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Psychosocial Work Characteristics as Predictors for Burnout: Findings From 3-Year Follow Up of the PUMA Study

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Learning Objectives

- Relate baseline psychosocial work characteristics to three categories of burnout (personal, work-related, client-related) in a cross-sectional study of 1772 workers at human service organizations.
- Identify any demographic or behavioral correlates of burnout.
- Recall associations between burnout and psychosocial features of work in 952 workers in the human services sector who were followed up prospectively for 3 years, after adjusting for possible confounding factors, the degree of burnout at baseline, and psychosocial work characteristics themselves.

Abstract

Objective: The objective of this study was to investigate the impact of psychosocial work characteristics on burnout. **Methods:** A total of 1772 participants in different human service sector organizations were eligible for the cross-sectional analyses (baseline) and 952 for the prospective analyses. We measured 14 psychosocial work characteristics and three types of burnout. Linear regression models were used for analyzing associations between psychosocial work characteristics at baseline and burnout at baseline and at 3 years of follow up. **Results:** Low possibilities for development, high meaning of work, low predictability, high quality of leadership, low role clarity, and high role conflicts predicted burnout at 3 years of follow up after the psychosocial work characteristics were adjusted for each other, potential confounders, and burnout level at baseline. **Conclusion:** Psychosocial work characteristics were prospectively associated with burnout, suggesting that improving the psychosocial work environment may reduce future burnout in human service work. (J Occup Environ Med. 2005;47:1015–1025)

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Burnout is an increasing problem in highly developed countries.^{1–3} The phenomenon burnout is described as a particular type of prolonged occupational stress that seems to occur most prominently among human services professionals and is characterized by emotional exhaustion, loss of energy, and withdrawal from work.³ The concept of burnout started as a “grassroots” description of prolonged occupational stress among human service workers, in which former engaged employees gradually get overwhelmed of emotional exhaustion, loss of energy, and withdrawal from work. Thus, the burnout concept was developed from field observations—not from theory. 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 1970s as a particular type of prolonged occupational stress that seemed to occur most prominently among human services professionals.”³ Research on burnout was initiated in the mid-1970s. Since then, more than 5500 studies on burnout have been published.^{1,3} From the 1980s to the mid-1990s, several cross-sectional studies were performed in addition to the former rather descriptive case stories. A metaanalysis including these cross-sectional studies showed that emotional work combined with organizational problems is associated with high levels of burnout.⁴ Since

the second half of the 1990s, an increasing number of prospective studies have been conducted. We found 33 prospective studies focusing on determinants for burnout in a literature search made for this paper.^{5–37} Although prospective studies are in general superior to cross-sectional studies, especially with regard to analyzing causal associations, most of the 33 studies had one or more limitations. The majority of the studies involved participants from only one specific occupational group, rather than a broader range of occupations, which may result in low variation of exposure and may therefore limit the ability to analyze the causal associations more precisely. Moreover, many prospective studies covered a follow-up period of 1 year or less and had response rates below 50%. Only 10 of the 33 studies covered follow-up periods longer than 1 year,^{5,8,9,11,12,15,20,24,26,36} and only seven studies included more than one occupational group.^{11,16,20,23,26,36,37} Of these studies, only four included both more than one occupational group and had a longer follow-up period of more than 1 year.^{11,20,26,36} These studies found that high workload, emotional demands, and an imbalance in job demands, control, and support predict emotional exhaustion.

Overall, it is widely agreed that burnout is a complex phenomenon with multifactorial causation. In concordance with general stress theory,^{38–40} it is our basic theoretical assumption that exposure to adverse psychosocial work characteristics lead to unfavorable psychophysiological arousal (distress) which, in the long run, will lead to a state of exhaustion, which we label burnout.

Little is known about burnout and risk factors for burnout in the Danish context. Therefore, in 1999, the PUMA study was initiated. PUMA is a three-wave study collecting data at baseline and after 3 and 5 years of follow up.⁴¹ In this article, we examine cross-sectional and 3-year prospective associations between a broad range of psychosocial work characteristics and burnout while control-

ling for potential confounders. In our view, it is important that burnout research in human service workers needs to go beyond the measurement of traditional psychosocial exposures such as high demands and low control, which often have been studied in the context of industrial work.⁴² Instead, we believe it is necessary to address a wide range of different psychosocial work characteristics, including characteristics that are specific for working with clients. In our theoretical framework of psychosocial exposures, we differentiate between four types of psychosocial work characteristics, that is, “client-specific work characteristics,” “demands at work,” “work organization and content,” and “interpersonal relations and leadership.”^{44,43} We hypothesized that exposure to adverse psychosocial work characteristics at baseline would be associated with higher burnout levels at follow up, even after adjustment for baseline burnout level and for potential confounding variables.

