonalisation and reduced personal accomplishments). According to the MBI, these dimensions should be measured independently and should not be combined to a single total score. This means that there is one burnout concept but three independent measures of the concept, and consequently a person will end up with three different burnout levels. Furthermore, each of the dimensions has its precursors and consequences.^{69;70}
3. In our view, the three dimensions of MBI present a mixture of an individual state (emotional exhaustion), a coping strategy (depersonalisation), and a consequence of long-term stress (reduced personal accomplishment). We think that each of these dimensions is important and they should be studied separately, but not lumped together as parts of a syndrome.
4. The MBI as well as the MBI-GS and the BM were criticized in a pilot study conducted prior to the PUMA study. In particular the questions on depersonalisation and personal accomplishment caused negative reactions. Participants told us that some items were "very American" and "would never function in Denmark".

After consideration of all these problematic features, we decided to develop the CBI. The main focus of the CBI is on the attribution of exhaustion, which is reflected in scales on personal burnout (general exhaustion, without a special attribution), work-related burnout (exhaustion, attributed to work in general and client-related burnout (exhaustion attributed to work with clients). Because two of the three scales (personal burnout and work-related burnout) are not restricted to human service workers, the CBI avoids the problem of circularity (see above) and allows comparing burnout between human service workers and other occupational groups or the general population.

In addition to the rationale for the development of the CBI, paper IV also included some empirical findings of the PUMA study. The three CBI scales, correlated negative with general health, vitality, and mental health. Client-related burnout showed a strong negative association with job satisfaction and for choosing the same job again, if one had the chance. Furthermore, work-related burnout was prospectively associated with sleep problems, use of painkillers, intention to quit the workplace, and (as already reported in paper II) with sickness absence days and spells.

Discussion of the results

CBI and distribution of burnout among occupational groups

Emotional exhaustion has been described as the core symptom of burnout,^{3;4;57;71-74} and in some research projects only the emotional exhaustion-scale of the MBI was used.^{25;29;33} The CBI is a new instrument that allows exploring exhaustion in more detail and also studying the individual's attribution of exhaustion to specific domains in life.

We found that the CBI has a good internal consistency. The three burnout scales concerns three domains: a generic scale to be responded by all persons (personal burnout), a work-related scale to be responded by persons who do paid work (work-related burnout), and a scale to be responded by persons who work with clients (client-related burnout). While the three burnout scales correlated with each other, the correlation coefficients indicated that the overlap is only partly, supporting the idea of three different burnout scales. Occupational groups showed different patterns on the three scales, supporting the concept of measuring burnout with regard to different domains.

Causes of burnout

The prospective analyses on determinants of burnout showed that high emotional demands, high demands for hiding emotions, high quantitative demands, high work pace, low possibilities for development, low meaning of work, low predictability, low role-clarity and high role-conflict predicted burnout on at least one burnout scale. These associations remained statistically significant after adjusting for several potential confounders and for the other psychosocial work characteristics. The most striking result was that two of the main factors in contemporary occupational psychology, influence at work (control) and social support, were *not* associated with future burnout. This contrasts with findings from other studies on burnout including more than one occupational group, those have reported prospective associations between influence at work and social support with burnout,^{37;54} or between job demands (quantitative demands) and emotional exhaustion.²⁵

Our study, however, provides strong support for the role of emotional demands, quantitative demands, possibilities for development (skill discretion), role-clarity, role-conflicts, and predictability. When we further adjusted for burnout at baseline, we found that role-clarity, role-

conflicts, predictability, and possibility for development, were associated with burnout at three years follow-up. Here, we found different associations with the three burnout scales. Future personal burnout was prospectively associated with low possibilities for development, high meaning of work, high leadership quality, low role-clarity and high role-conflicts at baseline. Future work-related burnout was associated with low predictability only, whereas future client-related burnout was associated with low role-clarity only.

Our prospective findings confirm the results of the meta-analysis of cross-sectional studies by Zapf, who found that emotional work combined with organizational problems was associated with high levels of burnout.¹⁷ This also underscores the point made by Zapf,¹² that burnout research should include specific factors that are related to human service work (such as emotional demands) and to the collaboration between the human service workers (such as role-conflicts and role-clarity).

