

Work pressure as a determinant of burnout: A comparison of groups

Authors	Zijlstra,F.R.H.; Roe,R.A.
Published in	WORC Paper / Work and Organization Research Centre (WORC)
Publication Date	1999
Link	https://research.tilburguniversity.edu/en/publications/e6ee5b54-f20a-4dc1-94c7-f4e794aa01eb
Citation	Zijlstra, F R H & Roe, R A 1999, Work pressure as a determinant of burnout : A comparison of groups. WORC Paper / Work and Organization Research Centre (WORC), vol. 99.10.01, vol. 99.10.01, Unknown Publisher.
Download Date	2026-05-18 21:55:18
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Work pressure as a determinant of burnout.

A comparison of groups¹

F.R.H. Zijlstra* & R.A. Roe

Tilburg University,
Work & Organizational Research Centre,
and *research institute Psychology & Health

paper presented at the 9th congress of the European Association of Work & Organizational Psychology, May 12-16, 1999

¹ In cooperation with M. Vd Mast, M. Megens, S. Van Helvoort, J. De Vries, A. Vingerhoets

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F.R.H. Zijlstra & R.A. Roe

Introduction

This paper reports on the effects of work pressure. Various studies suggest that work pressure has increased among the working population. In the beginning of this decade about 30 % of the working people complained about work pressure (Diekstra, et al., 1994). However, recent statistics indicate that this number has increased to about 50 % or 60 % of the Dutch working population (CBS, 1999; Helvoort et al, 1998).

It is generally believed that working hard is not a problem, and doesn't constitute any health risks. However, statistics indicate that the number of people with job related health complaints (occupational stress, burnout) have increased considerably in the past few years (CBS, 1999). Across Europe it appears that back-pain (30 %), stress (28 %), and overall fatigue (20 %) are the most frequently mentioned work-related health problems (Paoli, 1997). So, it seems as if the limits have been reached of what can be regarded as an acceptable level of pressure.

In this paper we want to address this point of the relation between work pressure and aversive health consequences like burnout. The main question is under which conditions do people develop burnout complaints and when they do not.

Theoretical background.

Despite its popularity, the concept of work pressure is not very clear. We have addressed this issue elsewhere (Roe & Zijlstra, 1999). However, in general it can be stated that work pressure can be seen as the result of rather taxing work situations. Work pressure is the cognitive energetic state that may result when persons evaluate the impact of the work demands of the present task and the manageability of the work that still has to be done (cf. Roe & Zijlstra, 1999). On the other hand, the burnout concept has had a lot of attention too, lately. There are various points of view as far as the burnout syndrom is concerned. Originally burn-out is considered to be a syndrom that is found with people who work in professions in which they have to deal with other people (Maslach & Jackson, 1984). The work is believed to 'drain' them emotionally, which results in a particular set of symptoms: they feel emotionally exhausted, they develop a cynical attitude towards the objects of their work (clients, pupils, patients, etc.), and they feel that they are not up to the demands of their work anymore (cf. Schaufeli & Enzmann, 1998). From this point of view the relation with work pressure is not evident.

Another point of view is that burnout is the result of a long term evaluation process: when people have invested a high amount of effort during a long period and when they perceive that the returns are (too) low, they loose their motivation, and they get exhausted. This point of view is advocated by Siegrist (1996), and clearly suggests a relation with work pressure.

When work is demanding people perceive a high workload and they will have to invest a lot of effort in order to cope with this workload. This effort investment leads to fatigue. When the person estimates his own capacity as insufficient in relation with the present workload and doubts the manageability of the remaining work, he will experience work pressure. In that case a person is likely to invest high amounts of effort in order to cope with the demands, without being sure whether the results of this effort investment will pay off. If indeed it appears that it doesn't pay off, people will loose their motivation, and they will feel exhausted. Exhaustion can be seen as the result of prolonged effort investment. The emotional component of exhaustion refers to the lack of rewards, i.e. the not paying-off of the effort investment. There are various situations in working life that can have such an effect, like investing a lot of time to help a client or patient, and in the end noticing that it didn't have any effect. Working over time without anybody noticing it. These examples illustrate that there is also an element of disappointment involved. However, it should be clear that incidental disillusion usually do not result in burnout. It apparently is primarily a matter of hard work and high costs, i.e a workload that is too high, without the necessary (or wanted, cq. expected) rewards. A schematic model is presented in Figure 1.