Materials and Methods

Study Design and Population

PUMA (Danish acronym for Study on Burnout, Motivation and Job satisfaction) is an ongoing 5-year prospective study in different organizations in the human service sector. To date, data have been collected at baseline (1999–2000) and at the first follow up (2002–2003), resulting in a mean follow-up period of 3 years (2½ to 4 years). A more detailed description on the background, design, study population, and measurements of PUMA can be found elsewhere.⁴¹

The study population was recruited from seven different organizations within the human service sector: 1) social security services in an urban area; 2) one state psychiatric prison; 3) institutions for severely disabled adults in a county; 4) one somatic hospital; 5) one psychiatric hospital; 6) one home care service in a rural area, and 7) one home care

service in an urban area. All occupational groups in each organization were eligible for the study.

We sent the baseline and follow-up questionnaires, together with the study description and an invitation letter from the organizations, to the home address of all employees. Nonresponders received two written reminders, the first after 2 weeks of nonresponse and the second—including a new questionnaire—after another 3 weeks. PUMA follows the open cohort principle, ie, employees who joined the workforce after the baseline survey were eligible at the follow-up survey. The Danish Data Protection Agency (Datatilsynet) and Scientific Ethical Committees (Videnskabetiske Komitéer) in the respective counties have given approval for the study protocol.

At baseline, 1914 of 2391 eligible employees participated in the survey (response rate 80%). At follow up, 1759 of 2335 employees responded (response rate 75%). Of the 1914 responders from the baseline survey, 1463 responders were still employed in the same organization at follow up. Of these 1463 employees, 1024 responded to the follow-up questionnaire (response rate 70%).

For the present article, we conducted analyses with two samples: a cross-sectional sample and a prospective sample. As a result of missing values on psychosocial work characteristics and covariates, the cross-sectional sample included 1772 participants and the prospective sample 952 participants.

Measurements

Client-Specific Work Characteristics. Emotional demands and demands for hiding emotions were measured with two scales derived from the Copenhagen Psychosocial Questionnaire (COPSOQ). The COPSOQ is a comprehensive and validated instrument on work and health^{44–47} in which the scales were constructed by using different approaches and methods such as, eg, factor analysis, the feedback of the

participants, differential item functioning, and qualitative methods. An overview of the scales is provided in Table 1.

The type of organization (eg, prison, hospital, social security office), department, or institution was used as a proxy measure for the type of client that the participants were exposed to. We constructed two categories: 1) the employee has primarily a helping function (like in somatic hospital and in home care service), and 2) the employee has a helping function but also a controlling function (like in the prison, in

certain departments in the social security offices, in the psychiatric hospital, and among some of the institutions for severely disabled adults).⁴⁸

We measured frequency of client contact with the question “How much contact do you have on average with clients during the working week?” with the four response categories “almost all the working time,” “more than half the working time,” “less than half the working time,” and “never/almost never.”

Nonclient Work Characteristics. Nonclient work characteristics were

assessed with scales from the COP-SOQ.^{44–47} Demands at work were measured with a scale on quantitative demands and with a single item regarding work pace (“Do you have to work very fast?”). Work organization and job content were measured with three scales: influence, possibilities for development, and meaning. Interpersonal relations and leadership were assessed with scales for social support, quality of leadership, predictability, role clarity, and role conflicts (see Table 1).