It is a strength of the PUMA study that it is not limited to the measurement of only a few psychosocial exposure at work, such as well-known factors from the demand-control-support of Karasek,^{75:76} but that a broad range of client and non-client specific characteristics is measured. This does not mean that in PUMA all possible psychosocial work characteristics have been measured. For example, for future studies one might consider of including a scale on reward at work, since an imbalance between high efforts and low reward in the client-professional relationship (lack of reciprocity) have been discussed as a contributor to burnout recently.¹⁹

Interestingly, we found that meaning of work and quality of leadership were negatively associated with personal burnout in the first model, but when personal burnout at baseline was included in the full model, the associations turned positive, i.e., high levels of meaning and quality of leadership

were associated with higher level of personal burnout at 3-year follow-up. This finding was unexpected. A possible ad hoc explanation could be that good leadership and meaningful work keep people with a high level of personal burnout in the job.

Burnout as a predictor for sickness absence

Regarding consequences of burnout, we found that burnout at baseline predicted sickness absence days and spells at 3-year follow-up. These associations remained significant after controlling for several potential confounders inclusive self-reported disease. Moreover we found that changes in work-related burnout during follow-up were associated with changes in absence over time. This means that increase in burnout predicts increase in sickness absence, and decrease in burnout predicts decrease in sickness absence. This result confirm Harvey's study, who found similar associations in a very small population (n=18) and with a follow-up of six months in total.³² The results are also in line with findings from an intervention study that showed that reducing burnout in the experimental group was followed by a decrease in sickness absence 12 months later.²⁸

Limitations of the PhD thesis

1. Common method variance

Data for this PhD-project are based solely on questionnaire data from baseline and 3-year follow-up in the PUMA study. This means that all data for the PhD-project are self-reported which might result in 'common method variance'.^{77;78} Common method variance can cause a positive bias, if for example personal or situational factors cause individuals to report negatively on both work factors and burnout. For instance, negative affectivity^{79;80} could have created spurious associations between work environment factors and the reported burnout, because individual with

high negative affectivity may perceive their work environment more negatively. In addition illness could have influenced the both the feeling of burnout and the perception of the psychosocial work environment. To account for this, we adjusted the analyses for self-reported diseases. However, this information was only collected at follow-up and not at baseline. Moreover, it would have been desirable, if we had information on doctor-diagnosed diseases. However, because we calculated both cross-sectional and prospective associations, we were able to address some of these problems. Associations based on self-reported data are more convincing when the baseline level of the outcome (burnout) is included in the longitudinal analyses, because one can control for the effect of current mood on reporting of working conditions.^{77;81-83}

In the future, we will also be able to study endpoints that are not self-reported. The PUMA study plan includes a follow-up of the cohort in Danish registers. This will allow us to analyse future objective outcomes as long-term sick leave, early retirement, morbidity, and mortality. The whole PUMA study, therefore, comprises both self-reported (subjective) and registered (objective) measurements, which will reduce the problems of 'common method variance'.

2. High job turnover from baseline to 3-year follow-up

The participation rate at the baseline survey was 80%. This is a good return rate. However, it is possible that individuals with the highest levels of burnout would feel too exhausted to fill out a long questionnaire, and therefore might be underrepresented among the responders. This would cause an underestimation of burnout in this study.

Moreover, of the 1,914 participants at baseline, only 1,024 participated at follow-up, resulting into a 46.5% reduction. Job-turnover constituted the major part of the reduction with 39.2% (range 29.0-51.8% between organisations) of the employees who had quit their job between baseline and

follow-up. We found that participants who responded to the baseline survey only were slightly younger, lived more often as single's, lived more often without children at home, and if they had children, these were more often below seven years old. Based on these findings, one could speculate that those employees who had left the workplace were more mobile because of younger age and a less binding family situation.

3. 'Healthy worker effect'

The so-called 'healthy worker effect' means that people in the workforce are usually in better health than those who are not working, which creates a selection bias. With regard to the PUMA study this could mean that people with a high degree of burnout have already left the labour market. This would reduce potential associations between predictors at work and burnout, resulting in an underestimation of possible effects.