Figure 1 about here .

The model in Figure 1 shows that work pressure can be seen as a determinant for developing complaints of burnout, but it also means that not everybody who experiences work pressure will develop the burnout syndrome. That means that work pressure is a necessary, but not sufficient condition for developing the burnout syndrome. The important question then is when do people get burnt out, and under which conditions they don't. An additional question is whether this is all a work-related problem, or whether factors related to private life also contribute.

The general aims of our study are threefold: a) conceptual clarity with respect to concepts like, work demands, work load, work pressure and stress/burnout. For this I refer to Roe & Zijlstra (1999). b) to find empirical evidence for the adequacy of our model. c) to determine to which extent this is work related problem, or 'general life' problem.

In this particular paper we will concentrate on the observation that not every person who experiences work pressure will get exhausted, or develop the burnout syndrome. We tried to identify factors that discriminate between groups who do get exhausted and those who don't, which may lead to identifying successful coping 'strategies' for dealing with work pressure.

Method.

The results of a cross-sectional survey (N=1129) among the Dutch working population are used to answer this question. The survey appears to be an adequate representation of the Dutch working population (see Table 1), although the higher educated persons are somewhat over-represented. But this is normal in this kind of studies.

Respondents have been randomly selected from the telephone directory, and the first approach was made by telephone. They have been asked whether there were people in the household who had a paid job at that moment, and if they were willing to participate in our study. Upon a positive reply the questionnaire was posted. This way 2000 questionnaires have been distributed and 1130 were returned (response percentage 55,6 %).

In this survey questions have been asked about respondent's work and private situation. Besides demographic data respondents were asked to indicate how many children they had, how much time per week they spend on various household activities (such as cleaning, feeding, shopping, care taking, maintenance) and the time they spend on leisure (hobbies, etc.).

Work pressure was measured using a scale that has been constructed for this purpose. A review of the literature resulted in a list of symptoms that were related to experiencing work pressure. (Examples are: 'I have difficulties getting asleep when I go to bed', 'work is getting to much for me', 'I find it difficult to relax at the end of the day', 'In the morning I feel like starting with a backlog', 'I'm relaxed while I'm at work' (opposite)). Those items have been presented and after factor analysis a thirteen item scale remained with an internal consistency (Cronbach's α) of .89.

Another scale has been constructed for measuring workload. Workload has theoretically been conceptualized as the *effects* of the demands of the task (i.e. the functional load). This has resulted in items like: 'do you have to work faster than you can?', 'do you find it difficult to meet the demands of the task?', 'do you have time to think of other things while you are at work?'. After factor analysis a scale with 8 items remained with an internal consistency (Cronbach's α) of .82).

Based on a survey of the relevant literature nine scales for job demands have been developed: scales for 1) quantity of work (6 items, Cronbach's α of .74); 2) complicatedness of work (6 items, Cronbach's α of .66); 3) attentional demands (5 items, Cronbach's α of .72); 4) emotional demands (6 items, Cronbach's α of .80); 5) responsibility in work (5 items, Cronbach's α of .71); 6) temporal demands (6 items, Cronbach's α of .64); 7) multiplicity of work (6 items, Cronbach's α of .69); 8) interruptiveness of work (6 items, Cronbach's α of .77); and 9) lack of support/hindrances (7 items, Cronbach's α of .76).

Effort investment has been measured with the Rating Scale Mental Effort. The RSME is a one-dimensional rating scale and has proven to be very sensitive and easy applicable in all kind of situations (Zijlstra, 1993). Respondents were asked to rate their average effort investment twice: in the morning when they start their working day, and at the end of their working day.

Burnout was measured with the MBI-Dutch version (Schaufeli & Van Dierendonck, 1994), this instrument contains three sub-scales: 'emotional exhaustion', 'personal accomplishment', and 'depersonalization'.

