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ORIGINAL ARTICLE

Types of employment and their associations with work characteristics and health in Swedish women and men

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Abstract

Aim: To investigate whether type of employment was related to work characteristics and health status at age 42 adjusted for health status at age 30 and whether gender moderates the associations. *Methods:* Questionnaire data was used from a 27-year follow-up study of school-leavers carried out in Luleå in the north of Sweden (response rate 94%). The study population consisted of 877 (47.8% women) working respondents. Data were analysed by means of t-tests, ANOVAs, and multiple linear regression analyses. *Results:* Men were more often self-employed, while more women had temporary types of employment. Moreover, men reported more control over work and less emotional exhaustion than women. Compared to permanently employed, self-employed (men and women) perceived more control over work and better health status ($p<0.01$). Self-employed men also reported more demands and social support ($p<0.05$). People in temporary types of employment, however, reported less job control, as well as lower health status (only men) ($p<0.01$). Poor self-reported health and emotional exhaustion were significantly ($p<0.05$) associated with poor work characteristics (more demands, lower job control, and lower support). ***Conclusions:*** **No direct associations between type of employment and health were found for women and men. However we find indications of an influence of type of employment on work and thereupon health, with job control playing an important role.**

Key Words: *Emotional exhaustion, gender, job control, job demands, self-reported health, social support, type of employment*

Background

During the two last decades, the number of non-standard work contracts has grown, e.g. on-call, project workers, and self-employment, in favour of permanent contracts, aiming towards more flexibility [1]. Flexibility is to be achieved through variation in the number of employees, working hours, skills, and services provided [2]. In Sweden, the number of temporarily employed increased from 9.4% in 1990 to 15.9% in 2007 [3]. Simultaneously, the number of self-employed, with or without employed staff, increased with around 3% and amounted 13% of all employed in Sweden 2007 [4,5].

A consequence of this development is the segmentation of the labour market into a core peripheral/flexible workforce [6]. At the core, permanent employees are located with relatively good job security, and opportunities for development with regards to skills, job content, and salary. The core is encircled by workers with time-restricted, or temporary, contracts, with varying degrees of security and benefits [6]. On the one hand in Sweden, men and highly educated persons dominate project work, which is the type of temporary employment with characteristics similar to permanent employment [6]. On the other hand, women and lower-educated persons dominate the two less beneficial forms of temporary

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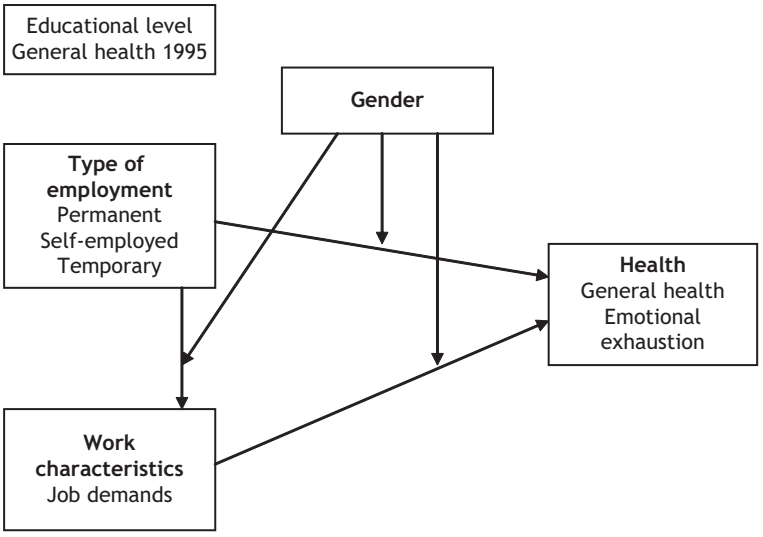

Figure 1. Research model showing the hypothetical relations between the studied variables.

employment: on-call and substitute [6,7]. They may face greater demands and less control over working time, receive less social support from superiors, and have fewer possibilities for training and career advancement as compared to workers with permanent contracts [8]. Furthermore, they may find it harder to criticise work characteristics and obtain a response to negative feedback from employers and colleagues than other employees [8]. Lastly, they often lack social security coverage, and are less often unionised [9].