4. Issues regarding longitudinal studies

An increasing number of longitudinal studies have been initiated in burnout research during the last few years to investigate the causes of burnout. While superior to cross-sectional studies, longitudinal studies do not solve all problems as pointed by Frese and Zapf,⁷⁷ Dormann and Zapf,⁸⁴ and Taris and Kompier.⁸⁵ An issue, which also applies to this PhD-project, is the limitation of longitudinal study designs that involve only two-waves of measurement. The two-waves of measurement provided us with information about change over time, but we do not have information about the processes within this period. Probably, complex changes in both psychosocial work factors and burnout may have taken place that could be of interest to study. Here, a follow-up time of three years is a long time and it is reasonable to assume that some exposures changed at some point during this time, or even changed several times. These changes

are not measured, resulting in the loss of important information. Dormann and Zapf⁸⁴ found in a multi-wave study that the strongest effect between social stressors and depressive symptoms were found in a 2-year time lag, whereas De Lange et al²⁵ found that a 1-year time lag resulted in the best model fit between work characteristics and mental health.

For future research it would be desirable, if work environment characteristics and burnout could be measured in shorter time lags, for example every 6 or 12 months. This would allow analysing causal association, but also reciprocal effects more precisely. However, one has to be aware that frequent measurement could be viewed as an unacceptable burden by the participants, and subsequently resulting into a lower participation rate.

Strengths of the PhD thesis

First, this study is a prospective study, providing a stronger rationale for causal interpretations of the associations between exposures and outcome. Second, unlike most other burnout studies, this study includes a range of different occupational groups in human service work, which means that the exposure to client-work is different between the groups. Third, we have developed the CBI as a new instrument for measuring burnout that allows comparisons between occupational groups with and without client-contact and, in the future, also comparisons between people in and outside the workforce. Fourth, we conducted a comprehensive assessment of potential work environmental determinants of burnout, including both client- and non-client specific work environment characteristics. Fifth, we controlled for a numerous confounders including demographic-, work-, and health-related factors.

In the future, we will have a third-wave survey at six-year follow-up in PUMA. This will enable us to analyse determinants for burnout, also reciprocal effects, in more detail. Moreover, the

PUMA population will be linked to registers, allowing us to investigate burnout as a determinant for long-time sick leave, early retirement, morbidity and mortality. Finally, future analyses will investigate the impact of workplace interventions in PUMA on changes in work characteristics, burnout and potential consequences of burnout. The analyses of the workplace interventions in PUMA are not only of great practical importance, but can also help to corroborate the associations found in this thesis.

Conclusions

This PhD thesis had the main goals of studying determinants of burnout and analysing the impact of burnout on sickness absence in the PUMA study. In the prospective findings, the psychosocial work characteristics (exposure) were measured at baseline, and burnout (outcome) both at baseline and at 3-year follow-up. This means that exposure is measured before outcome – minimizing the possibility of inverse causality. Further, we are able to adjust for burnout at baseline and for a range of potential confounders, including socio-demographics, type of workplace, socio-economic status, health-related lifestyle, and family status. When also adjusting for burnout at baseline we avoid positive bias of ‘common method variance’. These design features strengthens the possibility that the associations of specific work environment factors (such as un-clarity or conflicting work roles, poor possibilities for developing in job, and low predictability) on burnout is due to a causal relation in a human service work population. However, the possibility of alternative causal pathways remains and can never be completely ruled out in an observational study.

Further, the prospective design for the study of burnout as predictor for sickness absence also strengthen the likelihood of a causal explanation to the result that burnout (exposure) measured at

baseline increases the likelihood of sickness absence (outcome) at 3-year follow-up, after adjusted for a broad range of potential confounders, including prevalence of disease.

The associations between psychosocial work characteristics and burnout suggest that improvement of the psychosocial work environment possibly will reduce the level of burnout. Thus, burnout may be preventable and burnout prevention might be important for the reduction of sickness absence.

It is suggested that these observational findings on causal associations between work environment, burnout and sickness absence are further investigated in experimental or quasi-experimental designs such as intervention studies, including analyses of the workplace intervention conducted in PUMA.