Furthermore the Checklist Individual Strength (CIS-20, Vercoulen et al., 1994) has been used to measure fatigue. This scale contains four sub-scales: 'general fatigue' (8 items, Cronbach's α of .93), 'reduced concentration' (5 items, Cronbach's α of .88); 'reduced motivation' (4 items, Cronbach's α of .80); and 'reduced physical activity' (3 items, Cronbach's α of .73). A scale has been developed for measuring the 'need for recovery' (9 items, Cronbach's α of .85), and a scale for measuring the 'rewards of work' (6 items, Cronbach's α of .80). Scales for Job Involvement (6 items, Cronbach's α of .73), and Organizational Commitment (6 items, Cronbach's α of .73) were included, and a scale to measure the amount of personal control (Greenberger, et al., 1989), which comprises the dimension 'task control' and 'organizational control'. Finally respondents were asked to rate their general health situation (on a 5-point scale: answer categories ranging from 'very poor' to 'very good').

Analyses

Since our question has a rather explorative nature we use explorative techniques. First of all with the technique of discriminant analyses it was examined which variables would differentiate between respondents with high levels of exhaustion versus those with low levels of exhaustion. The exhaustion sub-scale of the MBI has been used as grouping variable, and as independent variables we used variables from the work domain and private domain.

In the second step the scores on the work pressure scale have been used to categorize respondents in three equal groups, having either 'low', 'medium', or 'high' work pressure. The 33 percentile scores have been used to assign each respondent to one of the categories. For the work pressure scale the 33 percentile score was 2.88, and the 66 percentile score was 4.08.

From the MBI the score on the sub-scale 'emotional exhaustion' has been used to create three groups according to the same procedure. Respondents with a score lower than 1.00 were assigned to the 'low exhaustion group', and respondents with a score higher than 2.00 were assigned to the 'high exhausted group'. (The norm tables for the Dutch MBI indicate 1.00 and resp. 2.20 as 'cut off scores, Schaufeli, 1999).

With a 'cross tabulation' (crosstabs from SPSS) it was examined whether the cells with high work pressure and low burnout, and low work pressure and high burnout were non-empty.

Results

First the technique of discriminant analyses (SPSS) was used to assess which function discriminates optimally between the respondents high on exhaustion and those who have low scores on this scale. As independent variables we included: the number of weekly hours respondents spend on relaxation (hobbies, sports, culture, etc.), sleep (working days and free days), household activities, and paid work. Furthermore the number of years of experience in their job, their effort rating (morning and evening), workload scale, work pressure scale, need for recovery scale, rewards scale, job involvement, CIS-20, The other two sub-scales of the MBI, and respondents's rating of his general health situation.

Due to missing values on one of the variables 365 respondents were excluded from the analysis.

The analyses resulted in six discriminant functions. Function 1 had an eigenvalue of 2.06 and explained 89.0 % of the variance. The second function had an eigenvalue of .09, and explained 3.8 % of the variance. Function three had an eigenvalue of .07, and explained 2.8 % of the variance. As can be read from Table 2 only the first three functions are significant.

Table 2 about here

Table 3 presents the Structure Matrix, which contains the correlations between each variable and any discriminant function.

Table 3 about here

The need for recovery appears to be the most discriminating variable between people who have high scores on the exhaustion scale and those who have low scores. Furthermore work pressure, workload and effort (evening score), and two sub-scales of the CIS (general fatigue,

and reduced concentration) are important. These variables represent the 'energetic' dimension of work, i.e. the amount of energy that is required to fulfill the demands of the job. The 'non-work' scale and the 'rewards scale' contribute as well, but the 'rewards scale' correlates negatively, indicating that high exhaustion is related to low rewards (which in fact is the definition of burnout). People who score high on the exhaustion scale also score high on the 'non-work' scale, indicating that they are always in a rush, and always have to manoeuvre between home and work. This is a clear indication of 'spill-over'. It should be noted that this is also an aspect of being able to organize one's life.

The second function consists of two of the CIS-sub-scales (reduced motivation and reduced physical activity) and the effort score.

The third significant function consists only of the MBI-sub-scale 'personal distance' (cynicism). People who are exhausted also are more aloof towards their work and more cynical about the effects of what they do. In fact this factor constitutes the burnout syndrom.

The first function can be seen as the 'work pressure function', respondents who indicated that they perceive high work pressure, and 'spill-over' to their private life, and they also report to be very fatigued (general fatigue, reduced concentration, and high need for recovery). In addition they feel that their efforts are not rewarded.

The second function can be called the 'motivation function'. Respondents have a strongly reduced motivation, and they also don't want to invest effort anymore. Effort investment is closely related to motivation (Meijman, 1991; Zijlstra, 1993).