Burnout. Burnout is usually measured with questionnaires. The most

TABLE 1
Scales, Sample Items, Alphas, and Interitem Correlations of the Psychosocial Work Characteristics and the Burnout Scales

Scale	Sample Item	No of Items	Cronbach's Alpha	Range of Interitem Correlations
Client-specific work characteristics				
Emotional demands	“Does your work put you in emotionally disturbing situations?”	3	0.84	0.56–0.67
Demands for hiding emotions	“Does your work require that you hide your feelings?”	2	0.46	0.30
Demands at work				
Quantitative demands	“Is your workload unevenly distributed so it piles up?”	4	0.83	0.41–0.67
Work organization and job content				
Influence	“Can you influence the amount of work assigned to you?”	4	0.73	0.30–0.55
Possibilities for development	“Do you have the possibility of learning new things through your work?”	4	0.75	0.37–0.45
Meaning of work	“Is your work meaningful?”	3	0.79	0.48–0.63
Interpersonal relations and leadership				
Social support	“How often do you get help and support from your colleagues?”	2	0.59	0.41
Quality of leadership	“To what extent would you say that your immediate superior gives high priority to job satisfaction?”	4	0.90	0.61–0.72
Predictability	“At your place of work, are you informed well in advance concerning, for example, important decisions, changes, or plans for the future?”	2	0.81	0.66
Role clarity	“Do you know exactly what is expected of you at work?”	4	0.84	0.45–0.66
Role conflicts	“Do you sometimes have to do things that should have been done in a different way?”	4	0.72	0.28–0.55
Copenhagen Burnout Inventory				
Personal burnout	“How often do you think: ‘I can't take it anymore’?”	6	0.87	0.39–0.62
Work-related burnout	“Do you feel that every working hour is tiring for you?”	7	0.87	0.35–0.63
Client-related burnout	“Does it drain your energy to work with clients?”	6	0.86	0.36–0.66

All items have five response categories (from “to a very low degree” to “to a very high degree” or from “never” to “always”). Each scale ranges from 0 to 100 points, with high scores indicating high levels of the referred scale.

widely used instrument is the Maslach Burnout Inventory (MBI) developed by Maslach and Jackson,⁴⁹ but also other instruments are frequently in use such as the Burnout Measure (BM) by Pines and Aronson⁵⁰ and the Maslach Burnout Inventory–General Survey (MBI-GS).⁵¹ After an extensive review of the literature on the theoretical assumptions and empiric results of the existing burnout instruments, and after testing the MBI, the MBI-GS, and the BM in a Danish pilot study, we decided to develop a new instrument for measuring burnout, the Copenhagen Burnout Inventory (CBI).^{52,53} The main reason for this decision was the critical feedback from the pilot study participants on the wording of several items. Moreover, the existing instruments do not differentiate between different domains in life that might be of potential relevance for burnout. The key feature of the CBI 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. The CBI has shown good psychometric properties when compared with the MBI.⁵⁴ A more detailed rationale for the development of the CBI is given in another paper that is currently under review.

The CBI consists of three scales: personal burnout, work-related burnout, and client-related burnout. Personal burnout assesses general symptoms of exhaustion and applies to everyone in and out of the workforce; work-related burnout measures symptoms of exhaustion related to work and applies to everyone in the workforce; and client-related burnout measures symptoms of exhaustion related to working with clients and applies to employees in human service work. Although we do not assume that these scales are completely independent of each other, they represent different phenomena, which also might be caused by different factors. The correlation

coefficients between the scales were 0.73 for personal and work burnout, 0.46 for personal and client burnout, and 0.61 for work and client burnout. Missing values on single items were low, ranging from 0.6% to 1.3%. A more detailed rationale for the development of the CBI is given in another paper that is currently under review.

Covariates

Sociodemographic Factors. We asked the participants about their age, gender, cohabitant status, the number of children at home and how many of these children were below the age of 7, education, in which organization they worked, and their job function.

We combined cohabiting status and having children at home to a new variable "family status" with four groups: 1) cohabiting with children at home, 2) cohabiting without children at home, 3) being single with children at home, or 4) being single without children.

We determined the socioeconomic status (SES) of the participants based on their job function and on their education: 1 = participants with supervisory function for more than 50 subordinates and/or with advanced education (academics), 2 = participants with supervisory function for less than 50 subordinates and/or with middle-range education, and 3 = participants who were subordinates and/or had a short-term education.

Health-Related Lifestyle. We asked the participants about their smoking habits and created a categorical variable representing four categories: nonsmoker, exsmoker, light smoker (less than 15 g tobacco per day), and heavy smoker (15 g tobacco or more per day). Weekly physical activity was assessed in four categories: 1) light exercise for less than 2 hours, 2) light exercise for 2 to 4 hours, 3) light exercise for more than 4 hours, and 4) heavy exercise for more than 4 hours per week.