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Figures & Tables

Figure 1. Theoretical relationship between stressors and burnout

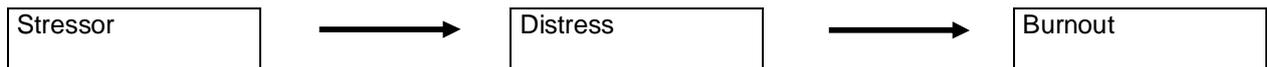


Figure 2. A priori assumption on work-related predictors and consequences of burnout

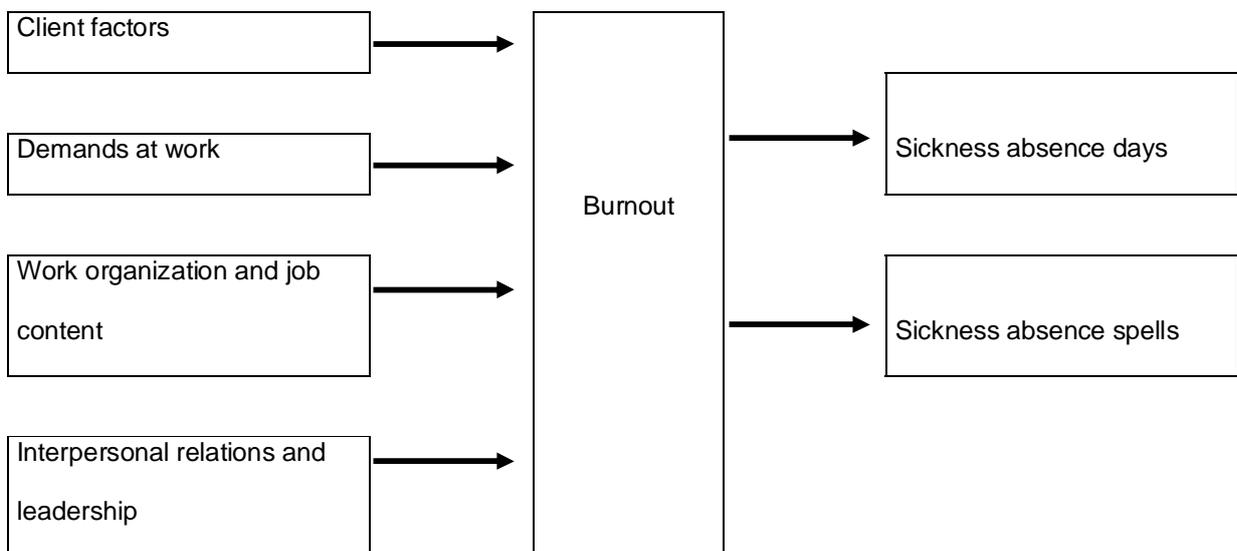


Figure 3. The PhD-project embedded in the PUMA study

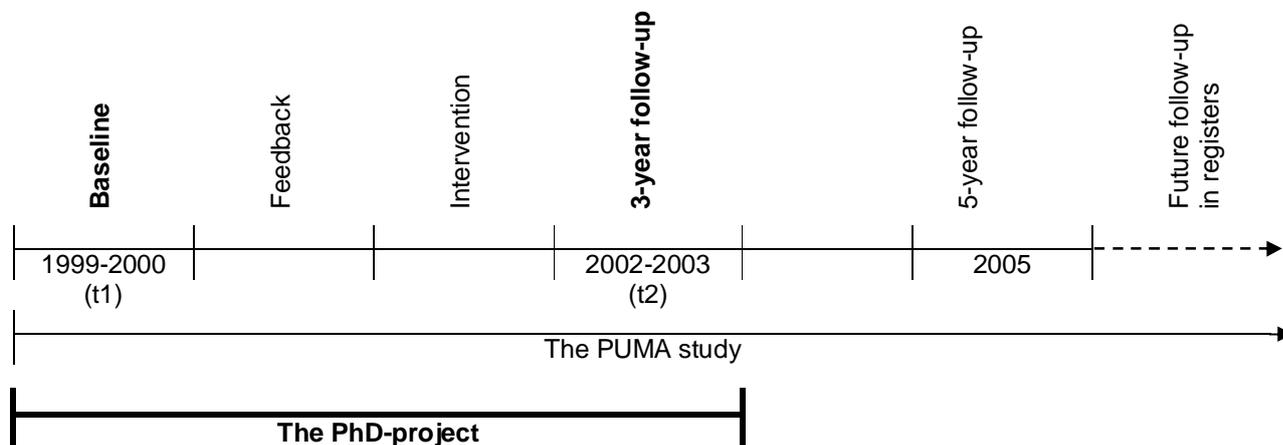


Figure 4. Participants and non-participants in the PUMA

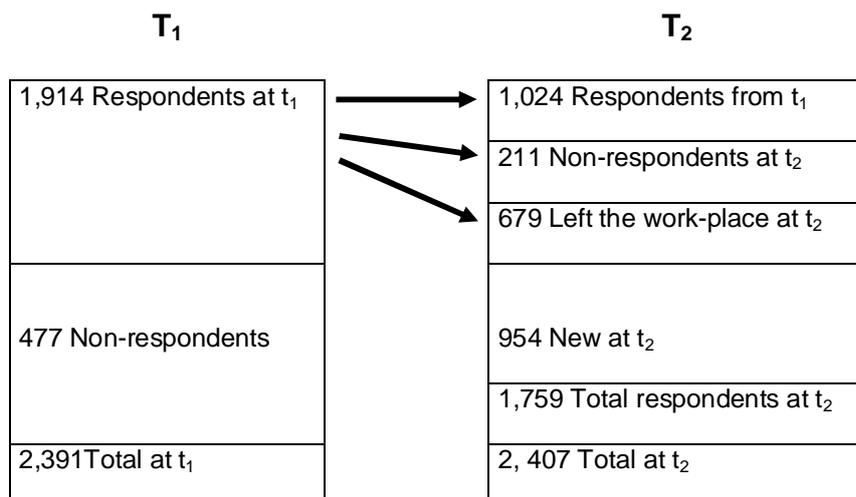


Table 1

Prospective predictors for Personal -, Work-related -, and Client-related Burnout when psychosocial factors were mutually adjusted for each other and for potential confounders. Only significant associations are shown ($p < 0.05$).

	Personal Burnout			Work-related Burnout			Client-related Burnout		
	Estimate	se	p value	Estimate	se	p value	Estimate	se	p value
Client-specific factors									
Emotional demands	2.108	0.649	0.001	3.299	0.726	<0.0001	2.498	0.711	0.001
Demands for hiding emotions							2.193	0.668	0.001
Demands at work									
Quantitative demands	1.816	0.736	0.014	2.054	0.824	0.013			
High work pace				1.828	0.777	0.019			
Work organization and job content									
Possibilities for development	-1.910	0.732	0.009	-1.976	0.819	0.016			
Meaning of work							-2.435	0.775	0.002
Interpersonal relations and leadership									
Quality of leadership									
Predictability				-1.735	0.731	0.018			
Role-clarity	-1.502	0.595	0.012				-2.162	0.648	0.001
Role-conflicts	2.665	0.636	<0.001	2.216	0.709	0.002	2.333	0.693	0.001

Psychosocial factors are adjusted for each other and for age, gender, SES, organization, family status, having children below the age of 7, smoking, and exercise at baseline

Table 2