The third function is clearly the cynicism function. This fits perfectly well with the definition of burnout. In fact this means that the discriminant analyses has resulted in a solution of discriminant functions that discriminates between groups who are 'burned out' and those who are not, according to the Siegrist model (1996).

Interesting to see is that the factors that relate to the private domain, like 'time needed for household' 'time for relaxation', 'hours sleep', number of children, et cetera are not related to any of the significant discriminant functions.

The same type of analyses has been done while the scores on the work demand scales have been used as independent variables. This resulted in two (out of six) significant discriminant functions. The first function explains 83.0 % of the variance (eigenvalue= .37; Wilks' Lambda = .67, and Chi-square= 354.1; df= 54; p< .000), and the second function (eigenvalue=.05; Wilks' Lambda .93; Chi-square=68.3; df= 40; p=.003) adds 9.7 %, making the total explained variance 92.7 %.

Table 4 about here

According to the structure matrix (see Table 4) the second demand scale (complicatedness of work) correlated highest (.70) with the first function, then followed by 'emotional demands' (.55), and 'lack of support, hindrances' (.52) was the third in rank. The second function is mainly determined by 'quantity of work' (.71), 'interruptions' (.54), and 'multiplicity' (.41).

This suggests a picture that people 'struggle' with complicated situations, which means all kind of problems they have to solve, this is demanding in the emotional sense, and they don't get sufficient support from their superiors and colleagues. And this is what makes them exhausted, because they are dealing with difficult situations (problems) without being rewarded for solving those problems.

Summarizing, the results this far indicate that in particular the demanding aspects of the work situation, in terms of energy (effort) expenditure, rather than the variables referring to the private domain, discriminate between respondents who score high on the exhaustion scale and those who score low. People who feel exhausted apparently perceive their work as very demanding, regarding the strong contributions of the work load, and work pressure scales. These respondents also have a high need for recovery, this seems to be obvious. Furthermore it turns out that the rewards of work are very important in this respect. The less rewarding the higher the level of exhaustion. These signals perfectly fit with Siegrist's model of burnout. However, apart from the fact that this finding can be seen as an indication of the construct validity of the instruments we used, it is also an interesting finding. It suggests that the burnout syndrom is not strictly reserved for people working in specific professions, but that this phenomenon can be found in all economic branches.

The second step was making a comparison of groups who both scored high on the work pressure scale, but differ with respect to their scores on the exhaustion scale: high versus low scores. A comparison of groups with high work pressure but with different levels of exhaustion

can be very interesting, such a comparison may reveal valuable information that may help explaining why some people develop burnout complaints and others do not. The results of the cross tabulation of scores on the work pressure and exhaustion scales are presented in Table 5.

Table 5 about here

As can be seen in Table 5 a relatively small proportion (8.7 %) of people with high work pressure have low burnout scores, and on the other hand only 6.7 % of the respondents with low work pressure belong to the 'high exhausted group'. In general work pressure seems to go together with exhaustion. The scales correlate pearson $r = .68$ ($p < .001$).

The two groups have been compared with respect to the dependent variables that have also been used in the discriminant analyses. The variables refer to the work situation and the private domain again. The comparison between both groups was made with Multivariate Analyses of Variance, with 'group' and 'gender' as independent variables, to see whether there would be a different profile for men and women, while age was treated as a co-variate. The results are presented in Table 6.

According to the Analyses of Variance there is a multivariate effect of the factors 'group', and 'gender'. The group with high work pressure and low burnout differs significantly for the group with low pressure and high burnout ($F(1,21)=2.38$; $p = .03$), and men differ significantly from women ($F(1,21)= 2.25$; $p = .04$). The interaction appears to be non-significant, and there is no (multivariate) effect of age.

As far as both 'exhaustion groups' are concerned uni-variate effects with respect to some work related variables (Effort investment (evening score), rewards scale and workload, and control) are found. The high exhaustion group has higher workload, (in particular the women), and in particular their effort investment is quite high. That appears to be a critical point, in particular the people in the high exhaustion group report high levels of effort investment (men higher than women).

From the private domain there are no clear distinctions: they have an equal number of children, they spend about the same amount of time on household activities. A close inspection of the means (table 7) learns that people who are exhausted sleep less hours per week. This difference is absent during weekends and holidays.

