PREDICTING ABSENTEEISM: SCREENING FOR WORK ABILITY OR BURNOUT

By: Roel Schouteten
Radboud University
Institute for Management Research
r.schouteten@fm.ru.nl

Abstract

Background. In determining the predictors of occupational health problems, two factors can be distinguished: personal (work ability) factors and work-related factors (burnout, job characteristics). However, these risk factors are hardly ever combined and it is not clear whether burnout or work ability best predict absenteeism.

Aims. To relate measures of work ability, burnout and job characteristics to absenteeism as an indicator of occupational health problems.

Methods. Survey data on work ability, burnout and job characteristics from a Dutch university were related to the absenteeism data from the university’s occupational health and safety database in the year following the survey study. The survey contained the Work Ability Index (WAI), Utrecht Burnout Scale (UBOS) and seven job characteristics from the Questionnaire on Experience and Evaluation of Work (QEEW).

Results. There were 242 employees in the study group. Logistic regression analyses revealed that job characteristics did not predict absenteeism. Exceptional absenteeism was most
consistently predicted by the WAI dimensions “employees’ own prognosis of work ability in two years from now” and “mental resources/vitality” and the burnout dimension “emotional exhaustion”. Other significant predictors of exceptional absenteeism frequency included estimated work impairment due to diseases (WAI) and feelings of depersonalisation or emotional distance from the work (burnout).

**Conclusions.** Absenteeism among university personnel was best predicted by a combination of work ability and burnout. As a result, measures to prevent absenteeism and health problems may best be aimed at improving an individual’s work ability and/or preventing the occurrence of burnout.

**Key words:** work ability index, sickness absence, stress
INTRODUCTION

Faced with ageing workforces, many nations seek effective methods to determine key antecedents of health problems and thereby minimise the threats of work disability and premature retirement to ensure a sufficient labour force, as well as a well-funded social security system.[1] Two main research streams suggest ways to identify these antecedents, focused on either personal or work-related factors. First, in extensive research from the Finnish Institute of Occupational Health,[2, 3] work ability, as a personal characteristic, emerges as an affirmative means to mitigate health-related problems. Second, several other researchers propose that job demands and other work characteristics are the most important antecedents of health problems in the labour force.[4-7]

Work ability is a personal trait of each worker, reflecting his or her means, at the present moment and in the near future, to perform his or her job, meet work demands, and apply health and mental resources.[8] A systematic review of 20 empirical studies of determinants of work ability[9] revealed that work ability may decrease due to individual characteristics (lack of leisure time, vigorous physical activity, older age), lifestyle (obesity), work demands (high physical or psychosocial work demands) and physical condition (poor musculoskeletal capacity). Work engagement functions as a determinant of work ability too.[10, 11] In addition to these findings, the Work Ability Index (WAI) provides a well-accepted technique to assess individual work ability. Evidence based on test–retest reliability confirms the suitability of the WAI questionnaire for occupational health research and occupational health care.[12] Although the WAI was designed explicitly for general applicability, most research using this inventory focuses on occupations that impose physical demands at work, with just a few exceptions.[9, 11, 13-16]

Studies focusing on work-related psychosocial factors instead highlight psychological job demands as a central factor.[4] Both industrial and organisational psychological theories
propose that the quality of a person’s working life depends on the balance (or lack thereof) between job demands and something else, such as decision latitude[5], job resources (e.g., social support)[6] or rewards[7]. Any imbalance results in stress and burnout, which then lead to production losses, absenteeism [17-19] and health problems for workers [20]. However, consideration of job demands needs to differentiate across types of jobs, such as blue- and white-collar work. The job demands for blue-collar workers tend to be associated with the pace of work; those for white-collar workers often relate more to long working hours or overtime.[4]

Across these different approaches, studies concur that the relative importance of personal and work-related aspects probably varies for different kinds of jobs. The work-related factors also differ for different jobs, such that they likely exert distinct effects on pertinent outcomes, such as absenteeism, work disability or early retirement. To assess these various elements the WAI questionnaire can identify workers at risk by taking individual measures of occupational health; at the group level, pertinent questionnaires instead focus on burnout, job demands and job resources. Yet only a few studies combine measures of burnout and work ability [16, 21-23], and those that do indicate the relation between these factors. We know of no studies that confirm the ability of these measures to function as screening instruments that might predict health problems among a labour force. Therefore this study aimed to relate the personal and work-related measures of work ability and burnout to various indicators of health problems.