Data Analysis

Differences in baseline burnout scores between study participants participating at both rounds and participants only participating at baseline were analyzed with a *t* test for independent groups. Two different methods were used to investigate the relationship between psychosocial work characteristics at baseline and burnout. 1) The cross-sectional association between psychosocial work characteristics and burnout at baseline was analyzed 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. 2) The prospective associations between psychosocial work characteristics and burnout at follow up were also analyzed with linear regression models. The analyses were adjusted in three steps: In model 1, the psychosocial work characteristics were adjusted for age, gender, SES, organization, family status, having children below the age of 7, smoking, and exercise at baseline; in model 2, the psychosocial work characteristics were additionally adjusted for each other; and 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).

All scales for measuring psychosocial work characteristics were standardized. The psychosocial work characteristics are measured using scales, which are arbitrarily scored from 0 to 100, with different means and standard deviations. Rather than reporting the effect of an increase of, eg, 10 points, we report the effect of an increase of one standard deviation. The burnout scales (outcomes) were maintained as continuous scales

scored 0 to 100. All analyses were performed using SAS 8.2.

Results

Table 2 shows the baseline characteristics of the 1772 participants of a cross-sectional sample. The majority of the participants were women (85%) and 54.8% had a lower SES. The mean age was 42 years. Mean baseline burnout scores of the 1024 participants who responded in both rounds were 35.2 (standard deviation [SD]: 16.0) for personal burnout, 32.5 (SD: 16.9) for work-related burnout, and 30.6 (SD: 17.2) for client-related burnout. The 890 participants who responded only at baseline had burnout scores of 36.6 (SD: 17.0, personal), 34.1 (SD: 18.6, work-related) and 31.5 (SD: 18.0, client-related), respectively. When

we compared the scores of responders to both rounds versus responders to baseline only, no statistically significant differences were found (all *P* values ≥ 0.05).

Cross-Sectional Associations Between Psychosocial Work Characteristics and Burnout at Baseline

Table 3 shows the cross-sectional associations between psychosocial work characteristics and the three burnout scales. High scores on emotional demands, quantitative demands, and on role conflicts and low scores on meaning of work were significantly associated with high levels of burnout on all three burnout scales. Low predictability was associated with high personal and work-related burnout, but not with

client-related burnout, whereas high demands for hiding emotions and low role clarity were associated with high work-related and client-related burnout, but not with personal burnout. Working fast, low possibilities for development, and low quality of leadership were associated with high work-related burnout only. Controlling clients at work was associated with client-related burnout only.

Regarding the covariates, we found that being a woman was associated with a high level of personal burnout, whereas being a man was associated with a high level of client-related burnout. Heavy smokers had higher levels of personal and work-related burnout than nonsmokers (data not shown).

Prospective Associations Between Psychosocial Work Characteristics at Baseline and Burnout at Follow Up

Tables 4, 5, and 6 show the prospective associations between psychosocial work characteristics measured at baseline and personal, work-related, and client-related burnout measured at the 3-year follow up.

For personal burnout, we found that with the exception of client contact, controlling clients and social support, all psychosocial work characteristics were predictive for high personal burnout levels when the analyses were adjusted for age, gender, SES, organization, family status, having children below the age of 7, smoking, and exercise (Table 4, model 1). When we further adjusted the psychosocial work characteristics for each other, only high emotional demands, high quantitative demands, low possibilities for development, low role clarity, and high role conflicts remained predictive for high levels of personal burnout (model 2). After further adjustment for personal burnout levels at baseline (model 3), low possibilities for development, low role clarity, and high role conflicts remained significant, whereas the estimates for emotional and

TABLE 2
Characteristics of the Study Population at Baseline (*n* = 1772)