Self-employed constitute a third segment of the labour market [2] because of their looser employment protection as regards social security or representation in unions. Also, they have an independent relationship with an employer, working for themselves, and being personally responsible for almost everything (independent self-employed). However, in some situations, i.e. outsourcing and/or subcontracting of activities, they may depend on an employer for their income (dependent self-employed) [10]. The degree and type of dependence on an employer, as well as their position in the value production chain (i.e. the relation with the customers), determine the self-employed persons' autonomy over economy and work characteristics [10,11]. According to Böheim and Muehlberger [10], men, younger persons, and lower educated have greater odds of working in dependent than in independent self-employment. Hence, similarly to temporary employment, social segregation exists within self-employment as well.

Considering that the security and work characteristics vary depending on type of employment, health status may vary as well. A systematic review [12] showed that temporary workers compared to permanent ones had 1.25-times higher risk for psychological distress, but a 0.23 lower risk for sickness absenteeism. The latter finding can be due to higher sickness presenteeism and working while ill in fear of losing the job. The situation for self-employed is, however, unclear. Finnish researchers found no differences in quality of life between self-employed and salaried workers [13], while others [14,15] found higher incidence rates of coronary heart disease for self-employed compared to permanent workers. Possibly self-employed, especially small enterprises, face high job demands which impacts on the time devoted to promotion of occupational health and safety activities [16,17].

Gender differences in health effects of different types of employment are yet to be determined. According to a systematic review on temporary and self-employment and health [18], findings are inconclusive. Consequently, more research is needed.

Aim

To investigate whether type of employment (permanent, temporary, self), was related to work characteristics (job demands, control, social support) and health status (general and emotional exhaustion) at age 42, adjusted for health status at age 30 and whether gender moderates the associations (Figure 1).

We formulated five hypotheses: (1) men and women have different types of employment, work characteristics, and health status; (2) work characteristics and health status differ for different types of employment; (3) direct associations exist between gender, type of employment, work characteristics, and health status; (4) work characteristics mediate

Table I. Cronbach's alphas, means, standard deviations and t-tests for gender (df ranges from 850 to 870), Pearson correlations for women (n=407, left-lower corner) and men (n=445, right-upper corner).

Scale (range)[a]	Cronbach's alpha	Women	Men	t	Scale (range)[a] 1	2	3	4	5	6
1. Poor SRH 1995 (1–4)	0.83	1.47±0.51	1.48±0.48	−0.42	–	0.08	−0.02	−0.17**	0.26**	0.26**
2. High demands 2007 (1–4)	0.80	2.61±0.61	2.62±0.59	−0.17	0.20**	–	0.01	−0.31**	0.29**	0.41**
3. High control 2007 (1–4)	0.76	3.11±0.52	3.22±0.50	−0.31**	0.01	0.17**	–	0.35**	−0.17**	−0.19**
4. High support 2007 (1–4)	0.88	3.49±0.47	3.49±0.47	0.05	−0.20**	−0.33**	0.17**	–	−0.35**	−0.34**
5. Poor SRH 2007 (1–4)	0.82	1.48±0.51	1.44±0.45	1.32	0.25**	0.33**	−0.10*	−0.39**	–	0.46**
6. Exhaustion 2007 (1–6)	0.84	2.31±1.19	2.07±0.94	3.35**	0.21**	0.45**	−0.13**	−0.42**	0.43**	–

[a]Variable names are indicative for interpretation. For instance, a high score on demands reflects a high level of job demands. But a high score on GHQ implies an adverse health condition.
*$p\leq0.05$; **$p\leq0.01$. SRH, self-reported health.

between type of employment and health status; and (5) associations are moderated by gender.

Methods

Design, data, and study population

Data were derived from a 27-year follow-up study of school-leavers carried out in Luleå city in the north of Sweden [19]. For this study we mainly used data from the follow-up in 2007 (age 42), but we also used health data from the follow-up in 1995 (age 30). Only people who reported "yes" when asked whether they had a job at age 42 were included (n=877; 45.5% women).

