

The Work Ability Index as screening instrument for university staff

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Abstract

The Work Ability Index (WAI) is a well-accepted questionnaire designed to assess an individual's work ability. However, most research with WAI has focused on occupational populations with physical demands at work. The purpose of this study is to explore the value of WAI as screening instrument among professionals in a Dutch university.

Based on database data about absenteeism, questionnaire data and interview data, our results show that the predictive, added and practical value of WAI are quite good, but the combination with measuring burnout yields even more and better information as a screening instrument.

Key terms: WAI, burnout, university staff, mixed methods.

Introduction

Based on extensive research by members of the Finnish Institute of Occupational Health (1; 2; 3), work ability has been promoted as an affirmative means with which to decrease work disability and premature retirement. This is important, as many Western countries face the challenge of an aging workforce.

The concept of work ability is defined as the ability of a worker, at present and in the near future, to perform his/her job with regard to work demands, health and mental resources (4). As a result, it has been identified as an important tool to identify workers at risk for imbalance between health, capabilities and demands at work (5). A systematic review of 20 empirical studies on the determinants of work ability by Van den Berg et al. (6) revealed that individual characteristics (lack of leisure-time, vigorous physical activity, older age), lifestyle (obesity), demands at work (high physical and psychosocial work demands) and physical condition (poor musculoskeletal capacity) are associated with decreased work ability. A limitation of this review is that the studies included are predominantly Finnish with an emphasis on research among municipal workers.

The Work Ability Index (WAI) is a well-accepted questionnaire designed to assess an individual's work ability. Since its development in the 1980s it has been widely applied in scientific studies on occupational health in order to identify occupational and personal risk factors or as a method to evaluate intervention programs on work ability (7). In an assessment of the test-retest reliability De Zwart et al. (7) provide evidence that the WAI questionnaire is very suitable for the purposes of occupational health research and occupational health care.

However, with a few exceptions (8, 9, 6), most research in which the WAI is used focused on occupational populations with mainly physical demands at work. In a study among professional workers in commercial services, Van den Berg et al. (6) found that the determinants of mental health are similar to those of work ability. The work ability of these workers was mainly associated with psychosocial factors at work,

such as teamwork, stress handling and self development. Physical health was influenced primarily by life style factors.

With regard to psychosocial factors at work, psychological job demands are probably the most important single factor (10). Many (industrial and organizational) psychological theories focus on the quality of work in terms of a balance – or lack of balance – between job demands and something else, for instance between job demands and decision latitude (11), job demands and job resources (such as social support; 12), or job demands (effort) and rewards (13). An imbalance between job demands and job resources results in stress and burnout, which are associated with production loss, sickness absence (14, 15, 16) and health problems (17).

However, regarding job demands differences, they were also found between blue and white-collar workers. Kristensen et al. (10) show that quantitative job demands for blue-collar workers are mainly associated with work pace, whereas job demands for white-collar workers are more associated with long working hours and overtime.

These studies indicate that the relative importance of personal and work-related aspects may differ for different kinds of jobs. Additionally, work-related aspects may also differ for various types of jobs, and they may have different effects regarding work disability and early retirement. Moreover, whereas the WAI questionnaire is suitable for identifying workers at risk and taking individual measures aimed at occupational health care, questionnaires on burnout, job demands and job resources are suitable for identifying risky work situations and taking measures at a group level. However, measures of work ability and burnout are hardly ever combined. An exception is a study by De Boer et al. (18) in an attempt to evaluate the effectiveness of an intervention programme preventing early retirement. This study yields no information on the quality of either measure as a screening instrument.

Since studies on the work ability of well-educated professionals are scarce, the purpose of this study is to explore the associations between job demands, burnout (as an indicator of quality of work) and work ability among well-educated professionals in a Dutch university. An

additional purpose is to determine whether screening work ability or burnout generates better points of departure for managers to prevent work disability and early retirement.

Method

If WAI is to be a proper screening instrument for university staff, it has to have predictive, additive and practical value. Predictive value is high when work ability correlates with burnout and/or work characteristics. Additive value is high when respondents with low work ability are not otherwise known as persons at risk, for instance based on their absenteeism pattern (frequency and/or duration) or previous visits to the Occupational Health Service (OHS). Practical value is high when the work ability scores suggest directions for improvement measures.

In 2008, a total number of 575 employees (scientific and support staff) working in three departments of a Dutch university were invited to participate in a cross-sectional study on the usability of WAI. The study used data from three sources. First, we constructed a questionnaire containing the official Dutch translation of WAI, a scale on burnout and seven scales on work characteristics. Burnout, as a dependent variable of job demands and job resources, is measured with the 16 items from UBOS (Utrechtse Burnout Schaal; 19) and consists of three parts: emotional exhaustion, depersonalization (emotional distance or cynicism), and feelings of personal accomplishment. The work characteristics are measured with scales from the Questionnaire on Experience and Evaluation of Work (QEEW; 20) and can be divided into job demands (work load, role ambiguity, and task changes) and job resources (autonomy, voice, relationship with superior, and career opportunities). An imbalance between job demands and job resources results in work pressure and eventually work stress (11).