Prospective predictors for Personal -, Work-related -, and Client-related Burnout when psychosocial factors were mutually adjusted for each other, for potential confounders and for the baseline level of the respective burnout scale. Only significant associations are shown (p<0.05).

	Personal Burnout			Work-related Burnout			Client-related Burnout		
	Estimate	se	p value	Estimate	se	p value	Estimate	se	p value
Work organization and job content									
Possibilities for development	-1.451	0.646	0.025						
Meaning of work	1.356	0.626	0.031						
Interpersonal relations and leadership									
Quality of leadership	1.615	0.650	0.013						
Predictability				-1.396	0.682	0.041			
Role-clarity	-1.496	0.524	0.004				-1.221	0.563	0.030
Role-conflicts	1.580	0.565	0.005						

Psychosocial factors are adjusted for each other and for age, gender, SES, organization, family status, having children below the age of 7, smoking, exercise at baseline burnout at baseline (personal burnout, work-related burnout, and client-related burnout, respectively)

Table 3

Prospective impact of Personal burnout, Work-related burnout, and Client-related burnout at baseline on sickness absence days and sickness absence spells at 3-year follow-up (prospective cohort, n=824)

	RR	95% CI
Sickness absence days per year		
Personal burnout ^{a)}	1.21	1.11 - 1.31
Work burnout ^{a)}	1.21	1.11 - 1.32
Client burnout ^{a)}	1.14	1.05 - 1.25
Sickness absence spells per year		
Personal burnout ^{a)}	1.13	1.05 - 1.21
Work burnout ^{a)}	1.09	1.02 - 1.17
Client burnout ^{a)}	1.12	1.05 - 1.21

^{a)} increases of 1 standard deviation. Adjusted for age, gender, organization, SES, BMI, smoking, alcohol consumption, and leisure time physical activity, family status, having children below the age of 7, and for disease.