Measures

All measures have earlier proven to be valid and reliable. The selection of measures was based on the research model (Figure 1) and the research framework (the Job Demand–Control–Support model), for Cronbach's alphas (Table I).

Dependent variables at age 42. Self-reported health (SRH) was measured with a six-item version of the General Health Questionnaire (range 1–4) [20]. Mean scores were computed when respondents answered 4 items or more. An example item: "Have you lost much sleep the last weeks?" A higher score meant worse health.

Emotional exhaustion was measured with the five-item emotional exhaustion subscale of the Swedish Maslach Burnout Inventory (range 1–6) [21]. Mean scores were computed when respondents answered four items or more. An example item was "I feel emotionally drained by my work". A higher score meant more emotional exhaustion.

Independent variables at age 42. The following socio-demographic variables were measured: gender, number of working hours, having partner (yes/no), having children living at home (yes/partly/no), and education based on the Swedish educational system, we distinguished three categories: (1) primary school (<10 years of education); (2) high school (10–12 years of education); and (3) university (>12 years of education).

Type of employment at age 42 was measured with one item. Respondents were permanently (reference group), self-, or temporarily employed. The latter category was measured with six questions about project/object, substitute, probationary, on demand, seasonal, and other fixed-term contracts. Cross-tabulations were used to define overlap between groups. Those who were both self-employed and permanently employed were placed in the permanently employed group, because we assumed that the self-employment was not substantial enough to work independently. Twelve cases were deleted and eight respondents were regrouped.

Psychosocial work characteristics were operationalised according to the Job Demand–Control–Support model [22,23] and measured with the Swedish version [24]. According to this model, the amount of job demands, job control, and social support at the work place are of major importance for the psychological/physical strains of the employees [22,23].

Job demands refer to work load, intellectual requirements, and time constraints and were measured with a five-item scale (range 1–4). An example

item was: "Does your job require you to work very fast?" Mean scores were computed when respondents answered four items or more. A higher score meant more demands. Job control refers to the possibility of making decisions and is measured with six items (range 1–4), four about skill discretion and two about decision authority. An example item was "Do you have the opportunity to learn new things in your work?" Mean scores of this scale were computed when respondents answered five items or more. A higher score meant higher control. Social support was measured by an eight-item scale (range 1–4). An example item was "There is a quiet and pleasant atmosphere at my place of work". Mean scores were computed and included when respondents answered six items or more. A higher score meant more support.

We controlled for health status in 1995 to remove the effect of earlier health on the relationships [25] in our model (Figure 1) in 2007. SRH at age 30 was measured in the same way as at age 42 (General Health Questionnaire). No measure of emotional exhaustion was included in the questionnaire at age 30 and thus could not be adjusted for.

Statistics

Gender differences in the distribution of the variables were analysed with χ^2 tests and t-tests (hypothesis 1). Cross-tabulations for gender, work characteristics, and type of employment were analysed with χ^2 tests and ANOVAs (hypotheses 1 and 2). The research model was tested by means of multiple linear regression analyses [26]. We applied the top down procedure to choose the best fitting models (hypotheses 3 and 5), and we entered the variables step by step, based on the research model in Figure 1. All regressions were adjusted (in step 1) for educational level and the regression for SRH was adjusted for SRH in 1995. The mediating role of work characteristics (hypothesis 4) was tested by means of the joint significance test [27]. According to MacKinnon and his colleagues [27], this test has the best balance of Type I error and statistical power of 14 methods to test for mediation. This method simply implies mediation when both the beta-coefficients between the independent and the mediating variables and between the mediating and the dependent variables are significant.

Gender may act as a moderator variable to affect the direction or strength of the relations between independent variables (type of employment) and dependent variables work characteristics and health outcomes (hypothesis 5). After regressing SRH 1995 and education (step 1, confounders), gender (step 2), type of employment (step 3), and work characteristics, we added interaction terms gender×type of employment (step 4). Next, we regressed the confounders (step 1), gender (step 2), type of employment, and work characteristics (step 3), on both health outcomes. Again, in step 4 we introduced the interaction terms: gender×work characteristics and gender×type of employment. All analyses were performed with SPSS version 15.01. The study was approved by the Regional Ethical Review Boards in Umeå.