METHODS
The employees (academic and non-academic) of three departments of a Dutch university were invited to participate in a 2009 study, designed to test the usability of WAI. The dean of each department issued the e-mailed invitations to these employees; a reminder followed a week later. Participation was voluntary, but the deans also agreed to act on the findings, as
necessary. The study was approved in advance by the executive board and works council of the university. We were granted permission to survey employees who were at least 35 years of age, reflecting the initial goal for this research, which we conducted in conjunction with the university’s human resources department. For the current study, we used data from two sources.

First, we constructed a survey containing the WAI, a burnout scale and seven work characteristics scales. The survey questions and scales came from previously validated instruments.[24-27] The WAI, which was developed in Finland[2], already has been translated into 25 languages, so we used the official Dutch translation.[25] This questionnaire consists of seven dimensions:[24, 25]

1. Current work ability compared with the lifetime best
2. Work ability in relation to the demands of the job
3. Number of current diseases as diagnosed by a physician (reverse coding)
4. Estimated work impairment due to diseases (reverse coding)
5. Sickness absence during the past year (reverse coding)
6. Own prognosis of work ability two years from now
7. Mental resources/vitality

The cumulative WAI, which adds the scores across the seven dimensions, thus ranges from 7 to 49 points. However, because prior research indicates that the WAI is not a one-dimensional construct, [28] we used the seven dimensions separately, as explanatory variables in the analyses. The burnout scale includes 16 items from the Utrecht Burnout Scale,[26] which comprises three dimensions: emotional exhaustion (Cronbach’s $\alpha = 0.897$), depersonalization (measured as emotional distance or cynicism; $\alpha = 0.733$) and feelings of personal accomplishment ($\alpha = 0.797$). The dimensions can be added to create a cumulative score, but prior research recommends studying them separately. [26] The work characteristics scales
come from the Questionnaire on Experience and Evaluation of Work [27] and refer to job demands (work load $\alpha = 0.829$, role ambiguity $\alpha = 0.808$, task changes $\alpha = 0.748$) and job resources (autonomy $\alpha = 0.889$, voice $\alpha = 0.875$, relationship with superior $\alpha = 0.898$, career opportunities $\alpha = 0.765$). An imbalance between job demands and job resources results in work pressure and, eventually, work stress. [5] For these scales, all the predictor variables are treated as continuous variables.

Second, to assess health problems, we used the university’s occupational health and safety (OHS) database, which provided information about absenteeism (frequency and duration) in the year following the surveys. The data included both the start and end dates of all absenteeism events throughout the university, such that we could derive measures of absenteeism frequency and duration per employee. This objective data source enabled us to test whether the results of the survey measures predicted actual absenteeism in the subsequent year. This quasi-longitudinal treatment of the data ensures that the measurement of the explanatory variables precedes the occurrence of the effect (absenteeism).

Finally, as control variables, we included age, gender and work hours per week, due to their potential correlations with work ability [2] and burnout. [4, 6] We also differentiated between academic (e.g. professors, researchers) and non-academic (e.g. administrative, secretarial, student support) staff, with the recognition that their distinct job characteristics and job requirements might influence the absenteeism behaviours of these two groups differently.

RESULTS

In total, 242 employees out of 575 completed the survey (42% response rate). An analysis of the absenteeism data indicated no significant differences in terms of frequency or duration of absenteeism between respondents and non-respondents. The sample consisted of 157 men and
85 women, with a mean age of 49.3 years (SD = 7.49) and average work experience in the current job of 12.0 years (SD = 9.79). The average length of the working week was 32.9 hours (SD = 9.61). Most respondents were well-educated, such that 79% completed at least some higher education. Non-academic staff members were slightly overrepresented, with 129 respondents compared with 113 academic staff.

The absenteeism data were highly skewed, such that more than half of the respondents did not report any absences in 2009. The mean absenteeism frequency was 1.13 (SD = 0.12), with an average duration of 11.3 days (SD = 2.1). Due to the extremely skewed nature of these absenteeism data a binary variable indicated ‘exceptional’ absenteeism. Specifically, absenteeism was considered exceptional when the frequency exceeded once per year and/or the duration exceeded 7 days per year (Table 1). These values coincide with the highest quartiles in the frequency and duration measures. Moreover a frequency of one episode or a duration of 7 days per year could be considered normal and probably due to common illnesses, such as colds, which are unavoidable and not subject to reduction efforts. The focus in this study instead was on predicting and preventing exceptional absenteeism.