Variables	
Age, mean yr (SD)	42.2 (10.3)
Women (%)	82.7
Socioeconomic status (SES)	
SES 1 (high) (%)	5.0
SES 2 (%)	38.2
SES 3 (low) (%)	56.8
Organization	
Social security offices (%)	19.9
Psychiatric prison (%)	10.5
Institutions for severely disabled (%)	15.5
Hospital, somatic (%)	22.1
Hospital, psychiatric (%)	2.3
Home care service, rural area (%)	15.4
Home care service, urban area (%)	14.3
Family status	
Living with children and with spouse (%)	45.5
Living with children and without spouse (%)	8.4
Living without children and with spouse (%)	33.0
Living without children and without spouse (%)	13.2
Living with small children (<7 years) (%)	22.0
Exercise	
Light exercise <2 h per week (%)	7.3
Light exercise 2–4 h per week (%)	54.7
Light exercise >4 h per week (%)	33.0
Heavy exercise >4 h per week (%)	5.0
Smoking	
Nonsmoker (%)	36.3
Exsmoker (%)	24.8
Light smoker (%)	14.3
Heavy smoker (>15 g per day) (%)	24.5
Client contact (%)	92.1
Controlling client work (%)	25.8

SD indicates standard deviation.

TABLE 3

Baseline Associations of the Psychosocial Work Characteristics With Personal Burnout ($n = 1760$), Work-Related Burnout ($n = 1771$), and Client-Related Burnout ($n = 1626$)

	Personal Burnout			Work-Related Burnout			Client-Related Burnout		
	Estimate	SE	P Value	Estimate	SE	P Value	Estimate	SE	P Value
Client-specific work characteristics									
Client contact	-1.398	1.309	0.29	-1.282	1.198	0.28	.	.	.
Emotional demands	4.061	0.402	<0.00	5.331	0.368	<0.00	5.560	0.455	<0.00
Demands for hiding emotions	0.757	0.390	0.05	0.833	0.356	0.02	2.816	0.437	<0.00
Controlling clients	-0.383	1.139	0.74	-1.634	1.040	0.12	2.846	1.298	0.03
Demands at work									
Quantitative demands	3.508	0.468	<0.00	4.703	0.429	<0.00	2.043	0.526	0.00
Work pace	0.660	0.435	0.13	1.433	0.399	0.00	0.281	0.495	0.57
Work organization and job content									
Influence at work	-0.368	0.395	0.35	-0.494	0.361	0.17	0.319	0.442	0.47
Possibilities for development	-0.777	0.456	0.09	-1.793	0.418	<0.00	-0.657	0.516	0.20
Meaning of work	-1.852	0.438	<0.00	-2.259	0.401	<0.00	-2.732	0.494	<0.00
Interpersonal relations and leadership									
Social support	-0.085	0.370	0.82	-0.616	0.339	0.07	-0.260	0.421	0.54
Quality of leadership	-0.246	0.470	0.60	-1.027	0.430	0.02	0.241	0.529	0.65
Predictability	-1.187	0.417	0.00	-0.845	0.381	0.03	0.264	0.469	0.57
Role clarity	-0.399	0.379	0.29	-0.967	0.347	0.01	-1.491	0.425	0.00
Role conflicts	1.948	0.400	<0.00	2.887	0.365	<0.00	1.705	0.451	0.00

Based on 1772 participants in the cross-sectional sample. The reduced number of participants for personal burnout and work-related burnout is the result of missing values on these burnout scales; the reduced number of participants for client-related burnout is the result of missing values and to the exclusion of 140 participants without client contact.

All analyses are mutually adjusted for the other psychosocial factors and for age, gender, socioeconomic status, organization, family status, having children below the age of 7 years, smoking, and exercise.

SE indicates standard error.

TABLE 4

Prospective Associations for the Impact of Moving One Standard Deviation on the Psychosocial Work Characteristics at Baseline on the Personal Burnout Scale 3 Years Later in 939 Human Service Workers