Results

Table I shows descriptives, t-tests, and the correlations of work characteristics and health for men and women separately (hypothesis 1). All work characteristics correlated significantly with the dependent variables, for both men and women. Men reported more control in their jobs; women reported higher levels of emotional exhaustion.

Table II shows the sample characteristics for the total group and for men and women separately, as well as the results of the t-tests and χ^2 tests for gender differences (hypothesis 1). Men and women differed significantly on all characteristics, except for the variable "living with partner". More women than men had permanent employment and worked in temporary types of employment, while more men were self-employed. Men worked more hours than women, and women more often had attended university and had children living at home.

Table III shows the results of the ANOVAs and the mean values for work characteristics and health status on type of employment for the total group, and for men and women separately (hypotheses 1 and 2). Self-employed (both men and women) had the highest level of job control and the best health status, while the reverse was found for both men and women who worked in temporary types of employment. Post-hoc analyses (Bonferroni) confirmed these group differences; only SRH was not significant for women (p=0.13).

Table IV shows the results of the linear regression analyses (hypotheses 3, 4, and 5). Poor work characteristics (high demands, low job control, and low support) were associated with poor SRH. We did not find significant direct associations between type of employment and SRH status. We found one significant interaction, however: gender moderated the association between temporary employment and poor SRH. Stratified analyses (not shown in the table) indicated that temporary employment was not significantly related to women's health (β=−0.05, not significant), while it was significantly associated with men's poor SRH (β =0.11, p<0.05).

Table II. Sample characteristics (2007) (total n=877, 419 women, 458 men).

Characteristic	Total	Women	Men	Chi-squared/t
Gender				
Women	419 (47.8)	–	–	–
Men	458 (52.2)			
Type of employment				
Permanent	698 (79.6)	340 (81.7)	358 (78.7)	22.27 (2)**
Self	102 (11.6)	30 (7.2)	72 (15.8)	
Temporary	71 (8.1)	46 (11.1)	25 (5.5)	
No. of work hours	39.4±8.69	36.3±8.11	42.3±8.24	−10.69 (874)**
Education				
Primary school	66 (7.5)	28 (6.7)	38 (8.3)	7.93 (2)*
Secondary school	577 (65.8)	261 (62.3)	316 (69.0)	
University	234 (26.7)	130 (31.0)	104 (22.7)	
Partner				
Yes	697 (79.5)	342 (81.8)	355 (78.2)	1.78 (1)
No	175 (20.0)	76 (18.2)	99 (21.8)	
Children living at home				
Yes	567 (64.7)	293 (70.1)	274 (60.5)	13.15 (2)**
Partly	141 (16.1)	67 (16.0)	74 (16.3)	
No	163 (18.6)	58 (13.9)	105 (23.2)	
Age of eldest child (years)	12.1±5.06	13.2±4.69	11.1±5.21	5.66 (727)**

Values are n (%) or mean±SD. *p≤0.05; **p≤0.01.

Table III. Mean values of the dependent variables and the indicator of health-related selection on type of employment (total, women. and men).