Secondly, we used data on absenteeism from the university's Occupational Health Service (OHS) database to determine the absenteeism

(frequency and duration) of the employees in the three departments in the year prior to the study. Besides, we used data on OHS visits by the employees in the year prior to the study. These visits indicate that employees have problems regarding occupational health. We use these data to determine whether WAI indicates people at risk that are not already known based on their absenteeism or prior visits to the OHS.

Finally, we gathered data in counseling interviews by an OHS professional with invited employees. Based on the questionnaire results individual respondents with low scores on work ability and/or high scores on burnout were invited for a counseling interview to determine the background of these scores. These data are aimed at drawing individual measures to improve work ability and/or help decreasing burnout.

The questionnaire was completed by 242 employees (response rate: 42.1%). All respondents received an individual overview of their scores on the scales in the questionnaire (work ability, burnout and work pressure). Based on the individual scores, 59 respondents were invited to discuss their scores with an OHS professional, because of their low WAI and/or high burnout scores¹¹. Eventually, 37 respondents attended for a counseling visit (response rate: 62.7%).

Results

Predictive value. Table 1 presents the correlation matrix for work ability, burnout and work characteristics. This table shows that work ability and burnout are strongly correlated; a high score on work ability correlates with low scores on burnout ($r=-0.487$), emotional exhaustion ($r=-0.520$), depersonalization (emotional distance; $r=-0.319$), and feelings of personal accomplishment²² ($r=-0.324$). Table 1 also shows

1. 20 respondents scored low on work ability, 28 scored high on burnout, and 11 scored low on work ability *and* high on burnout.
2. Feelings of personal accomplishment is reversed coded; a high score indicates that an individual has a feeling not to be able to perform the work.

Table 1. Correlation between work ability, burnout and work characteristics (p<.05; two sided)

	1 WAI score	2 Burnout	3 Exhaustion	4 Distance	5 Personal accomplishment	6 Workload	7 Role ambiguity	8 Task changes	9 Autonomy	10 Voice	11 Relation with superior
1	-										
2	-.487**	-									
3	-.520**	.815**	-								
4	-.319**	.834**	.566**	-							
5	-.324**	.775**	.385**	.548**	-						
6	ns	.202**	.314**	.237**	ns	-					
7	ns	.411**	.240**	.384**	.436**	.258**	-				
8	-.266**	.370**	.319**	.364**	.225**	.365**	.268**	-			
9	.198**	-.325**	-.188**	-.290**	-.334**	-.169*	-.338**	-.333**	-		
10	.233**	-.419**	-.166*	-.440**	-.438**	ns	-.548**	-.321**	.608**	-	
11	.196**	-.338**	-.188**	-.411**	-.249**	-.284**	-.470**	-.357**	.298**	.633**	-
12	.249**	-.284**	-.156*	-.295**	-.221**	ns	ns	-.147*	.210**	.343**	.210**

* p<.05, ** p<.01, ns=not significant

12= Career opportunities

that work ability correlates significantly with the work characteristics in the expected direction, except work load and role ambiguity. Burnout and its dimensions are correlated with all work characteristics. This is a first indication that work ability and burnout are not related to the same determinants.

We also conducted regression analyses to determine to what extent work ability and work characteristics may predict burnout. Table 2 presents the results. In the first model we entered the work characteristics (following the job demands-resources model), in the second model we added work ability. Table 2 shows that adding work ability as independent variable to explain burnout adds significantly to the explanatory power of the work characteristics (significant R^2 Change). This effect is strongest for emotional exhaustion, but much weaker for emotional distance and feelings of personal accomplishment. Furthermore, this table shows that in every model, except for feelings of personal accomplishment, work ability has the highest value of β , meaning that work ability has the strongest effect on burnout. From the work characteristics work load and role ambiguity are the strongest predictors of burnout. This is in accordance with the hypotheses in the job demands-resources model (12).

Table 2. Regression analysis with Burnout as dependent variable (standardized coefficient β).