To test whether work ability, burnout and/or work characteristics predicted exceptional absenteeism, three separate logistic regression analyses featured exceptional absenteeism, exceptional frequency or exceptional duration as the dependent variable (see Table 2). All the analyses confirmed that academic staff were less likely than non-academic staff to be exceptionally absent, which might reflect their job functions. That is, academic staff may be less strict about reporting their absences than non-academic staff, because they can often work more flexibly, whereas non-academic (support) staff members generally need to be present in the workplace to perform their jobs. If they are ill academic staff can choose to work from
home (and not report themselves absent), whereas non-academic staff who cannot work due to their illness must be reported absent.

Regarding exceptional absenteeism, the results in Table 2 indicate that two WAI dimensions and one burnout dimension were significant predictors. The better employees’ own prognosis of their work ability two years hence (B = -0.542, p < 0.05), the less likely they were to be exceptionally absent in the next year (odds ratio [OR] = 0.582). The mental resources and vitality dimension in the WAI also provided a significant predictor (B = -0.813, p <0.05). The more respondents enjoyed their work, felt fit and had faith in the future, the lower their chance of exceptional absenteeism (OR = 0.444). The emotional exhaustion dimension of burnout exerted an influence too (B = 0.560, p <0.05); the more respondents experienced emotional exhaustion, the higher their chances of exceptional absenteeism (OR = 1.750).

[insert Table 2 here]

For exceptional duration, the same WAI and burnout dimensions emerged as important predictors. The better employees’ own prognoses of their work ability in two years (B = -0.588, p < 0.01); the more they enjoyed their work, felt fit and had faith in the future (B = -0.751, p <0.05); and the less they experienced emotional exhaustion (B = 0.852, p <0.05), the less likely those employees were to report exceptionally long absenteeism durations.

Finally, exceptional absenteeism frequency stemmed from slightly different WAI and burnout dimensions. The more respondents thought that their workability was impaired by their diseases (B = 0.544, p <0.05), the more likely they were to exhibit exceptionally frequent absences (OR = 1.722). In addition, the more respondents enjoyed their work, felt fit and had faith in the future (B = -1.280, p <0.01), the lower their chance of exceptionally frequent absences (OR = 0.278). The burnout dimension of depersonalization also revealed an unexpected relation: feeling distant from work generally is regarded as a negative work
outcome, but in the current analysis, it implied a positive effect, in that when employees sensed greater distance from their work ($B = -1.008$, $p < 0.01$), they were less likely to report exceptionally frequent absenteeism ($OR = 0.365$).

In none of the models did work characteristics significantly predict absenteeism. Even if job demands and job resources relate to stress and burnout, they did not directly affect absenteeism in this study. In unreported robustness analyses with work characteristics as explanatory variables and burnout and work ability as dependent variables, we further determined that job demands related significantly to higher burnout and lower work ability scores.

**DISCUSSION**

The results of the logistic regression analyses showed that absenteeism could best be predicted by a combination of work ability and burnout. The most consistent predictors of exceptional absenteeism were emotional exhaustion (burnout), the employee’s own prognosis of work ability two years hence (WAI) and mental resources/vitality (WAI). People who reported high levels of emotional exhaustion (i.e. find their work tiring) tended to be absent for longer or more frequently, whereas employees with strong mental resources, who enjoyed their work and believed their strong work ability would continue, were less likely to be exceptionally absent.

Other factors functioned as significant predictors of exceptional absenteeism frequency, namely estimated work impairment due to diseases (WAI) and feelings of depersonalisation or emotional distance from work (burnout). The more employees felt work impaired due to diseases, the more likely they were to be absent more frequently. However, the direction of the effects of depersonalization and work ability was somewhat unexpected, in that respondents with higher levels of emotional distance from their work tended to be less
frequently absent. Emotional distance thus might function not only as an indicator of burnout[6] but also as a kind of coping mechanism, enabling people to cope with stressful working conditions. Keeping a distance may help university staff prevent negative effects, such as health problems or sickness absence.