	Model 1			Model 2			Model 3		
	Estimate	SE	P Value	Estimate	SE	P Value	Estimate	SE	P Value
Client-specific work characteristics									
Client contact	3.229	2.131	0.130	0.268	2.116	0.899	0.482	1.866	0.796
Emotional demands	3.528	0.566	<0.0001	2.108	0.649	0.001	0.303	0.543	0.577
Demands for hiding emotions	2.950	0.550	<0.0001	0.400	0.616	0.517	-0.310	0.591	0.601
Controlling clients	0.770	1.806	0.670	0.886	1.709	0.604	0.935	1.507	0.535
Demands at work									
Quantitative demands	4.273	0.592	<0.0001	1.816	0.736	0.014	0.391	0.655	0.551
Work pace	2.687	0.592	<0.0001	1.039	0.693	0.134	0.172	0.613	0.779
Work organization and job content									
Influence at work	-2.919	0.568	<0.0001	-1.120	0.625	0.074	-1.028	0.551	0.063
Possibilities for development	-2.417	0.592	<0.0001	-1.910	0.732	0.009	-1.451	0.646	0.025
Meaning of work	-2.013	0.585	0.001	-0.073	0.703	0.918	1.356	0.626	0.031
Interpersonal relations and leadership									
Social support	-0.408	0.554	0.462	0.456	0.575	0.427	0.704	0.507	0.165
Quality of leadership	-1.803	0.576	0.002	1.165	0.737	0.114	1.615	0.650	0.013
Predictability	-2.362	0.555	<0.0001	-0.631	0.653	0.335	-0.153	0.577	0.790
Role clarity	-3.249	0.556	<0.0001	-1.502	0.595	0.012	-1.496	0.524	0.004
Role conflicts	4.744	0.555	<0.0001	2.665	0.636	<0.001	1.580	0.565	0.005

Model 1: adjusted for age, gender, socioeconomic status, organization, family status, having children below the age of 7 years, smoking, and exercise at baseline.

Model 2: model 1 plus all psychosocial variables mutually adjusted.

Model 3: model 2 plus adjustments for personal burnout at baseline.

SE indicates standard error.

TABLE 5

Prospective Associations for the Impact of Moving One Standard Deviation on the Psychosocial Work Characteristics at Baseline on the Work-Related Burnout Scale 3 Years Later in 952 Human Service Workers

	Model 1			Model 2			Model 3		
	Estimate	SE	P Value	Estimate	SE	P Value	Estimate	SE	P Value
Client-specific work characteristics									
Client contact	3.670	2.424	0.130	-0.184	2.388	0.939	-0.132	2.224	0.953
Emotional demands	4.636	0.635	<0.0001	3.299	0.726	<0.0001	-0.301	0.641	0.639
Demands for hiding emotions	3.332	0.622	<0.0001	0.101	0.688	0.884	0.431	0.718	0.548
Controlling clients	-2.167	2.044	0.289	-1.858	1.920	0.333	-0.743	1.790	0.678
Demands at work									
Quantitative demands	5.358	0.664	<0.0001	2.054	0.824	0.013	-0.089	0.788	0.910
Work pace	3.827	0.664	<0.0001	1.828	0.777	0.019	0.667	0.731	0.362
Work organization and job content									
Influence at work	-3.428	0.643	<0.0001	-1.085	0.702	0.122	-0.964	0.654	0.141
Possibilities for development	-2.454	0.666	<0.001	-1.976	0.819	0.016	-1.222	0.765	0.111
Meaning of work	-2.089	0.660	0.002	-0.189	0.791	0.811	0.949	0.743	0.202
Interpersonal relations and leadership									
Social support	-1.366	0.625	0.029	-0.151	0.646	0.815	0.558	0.605	0.356
Quality of leadership	-2.876	0.648	<0.0001	0.973	0.827	0.240	1.331	0.771	0.081
Predictability	-3.691	0.622	<0.0001	-1.735	0.731	0.018	-1.396	0.682	0.041
Role clarity	-3.407	0.628	<0.0001	-1.204	0.666	0.071	-0.785	0.621	0.207
Role conflicts	5.130	0.627	<0.0001	2.216	0.709	0.002	0.610	0.674	0.366

Model 1: adjusted for age, gender, socioeconomic status, organization, family status, having children below the age of 7 years, smoking, and exercise at baseline.

Model 2: model 1 plus all psychosocial variables mutually adjusted.

Model 3: model 2 plus adjustments for work-related burnout at baseline.

SE indicates standard error.