Sleep is one of the most important recovery mechanisms we have. To a certain extent this is a 'personal' decision. And although people in the high exhaustion group report to have more control, this does not help in preventing them from getting burned out. The amount of control one has is also an indication of job-level: people in higher level jobs usually have more control, and people in higher level jobs usually also have more work pressure (Carayon & Zijlstra, 1999).

Discussion

The results of the discriminant analyses show that the energetic dimension appears to be the most discriminating dimension between people who do get burned out and those who don't. They have a high workload and invest a lot of effort in their work. According to the second discriminant analyses the most discriminating aspect in work is the 'complicatedness' of work. This refers to situations in which normal work routines are not sufficient, and some problems have to be solved. Usually these problems are not that big that they can't be solved. Problems can be caused by clients wanting something different or additional to what is standard delivery, students with specific requests, a colleague being ill or absent, however, they require that some additional resources have to be used to solve the current problems. This may explain the high effort scores during the day.

In the past decade organizations have been through all kind of efficiency operations and reorganizations which has resulted in rather lean organizations, very often they are staffed to the absolute minimum. This means that people in the organization have to work hard to get the work done. And even the slightest deviation from the regular pattern can cause problems, and or hindrances in such a situation. Furthermore people who do get exhausted experience a lack of support (Table 4). And on the other hand they think that their efforts are not rewarded sufficiently. This not only refers to the financial rewards, but in particular to the immaterial rewards (pat on the shoulder, recognition). This is not surprising if one takes into consideration that most superiors also have too much work to do (problems to solve), which means that human interest is being skipped first of all.

The pattern described above fits very well with Siegrist's model for burnout (1996) in which he states that high effort investment without adequate rewards might cause burnout. As it appears now, this is a problem that occurs in all economic branches, and not only in the service sector, and across all kind of professions. This also means that the burnout syndrom is not specific for people working in professions in which they have to work with other people (clients, patients, students, etc.).

The comparison between the high and low exhaustion groups revealed that the work related factors (working hours, effort investment at work, rewards) are the factors that make the difference between the highly exhausted group and the low exhaustion group. The factors related to the private life domain (number of children, time for household), do not differentiate between those groups. However, these aspects do matter between men and women. The male respondents appear to have more children than the female respondents. This can be explained by the fact that men with high work pressure are more likely to have a partner at home taking care of the children, than is the case for women. As far as the time spent on household activities is concerned, it turns out that women spend much more time on these activities than men. In particular in the highly exhausted group, the women are more involved in household activities than men. It could be that those women have a cumbersome household, although the time spend on care activities does not supports this conclusion. Another explanation could be that those women think they have to spend that much time on household, for one reason or another. This may be because of their norms and values, or it may be their personality (perfectionism) that forces them to do that much. One way or another it is likely that it contributes to feeling exhausted. This interpretation is supported by the finding that men and women in the high exhaustion group spend about the same amount of effort during work, although women work significantly less hours. Many women have a part-time job, and try to combine work and household activities. Earlier studies already indicated that women's experiences of work load is influenced by the degree to which they are satisfied with the division of household activities between themselves and their partners (Shaw, 1988).

However, it should be noted that highly exhausted men and women spend less time on work *and* household together than not-exhausted respondents (see Table 7). This makes it unlikely that the 'traditional' double load hypothesis can be the explanation for getting exhausted. It is more plausible that the highly exhausted respondents encounter more 'complicated situations' at work, or that combining work and household leads to more 'complications'. This may be caused by inflexibility or incompatibilities of working times.

Conclusion

The picture has arisen that at present men and women have invest a lot of effort in order to get their working life going. Work demands are high, mostly because of the complicated work situations, and (immaterial) rewards are too low. One may conclude that lean (and mean) management strategies ask their price.

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Table 1: Respondents to survey N=1129

	Frequency (%)
Children:	
none	339 (30)
yes	695 (61.6)
missing	95 (8.4)
Gender	
female	494 (43.8)
male	628 (55.6)
missing	7 (0.6)
Marital Status	
married	658 (58.3)
living together	192 (17)
single	271 (24)
missing	8 (0.7)
Age	
younger than 30	186 (16.5)
30-50	775 (68.6)
older than 50	165 (14.6)
missing	3 (0.3)
Education	
Basic education	24 (2.1)
Lower professional	224 (19.8)
Medium professional	259 (22.9)
High school level	109 (9.7)
Professional/academic	460 (40.7)
missing	53 (4.7)

Table 2: Results of discriminant analyses with exhaustion as grouping variable.