From a theoretical perspective, the results of this study are in line with findings that suggest that job motivation and commitment (which are similar to the WAI dimension of mental resources/vitality) relate strongly to absenteeism frequency. [19] Prior studies differentiate between the predictors of absenteeism frequency (i.e. low job motivation as a result of job resources [19]) and duration (health issues due to job demands and burnout [19]). The current results instead challenge the uniqueness of the predictors of either absenteeism frequency or duration. [29] That is, the burnout dimensions of emotional distance (cynicism) and feelings of accomplishment relate to absenteeism frequency but not to absenteeism duration in prior work. [19] But these results indicate that both personal factors (measured by work ability) and work-related factors (measured by burnout) simultaneously predict absenteeism frequency. We recognise that this result requires some caution though, considering the one-year time frame of the study. Shorter time frames might be more appropriate for testing the strict distinction between the antecedents of absence duration and frequency. [29]

Furthermore the lack of correlation between work characteristics (job demands and job resources) and absenteeism indicates that work characteristics have at best an indirect effect on absenteeism, through work ability and burnout. The relationship among work characteristics, work ability and burnout thus is complex. A longitudinal approach (rather than the quasi-longitudinal approach we adopted) could help determine specifically how these constructs are causally related.
We also noted that several work ability and burnout dimensions were important predictors of absenteeism, but some of the central WAI dimensions were not. Perceived current work ability, current diseases and absenteeism in the preceding year did not predict exceptional absenteeism in the following year. This finding might reflect the sample; work ability scores are relatively high among our respondents \((M = 41.61, SD = 5.12)\), and only a few of them indicate low current work ability or a high number of diagnosed diseases. A more heterogeneous sample in terms of work ability could produce different results.

Another factor might be limited information about the character of the absences in the OHS database. Absenteeism is not always sickness absence; situational issues, such as family needs, also might lead to absenteeism. [29] On the other hand not all health problems result in absenteeism. For example, a secretary with a broken leg might not be able to get to the office and thus would need to call in sick, whereas a professor with a broken leg might work from home or teach from a sitting position and not take any absence. Similarly, a professor dealing with a serious health condition might rely on alternative options, such as a sabbatical, while undergoing treatment. This absenteeism alternative would not appear in the database. A more detailed absenteeism database could offer more specific conclusions, though we are invariably hindered by privacy restrictions.

By conducting this study among university personnel (i.e. white-collar workers) older than 35 years of age, we extend prior research that focuses mainly on blue-collar workers[19] and offer further support for the notion that the relative importance of various antecedents differs for distinct jobs.[4] In particular, the current study reveals significant differences in absenteeism rates across different types of jobs (i.e. academic and non-academic staff).[4] We also found that although work ability relates strongly to age,[2] age is not a predictor of exceptional absenteeism. Applying these new insights to other occupations and age categories would require careful testing and further research though, using larger, long-term studies that
rely on similar tools but consider other sectors, jobs and employees of all ages. Another extension of this research might implement a power calculation, to determine the sample size needed to confirm that the non-significant results in this study truly mean that these variables failed to predict exceptional absenteeism.

Finally, there are two main managerial implications of this study. First, when screening for absenteeism, employers should use a combination of work ability and burnout measures, because both instruments offer good predictors of absenteeism. Second, efforts to prevent absenteeism and health problems should aim at improving the employee’s work ability, especially mental resources and vitality, such as with vitality programmes [30]. Alternatively, these efforts might function to prevent the occurrence of burnout, in the form of emotional exhaustion, such as by decreasing the level of job demands. [5, 6, 30]

By testing whether work ability (personal characteristic) or burnout and work characteristics (work-related characteristics) best predict absenteeism among university staff with a single study, this contribution shows that a combination of factors can best predict absenteeism. Therefore measures to decrease absenteeism should seek to improve employees’ work ability and prevent their experience of burnout.

**KEY POINTS:**

- This study combined personal (work ability) and work-related (burnout and work characteristics) factors to identify the best predictors of absenteeism, as a measure of health problems.

- The results, obtained from a sample of Dutch university staff, indicate that a combination of work ability and burnout best predicted absenteeism.

- Measures to decrease absenteeism should aim at improving individual work ability and preventing the occurrence of burnout.
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Table 2 Odds ratios (OR) for work ability, burnout and work characteristics on exceptional absenteeism, exceptional frequency and exceptional duration

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<th>Work characteristics</th>
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