	F (df)			Employment (mean)			
Variable	Total	Women	Men		Total	Women	Men
High demands	0.80 (2, 864)	0.55 (2, 412)	1.95 (2, 449)	Permanent	2.61	2.62	2.60
				Self	2.67	2.51	2.74
				Temporary	2.56	2.58	2.53
High control	25.81 (2, 864)**	8.41 (2, 412)**	15.97 (2, 449)**	Permanent	3.15	3.10	3.20
				Self	3.47	3.46	3.48
				Temporary	2.96	2.99	2.90
High support	2.23 (2, 857)	1.51 (2, 408)	2.10 (2, 446)	Permanent	3.49	3.50	3.47
				Self	3.57	3.55	3.59
				Temporary	3.43	3.39	3.53
Exhaustion	0.87 (2, 862)	0.05 (2, 412)	0.61 (2, 447)	Permanent	2.20	2.32	2.09
				Self	2.05	2.28	1.95
				Temporary	2.19	2.26	2.06
Poor SRH 1995	3.33 (2, 844)*	2.03 (2, 401)	1.86 (2, 440)	Permanent	1.47	1.46	1.47
				Self	1.42	1.35	1.45
				Temporary	1.61	1.59	1.66
Poor SRH 2007	6.21 (2, 859)**	2.05 (2, 410)	4.05 (2, 446)*	Permanent	1.46	1.48	1.44
				Self	1.34	1.34	1.34
				Temporary	1.60	1.58	1.62

*p≤0.05; **p≤0.01. SRH, self-reported health.

As regards emotional exhaustion, we found direct and significant associations with demands, control, and support, in the expected directions, but no association with type of employment. Being a woman was associated with more emotional exhaustion (Tables II and IV). No significant interaction effects were found.

With regard to the associations between type of employment, gender, and work characteristics, neither job demands nor social support could be predicted by gender or type of employment. Job control, however, was related to gender (men reported more job control than women), educational level (job control increased with education level), and to type of

Table IV. Results of multiple linear regression analyses in four models (method=enter, *n* ranges from 816 to 866).

Model		Health		Work characteristics		
		SRH 2007	Exhaustion	Demands	Control	Support
1	SRH-1995	0.12**				
	Education level D1[a]	−0.01	0.00	NS	0.15*	NS
	Education level D2	−0.04	−0.04	NS	0.35**	NS
	R^2 change	0.03**	0.00	0.01	0.05**	0.00
2	Gender[b]	0.01	−0.11**	NS	0.09**	NS
	R^2 change	0.00	0.02**	0.00	0.02**	0.00
3	Demands	0.16**	0.36**			
	Control	−0.09*	−0.12**			
	Support	−0.22**	−0.23**			
	Employment D1[c]	−0.04	0.00	NS	0.21**	NS
	Employment D2	−0.04	−0.01	NS	−0.10**	NS
	R^2 change	0.11**	0.26**	0.00	0.06**	0.01
4	Gender×demands	NS	NS			
	Gender×control	NS	NS			
	Gender×support	NS	NS			
	Gender×employment D1	NS	NS	NS	NS	NS
	Gender×employment D2	0.08*	NS	NS	NS	NS
	R^2 change	0.01*	0.00	0.00	0.00	0.00
	R^2 total	0.14	0.27	0.01	0.12	0.01

Values are standardised beta values of the best fitting models (after backward deletion of insignificant interactions). All variables, except SRH-1995, were measured in 2007.

[a]Compulsory school is the baseline group; D1, high school; D2, university degree or other post high school education.

[b]Women are the baseline group.

[c]Permanent employment is the baseline group: D1, self-employment; D2, temporary employment.

*$p \leq 0.05$; **$p \leq 0.01$. NS, not significant; SRH, self-reported health.

employment − in comparison with permanently employed, self-employed experienced more job control, while temporary employment was related to a lower level of job control. Job control was in turn related to a better health status and less emotional exhaustion. Hence, job control acted as a mediator between type of employment and both health outcomes (hypothesis 4). Gender did not moderate the association between type of employment and job control. Both hypotheses 3 and 5 were partly confirmed.

Finally, we performed all regression analyses for men and women separately. As regards emotional exhaustion the results did not deviate from the results above. For men self-employment was related to more job demands ($\beta = 0.15$, $p<0.05$); for women this association was negative, but not significant ($\beta = -0.11$, not significant). For both men and women self-employment was significantly related to a higher level of job control (men: $\beta = 0.23$, $p<0.05$; women: $\beta = 0.18$, $p<0.05$), while only for men temporary employment was significantly related to a lower level of job control ($\beta = -0.12$, $p<0.05$). Only for men self-employment was significantly related to a higher level of social support ($\beta = 0.10$, $p<0.05$).

