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# **The Work Experience Measurement Scale (WEMS):**

## **A useful tool in workplace health promotion**

### **Abstract**

*Objective:* To present validity data for the Work Experience Measurement Scale (WEMS), an instrument measuring multifaceted work experience from a salutogenic health resource perspective as a contrast to the more common pathogenic risk perspective, by exploring WEMS relationship to established measurements that are positively related to health and work. A salutogenic perspective focuses on finding conditions and resources in life, for example at work, that can enhance the individual's health and strength, instead of those causing illness and weakness.

*Method:* This study was carried out in 2009 at a Swedish hospital with a web-based survey (WEMS) to 770 employees. Different occupational groups at the hospital participated. Additional questionnaires used at the same time were the Utrecht Work Engagement Scale (UWES-9), the Salutogenic Health Indicator Scale (SHIS), the General Self-Efficacy scale (GSE), and three questions about self-rated health, general well-being, and quality of life.

*Results:* Cronbach's Alpha of WEMS sub-indices were in the interval of 0.85-0.96. Convergent validity and discriminant validity of WEMS and its sub-indices were shown to be satisfying by correlations. In addition, WEMS demonstrated the ability to discriminate between groups. WEMS sub-indices discriminated even better between groups than the total index.

*Conclusion:* The WEMS proved to be a workplace health promotion questionnaire that was able to measure experiences of work from a salutogenic perspective. The WEMS has a potential of being a useful tool in workplace health promotion to enhance positive human capabilities and resources to improve work performance.

Keywords: work experience, measurement, scale, salutogenic, workplace health promotion

# 1. Introduction

Organizations that are interested in improving the way their work is organized in order to benefit their employees' health are committed to workplace health promotion. Work tasks and work processes are structured in a health-promotion manner, so that the employees' well-being can be enhanced. To assess how the employees experience their workplace, organizations use health and/or work-related questionnaires and make appropriate interventions from their results [1]. Workplace health promotion has the primary intention to improve employee health, but when for example questionnaires are used, they tend to have a focus and content of assessing shortcomings instead [2-4]. A questionnaire that measures negative experiences and risks but aims to enhance health is equivocal, because it contains two approaches of health, pathogenesis and salutogenesis. These two health approaches focus on health risks and health resources, respectively, where the pathogenic risk perspective is preventive, protective, and caring while the salutogenic resource perspective is promoting [5,6].

Workplace health promotion processes need to be clearly defined from a preventive or promotional perspective in order to be more effective. However, one perspective does not exclude the other, but the focus of actions has to be defined [6]. Therefore, questionnaires that are meant to be used in a workplace health process should be adapted to the purpose of either prevention or promotion. Questionnaires with content from a pathogenic and thereby a preventive perspective is useful and valid if the purpose for instance is to assess work-related risks or causes of employee illness. However, such a questionnaire is insufficient if the purpose is to promote and assess work-related salutogenic resources. One will not get the

questionnaire results you expect to get if your focus and approach of health development are not clear.

In our experience, there is a shortage of questionnaires measuring work-related health from a salutogenic perspective. This is confirmed by Luthans [7] who describes the concept of positive organizational behaviour, and refers to the need to study, and then develop, positive human capabilities and resources at workplaces in order to improve the work performance. With this in mind, we consider it important to develop questionnaires that illuminate co-worker experiences of a workplace from a positive point of view, and with a focus on enhancing the workplace resources. An attempt to measure work experiences in a positive sense was made by Nilsson et al. [8] with the constructed Work Experience Measurement Scale (WEMS). That paper presented the development process and quality analysis from both qualitative (focus group interviews) and quantitative study results (Principal Component Analysis), as well as reliability arguments for the psychometric properties of WEMS. Validity was also qualitatively assessed by a content comparison with some other existing workplace-related questionnaires [8].

The intention with WEMS is that it should be useful in questionnaire processes for workplace health promotion and thereby give a workgroup the ability to discuss and identify strengths and resources in their workplace. The content of WEMS is focused on assessing employee work experiences from a salutogenic point of view, and therefore WEMS needs to be further validated to prove its salutogenic and promotional function. Other instruments measuring facets of work and health, for example Job Content Questionnaire [9], The Quality, Work, Competence model [10], and The Health and Work Questionnaire [11] are available, but they have a partly or completely pathogenic perspective. For the current study, various theories

with adherent measurements, all with a positive approach to health and work, were used to perform a validation process of WEMS. One was Bringsén et al. [12] who make a description of health in a positive sense: “*Health is a positive, subjective experience of oneself as a whole. [...] ...health serves as a resource for the individual when dealing with the various strains of everyday life or pursuing their individual goals*”. Bringsén et al. suggest that physical, mental and social health as well as well-being could be measured by using indicators related to the individual’s own estimation of his/her health perception. These indicators are stated in the Salutogenic Health Indicator Scale (SHIS), which can appropriately be related to WEMS as SHIS measures an individual’s health experience from a salutogenic perspective.

Another theory that focuses on the individual’s well-being in relation to how unexpected situations are dealt with is the General Self Efficacy (GSE) theory by Schwarzer and Jerusalem [13]. It describes general self-efficacy as a positive enhancing individual resource, an optimistic belief that strengthens a person’s competence and reassurance in relation to daily challenges, like a facilitator that motivates coping strategies [13,14]. Our interpretation was that GSE could be related to WEMS in terms of how a person experiences work and deals with unexpected situations at work.