	Burnout		Exhaustion		Distance		Personal accomplishment	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Work load	.075	.092	.211**	.234***	.121	.129	-.152*	-.143*
Role ambiguity	.245***	.276***	.131	.173*	.168*	.183*	.357***	.374***
Task changes	.196**	.114	.178*	.070	.142*	.103	.166*	.121
Autonomy	-.082	-.070	-.066	-.050	-.040	-.034	-.094	-.088
Voice	-.084	-.060	.087	.118	-.122	-.111	-.144	-.131
Relation w supervisor	.008	.026	.022	.046	-.109	-.100	.097	.107
Career opportunities	-.191**	-.115*	-.169*	-.070	-.182**	-.146*	-.095	-.054
WAI score		-.385***		-.506***		-.183**		-.208***
R ²	.303	.432	.172	.396	.310	.339	.291	.329
R ² Change	.303***	.129***	.172***	.223***	.310***	.029**	.291***	.038***

* p<.05; ** p<.01; *** p<.001

As a result, work ability and burnout are correlated, even when controlled for work characteristics. This correlation is strongest for emotional exhaustion. Therefore we conclude that WAI has good predictive value.

Additive value. Determining the added value of WAI, we compared the respondents with low WAI scores and/or high burnout scores with the database on absenteeism and visits to OHS. With this analysis we can determine whether respondents at risk (regarding work ability and/or burnout) are not already known by their supervisors or OHS. Our analysis shows that not all respondents with low work ability had an exceptional absenteeism pattern³³ or visited OHS in 2008. Approximately 25% of respondents with low work ability had an exceptional absenteeism pattern. Thus absenteeism rate is not a good predictor of people at risk with regard to work ability. Approximately 39% of these respondents visited OHS in 2008. As a result, visiting OHS is a better indicator for people at risk regarding work ability, but many respondents at risk are still not detected. Therefore we conclude that WAI indicates more people at risk than already known on the basis of absenteeism or visits to OHS.

Regarding the burnout scores, our analysis shows that UBOS detects even more respondents at risk; of the respondents with high burnout only 15% had an exceptional absenteeism pattern and only 25% visited OHS in 2008.

On the other hand, not all respondents with exceptional absenteeism patterns (9% of 264) and/or who visited OHS in 2008 (11% of 264) had a low work ability and/or high burnout. Only about half of these respondents were invited (on the basis of their WAI and UBOS scores) for a counseling visit with the OHS professional. This means that absenteeism and visits to the OHS not necessarily correspond with low work ability or high burnout. Besides, these data indicate that absenteeism and work ability correlate more strongly than absenteeism and burnout, because fewer respondents with high burnout than with low work ability have an exceptional absenteeism pattern (so far).

3. We defined an exceptional absenteeism pattern as more than two times and/or longer than 15 working days in one year.

As a result, WAI has good additive value as a screening instrument, because it detects more people at risk than could have been known on the basis of other data (absenteeism and visits to OHS). However, the additive value of UBOS is even greater, probably because the correlation between WAI and absenteeism is stronger than between UBOS and absenteeism.

Practical value. During the counseling visits the OHS professional kept a record of the following aspects: the reason for the visit (invitation based on WAI and/or UBOS), the primary line of approach of the interview (explanation of the scores or question for help), an indication of the nature of the problems or most prominent counseling topic (history of illness, work situation, other), and the nature of the advice to the respondents (support and/or advice). The results show that the nature of the counseling visits with respondents with low work ability differed from those with high burnout. Respondents with low work ability mainly talked about their history of illness and personal situation (60%) and less about work (30%). Respondents with high burnout mainly talked about their work situation (85%) and rarely about illness or personal situation (5%). This concurs with our conclusion that work ability, rather than burnout, is more related to illness and absenteeism. Burnout is more strongly related to work related aspects.

As a result, we conclude that the determinants of work ability are more personal and the determinants of burnout are more work related. Hence, WAI and UBOS detect different kinds of workers at risk and different kinds of risks. This implies that improving work ability and burnout has to be aimed at different aspects.

Conclusion

Based on qualitative and quantitative data, our explorative study on testing the Work Ability Index as a screening instrument for university personnel reveals that it is a useful instrument for detecting people at

risk with regard to work ability, because it has good predictive, additive and practical value. However, the causes of low work ability are mainly personal and worker related (illness history, general health, personal background, etc.); WAI detects employees who have troubles in balancing their personal life. As a result, the most important instrument for employers is to support employees in dealing with their limitations.

Another important result from this study is that screening for burnout is probably even more interesting when screening university personnel. Not only does screening for burnout detect more people at risk, it also enables employers to take more general measures in the prevention of occupational stress, an important predictor of illness and work disability. As opposed to work ability, the main causes of burnout are work related, which is easier for employers to manipulate. For instance, creating a better balance between job demands and job resources, through work redesign, might improve the work situation for more workers than just those currently at risk, also preventing future illness and work disability.

As a result, we conclude that for university personnel screening for work ability and burnout yield different results. Both kinds of results are useful and offer – albeit different – indications for improvements. A combination of both instruments detects the most people at risk of work disability or early retirement and, therefore, generates the broadest pallet of measures for improvement.

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