TABLE 6

Prospective Associations for the Impact of Moving One Standard Deviation on the Psychosocial Work Characteristics at Baseline on the Client-Related Burnout Scale 3 Years Later in 831 Human Service Workers

	Model 1			Model 2			Model 3		
	Estimate	SE	P Value	Estimate	SE	P Value	Estimate	SE	P Value
Client-specific work characteristics									
Client contact									
Emotional demands	4.159	0.661	<0.0001	2.498	0.711	0.001	0.766	0.584	0.190
Demands for hiding emotions	4.506	0.613	<0.0001	2.193	0.668	0.001	-0.795	0.646	0.219
Controlling clients	0.421	2.054	0.838	0.342	1.914	0.858	-0.887	1.655	0.592
Demands at work									
Quantitative demands	3.035	0.663	<0.0001	0.431	0.807	0.593	-0.301	0.698	0.667
Work pace	1.734	0.659	0.009	0.665	0.760	0.382	0.087	0.658	0.895
Work organization and job content									
Influence at work	-2.282	0.643	<0.001	-0.179	0.684	0.793	-0.285	0.591	0.630
Possibilities for development	-2.579	0.666	<0.001	-0.385	0.803	0.632	0.428	0.696	0.539
Meaning of work	-3.826	0.645	<0.0001	-2.435	0.775	0.002	-0.838	0.677	0.216
Interpersonal relations and leadership									
Social support	-1.553	0.611	0.011	-0.623	0.641	0.331	-0.163	0.555	0.769
Quality of leadership	-2.464	0.632	<0.001	0.993	0.806	0.218	0.643	0.697	0.357
Predictability	-2.651	0.612	<0.0001	-0.498	0.721	0.490	-0.603	0.623	0.333
Role clarity	-4.009	0.611	<0.0001	-2.162	0.648	0.001	-1.221	0.563	0.030
Role conflicts	4.980	0.616	<0.0001	2.333	0.693	0.001	1.112	0.603	0.066

Model 1: adjusted for age, gender, socioeconomic status, organization, family status, having children below the age of 7 years, smoking, and exercise at baseline.

Model 2: model 1 plus all psychosocial variables mutually adjusted.

Model 3: model 2 plus adjustments for client-related burnout at baseline.

SE indicates standard error.

quantitative demands dropped to a level that was no longer statistically significant. Meaning of work and quality of leadership also became significant in this model. However, although high meaning of work and high quality of management were associated with lower personal burnout in model 1, they were associated with higher personal burnout in model 3.

For work-related burnout, all psychosocial work characteristics, with the exception of client contact and controlling clients, were significant in model 1 (Table 5). When we further adjusted the psychosocial work characteristics for each other, high emotional demands and high quantitative demands, high work pace, low possibilities for development, low predictability, and high role conflicts remained predictive for high levels of work-related burnout (model 2). After further adjustment for work-related burnout at baseline, only low predictability remained statistically significant (model 3).

For client-related burnout, all psychosocial work characteristics, with the exception of controlling clients, were significant in model 1 (Table 6). When we further adjusted the psychosocial work characteristics for each other, high emotional demands, high demands for hiding emotions, low meaning of work, low role clarity, and high role conflicts remained predictive for high levels of client-related burnout (model 2). After further adjusting for client-related burnout at baseline, only low role clarity remained statistically significant.

Discussion

The PUMA study is the first study exploring prospective associations between psychosocial work characteristics and burnout among different occupational groups in human service work in Denmark.

We found that most psychosocial work characteristics were associated with personal, work-related, and client-related burnout among employees in human services in the

cross-sectional samples. The prospective findings showed that when psychosocial work characteristics were adjusted for each other and for several confounders (model 2), 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 conflicts predicted burnout on at least one burnout scale. When we further adjusted for burnout score at baseline (model 3), low possibilities for development, high meaning of work, high leadership quality, low role clarity, and high role conflicts predicted future personal burnout. For work burnout, only low predictability was predictive, whereas for client-related burnout, only low role clarity was predictive.

Although many of our findings were as expected in relation to former research, we did not find significant independent associations among job demands, influence at work, social support, contact with clients, or controlling client at baseline with future burnout after adjustment for the baseline level of burnout. Moreover, regarding personal burnout, we found that meaning 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, ie, 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.

It is an open question whether model 2 or model 3 in the three tables with prospective analyses (Tables 4–6) is the most conclusive. If we assume that the causal factors have their main effects during the first years of employment, it could be argued that model 2 is the most valid.

Here we control for background factors and mutually for the psychosocial work characteristics. If the factors already have “played their role” at baseline, it is overadjustment to control for baseline burnout levels. If, on the other hand, we assume that the causal factors continue to play a role for the development of burnout during all the years of employment, then model 3 is the most conclusive, because we control for baseline burnout levels.