Test of functions	Wilks' Lambda	Chi-square	df	Sig.
1 through 6	0.26	964.5	144	0.000
2 through 6	0.78	174.1	115	0.000
3 through 6	0.85	114.7	88	0.03
4 through 6	0.91	70	63	0.25
5 through 6	0.96	31.8	40	0.82
6	0.98	14.3	19	0.77

Table 3: Structure matrix discriminant solution with factors from work domain and private life as independent variables.

Variable	Function 1	Function 2	Function 3	Function 4
Need for recovery	.69 *	-.02	-.22	.07
work pressure	.63 *	-.19	-.18	.12
CIS-general fatigue	.57 *	.09	-.20	.30
work load	.51 *	-.26	.10	-.01
CIS-reduced concentration	.40 *	.39	-.17	.18
spill-over	.34 *	.07	-.24	-.14
rewards of work	-.22 *	-.15	.02	-.04
CIS-reduced motivation	.40	.51 *	-.22	-.10
effort (evening)	.39	-.39 *	.18	-.13
CIS-reduced physical activity	.11	.19 *	-.06	.18
MBI-distance	.38	.36	.49 *	-.04
time for household	-.04	.15	.14	.25 *
task control	-.23	.17	.10	.25 *
weekly relaxation (hours)	-.04	.04	-.07	-.21 *
Effort (morning)	.18	-.16	-.11	.31
hours sleep (working day)	-.03	.08	-.15	-.10

Table 4: Structure matrix discriminant solution with work demands as independent variables

Variable	Function 1	Function 2	Function 3	Function 4	Function 5
Complicatedness of work	.70 *	-.06	-.32	.46	-.06
quantity of work	.56	.71 *	.03	.05	.26
interruptiveness of work	.45	.54 *	-.26	-.19	-.02

multiplicity of work	.37	.41 *	-.13	.25	.40
lack of support/hindrances	.50	-.25	.59 *	-.31	.10
attentional demands	.32	.36	-.40	.67 *	-.05
temporal demands	.30	.41	.38	.60 *	-.09
emotional demands	.57	-.14	-.31	.15	.58 *
responsibility at work	.10	.28	-.31	.38	.35

Table 5: cross tabulation 'exhaustion' and 'work pressure' scales

	Work pressure < 2.88	2.88 < wp < 4.08	work pressure > 4.08	Total
Exhaustion < 1.00	235	110	33	378
1.00 < exh < 2.00	101	164	72	337
Exhaustion > 2.00	24	132	258	414
Total	360	406	363	1129

Table 6: *Multivariate Analyses of Variance of level of exhaustion (high, low) and Gender (age as covariate)*

Source	F	df	p	Univariate Dependent var.	F(df=1)	p
Age	3.5	14,196	.000			
number of kids	39.0		.000			
Exhaustion	6.2	14,196	.000			
working hours	4.1	.05				
Effort (evening)	16.0		.000			
Task control	15.1		.000			
Organiz. control	3.5		.05			
General fatigue	47.8		.000			
Rewards of work	5.7		.02			
Gender	3.1	14,196	.000			
number of kids	5.2	.02				
Time for household	10.4		.001			
Working hours	13.2	.000				
Organiz. control	5.8		.02			
Rewards of work	5.7		.02			
Exhaust by Gender	.92	14,196	.54			

Table 7: Means and Standard Deviations

variable	Low exhaustion		High exhaustion	
	men	women	men	women
number of kids	1.9 (1.2)	.9 (.9)	1.8 (1.1)	1.1 (1.2)
time for household	9.4 (5.8)	13.4 (2.9)	9.2 (5.6)	16.7 (11.0)
working hours	48.8 (9.3)	43.2 (10.4)	46.7 (11.7)	34.8 (10.5)
Effort (evening)	60.0 (20.2)	62.0 (27.6)	79.6 (20.2)	79.5 (18.1)
Control	3.8 (.5)	3.7 (.8)	3.1 (.7)	3.1 (.7)
General fatigue	2.5 (.9)	2.1 (.5)	4.0 (1.3)	4.6 (1.3)
Rewards scale	3.8 (.7)	3.2 (.9)	3.1 (.9)	3.0 (.8)