Discussion

In this study we explored the associations between type of employment, work characteristics, and health among women and men. Direct associations were found between gender and health and/or work characteristics, and type of employment and work characteristics. Moreover, all work characteristics were associated with SRH and emotional exhaustion. Job control functioned as mediator between type of employment and health status/emotional exhaustion, and finally, gender moderated the association between type of employment and SRH status. However, there were no direct associations between type of employment and SRH or emotional exhaustion.

As expected, men in general reported better work characteristics and health status than women. Possibly this is related to the fact that more men were self-employed; in this study considered the most active job [22,23], with the highest levels of control, support, and demands (the last two only significant for men) and best SRH. This contradicts the findings of two recent prospective studies [14,15] where job strain could not explain the differences of coronary heart disease rates between self-employed and other

salaried workers. The different results of the studies could be due to limitations of applying the Job Demand–Control–Support model to self-employed. Self-employed could be expected to have high job control, but depending on their position in the value production chain, as well as the degree and type of dependence of a potential employer (e.g. in the case of outsourcing), the job control could also be lower [10,11]. There is a need for further conceptualisation of the relevance and limitation of using the Demand–Control–Support model as well as the core- periphery model among self-employed.

On the contrary, men in temporary employment reported poorer health status than women, even though both women and men in this group experienced less control compared to permanent workers. Possibly, this is related to the so-called gender paradox in work satisfaction [28]. According to this paradox, women are socialised to put less effort into work and therefore expect less in return than men. This explanation may apply to some women in the temporary group, who occupy the less beneficial contracts, such as on-call. However, for women in project and substitute jobs, which demand more former training, this assertion is probably less manifest, especially in a Scandinavian context with high participation rate of women on the labour market.

Women's higher level of emotional exhaustion was not related to their type of employment per se. Instead other explanations are needed. One well-known hypothesis is related to the double-work load of women [29], which claims that women's health problems is a result of a double burden of work and care (in this study measured as children living at home). However, this hypothesis has proven to be only valid for some individuals under certain conditions (e.g. single parents) [30]. Additionally, women experience more violence at work [30], are more often involved in repetitive work, and have less influence and control over their paid work than men [31]. The latter finding was also confirmed in this study.

The main strengths of this study were the high response rate of the questionnaire (94%) and the fact that we considered gender differences in relation to type of employment, work characteristics, and health. Previous studies [18] have hardly analysed the interaction effects of gender and type of employment, and gender and work characteristics. Furthermore, we adjusted for earlier SRH, and thus avoided some potential health selection effects, i.e. people with poor health may be at risk of being selected into temporary and/or less attractive jobs in favour of people in good health [25].

A limitation of the study is related to the cross-sectional design, meaning that causation cannot be proven. Other limitations refer to the measurement of type of employment. Due to statistical power reasons we had to group all temporarily employed together, which is a heterogeneous group with regards to social background and perceived work characteristics, and hence to possible health effects. Moreover, even though we tried to solve overlaps between the groups, we cannot claim that, for example, the group of self-employed only consisted of independently employed workers [10]. Currently in Europe, there is a trend towards the dependent autonomous worker, who is formally self-employed but economically dependent on one employer and hence does not have the same level of control as the actual self-employed worker. Nevertheless, by adjusting for educational level in all analyses we believe that some of these issues were taken care of. Level of education [32] is an important and often-used marker of socioeconomic position, as information about education is easily available for everyone independent of labour market position. But also because health-related selection is concluded to be less pronounced when education is used as compared to other measures. Also, high level of education is predictive of better jobs (in relation to income and work characteristics).

Conclusions

Our findings show that type of employment is related to job control (with self-employed reporting the highest level of control, and temporarily employed reporting the lowest level of control). Job control in turn is related to SRH and emotional exhaustion. In addition, for men temporary employment was related to poorer SRH. Even though we did not find direct associations between type of employment and health for women and men, we did find indications of an influence of type of employment on work and thereupon health, with job control playing an important role. Because of a higher level of job control, independent self-employment could be beneficial for workers.

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Conflicts of interest

None.

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