In our opinion there is no clear solution to this problem. In principle, it could be a solution to look at very young employees with low seniority only, but unfortunately our database is too small for that. In the present study, we think that the most balanced picture is obtained by including both models (2 and 3) in the considerations regarding possible causal factors.

Looking at the results from model 2, the most striking result is that two of the main factors in contemporary occupational psychology, influence at work (control) and social support, are 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,^{20,37} or between job demands (quantitative demands) and emotional exhaustion.¹¹ However, there is strong support for the role of emotional demands, quantitative demands, possibilities for development (skill discretion), predictability, role clarity, and role conflicts. In model 3, this picture is supported with regard to possibilities for development, role clarity, and role conflicts. Overall, these results underscore the point made by Zapf⁴³ that burnout research should include specific factors related to human service work such as emotional demands, role conflicts, and role clarity. Limiting oneself to the traditional factors of demand, control, and support would

have resulted in a rather misleading picture.

Strengths

This study has several important strengths. First, in contrast to most research on determinants of burnout, this is not a cross-sectional but a prospective study, allowing analysis of the impact of work characteristics at baseline on burnout 3 years later while adjusting for baseline burnout level. Second, the inclusion of different organizations in the human service sector, representing a range of different occupational groups, allows us to explore differences in exposure among professionals working with different clients. Third, all occupational groups within each workplace were included in the PUMA study, so that both employees with and without client contact participated, which enabled us to study contrasts of exposure within each workplace as well as between the workplaces. Fourth, we did not restrict ourselves to a few psychosocial work factors, but measured a broad range of psychosocial work characteristics, including client-specific characteristics, which are viewed as of special importance in human service work,^{4,43} but have only rarely been used in research. Fifth, we controlled for several factors from outside the work environment that might influence both the perception of the work and the level of burnout and therefore might be confounders.

As a result of this combination of different strengths, we believe that the results from our study are robust. Because we studied a broad range of psychosocial work characteristics, this study contributes to a more detailed understanding of which psychosocial work characteristics have an impact on burnout. This will not only help to better understand the development of burnout, but is also important for the development of interventions that might prevent or at least reduce burnout.

Limitations

There were 1914 participants at baseline and only 1024 at follow up, meaning that 890 employees who participated at baseline did not participate in the follow up. This 46.5% reduction can be explained by high job turnover, because 39.2% (range, 29.0–51.8%) of the employees had quit their job between baseline and follow up. The participation rate at the baseline survey was high, with an overall response of 80% (74–87% for the different organizations). Of these, 70.0% were still employed at the same workplace and responded at follow up. The high response rate at baseline indicates a low likelihood of selection bias. However, we must still consider that people with high levels of burnout might have felt too exhausted to complete the baseline questionnaire and therefore might be underrepresented among the responders. Although we were not able to perform a nonresponse analysis at baseline, we compared the burnout scores of participants at both baseline and follow up with the scores of those who participated at baseline only. This analysis showed no significant differences on the three burnout scales.

It needs to be recognized that the findings might result from shared-method variance: both psychosocial work characteristics (exposure) and burnout (effect) were self-reported, which might lead to possible overestimation of the associations. Moreover, personality factors may cause that individuals report negatively on both work factors and burnout. In line with this, potential underlying effects of negative affectivity may result in spurious associations between work environment factors and the reported burnout, because individuals with high negative affectivity may perceive their work environment more negatively.⁵⁵

The follow-up time in this study ranged from 2½ to 4 years (mean, 3 years). During a follow-up time of that length, 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 Zapf⁵⁶ found, in a multiwave study, that the strongest effect between social stressors and depressive symptoms were found in a 2-year time lag, whereas De Lange et al¹¹ 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 help to clarify whether the psychosocial work characteristics have immediate, delayed, or cumulative effects, to identify the impact on exposure changes on future burnout levels analyzing 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 in a lower participation rate.

Conclusion

The PUMA study is the first study exploring prospective associations between a broad range of psychosocial work characteristics and burnout among different occupational groups in human service work in Denmark.

We identified modifiable factors such as possibilities for development, predictability, role clarity, and role conflicts that were associated with burnout after 3 years follow up. These findings suggest that improvement of the psychosocial work environment possibly will reduce the level of burnout.

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