Schaufeli et al. [15] state that health is closely related to experiences of work as the work and workplace can influence an adults’ health in both positive and negative ways. A work-related theory with a positive perspective is Work engagement (WE), which describes a person’s individual attitudes to and experiences of his/her work and work situation. Work engagement is related to an individual state of mind in terms of vigour, dedication, and absorption of the work situation. These positive components are measured with the Utrecht Work Engagement Scale (UWES-9) [15] and were assessed to be a suitable measure to compare to WEMS.

According to previously presented theories, work is a large part of many people's lives because they spend a lot of time at work. Therefore, the complex theory of Quality of Life (QoL) is possibly related to WEMS. Eriksson and Lindström [16] describe QoL as a broad spectrum of factors for a general life satisfaction that could be considered quality of life. QoL could be interpreted from a salutogenic perspective [16], and such a positive relationship between QoL and positive health was found by Ejlertsson et al. [17]. The salutogenic interpretation of QoL described by Eriksson and Lindström [16] is an extensive positive experience of life that could embrace a person, a group, or society. Therefore, it should be connected to the quality of working life as well.

Thus, this paper is a continuation of a previously published paper by Nilsson et al. [8], by further studying the concept, its qualities and the practical usability of the WEMS. The aim of this paper is therefore to present arguments of discriminant and convergent validity by correlating WEMS and its six sub-indices to the presented scales and questions that are conceptually related to positive aspects of health and work. It is also presenting group comparisons that support the argument that WEMS can be used for workplace health promotion.

## **2. Methods**

### ***2.1 Setting and participants***

This study was conducted at a hospital in the south of Sweden. A web-based survey to 770 employees, followed up by one reminder after two weeks, was carried out in the autumn of 2009. The response rate was 66%. The study was conducted in agreement with the Swedish

Law of Research Ethics, SFS 2003:460, and a description of the study population is presented in Table I.

*Insert Table I here*

## **2.2 Measurements**

From the theory basis and the measurement development of WEMS [8] referred to in the introduction, WEMS together with the scales of SHIS, UWES-9, GSE, and the three single questions about well-being, QoL and self rated health (all Swedish versions) were sent to the respondents at the same time. The scales and questions were selected because of their positive features in relation to work and health. Therefore, a possible positive correlation to the WEMS was expected.

The Work Experience Measurement Scale (WEMS) has a total of 32 statements divided into six dimensions, here with one example on each dimension: supportive work conditions (*“We encourage and support each other at work”*), internal work experience (*“I feel that my work is meaningful”*), autonomy (*“I decide my own work pace”*), time experience (*“I do not need to work more than my scheduled hours”*), management (*“My boss is available when I need him/her”*), and process of change (*“The process of change was done with an open dialogue”*). For responses, each item in WEMS uses a six-step Likert scale ranging from totally agree to totally disagree. The entire WEMS questionnaire could be used as one index or it could be calculated into six sub-indices [8].



The Utrecht Work Engagement Scale (UWES-9) is an established occupational well-being questionnaire containing nine items. It assesses an individual's positive commitment to work, based on feelings of vigor, dedication, and absorption. One example from the UWES-9 is: "*At my work, I feel bursting with energy*". The UWES-9 has seven response alternatives: never, almost never, rarely, sometimes, often, very often and always. The items are preferably used as one index. [15].

The Salutogenic Health Indicator Scale (SHIS) measures twelve aspects of health for example alertness, happiness, sleeping well, and functioning well with other people. SHIS has one overall question: "*How have you been feeling during the past 4 weeks? The last 4 weeks I have...*" and the response format goes from for example "felt alert" to "felt tired, exhausted". A six-step semantic differential is used as answering option (one positive end and one negative end). The items in SHIS may be used as one index or divided into two dimensions of intrapersonal characteristics and interactive functions [12]. In this study, SHIS is used as one index.

The General Self Efficacy Scale (GSE) reflects self-belief in an optimistic way, and this perception of self-efficacy influences an individual's daily actions, assuming for example work performance. The GSE has ten questions, and one example is: "*I am confident that I could deal efficiently with unexpected events*". All the questions have four response alternatives: not at all true, hardly true, moderately true, and exactly true. The ten items in GSE are always merged into one index [13].

Three questions were used to estimate general health, well-being and quality of life. Self-rated health: *How is your health in general*; general well-being: *How do you experience your*

*general well-being? During the last 4 weeks I have felt...; and quality of life: How do you think your overall life is right now?* All three questions had a five-graded scale with response alternatives ranging from very good to very bad.

## **2.3 Statistical analyses**

This study performed validations of the WEMS index and its sub-indices, and also tested some hypotheses for the WEMS usability in workplace health promotion. To start with, the internal consistency of the WEMS sub-indices was established by using Cronbach's Alpha (CA), with a set criterion of 0.7 according to Field [18]. Correlation analyses were established by Spearman's rank order correlation coefficient to estimate convergent and discriminant validity. The significance level was set to 0.05. Convergent validity and discriminant validity were estimated to be appropriate for assessing whether the WEMS is measuring work related experiences from a salutogenic approach. For the statistical procedures, SPSS version 16.0 was used. To consider convergent validity, correlations between six WEMS sub-indices and the three scales and questions (presented in the previous section) were investigated in order to estimate the degree of concept similarity. The assessment criterion for convergent validity is a correlation higher than 0.5 [19]. The stronger the correlation is, the more it shows concept congruence. Discriminant validity was assessed to consider whether WEMS measures a divergent but still related concept in a better way than the three scales and questions. The adequate degree of correlation was defined as less than 0.5 [19]. The weaker the correlation is, the more it shows concept discrimination.

To investigate the WEMS usability in practice, some hypotheses of differences between group means were tested with independent-sample t-test and one-way ANOVA. The means were standardized to show comparable values from 0-100%. The standardization was made by

calculating:  $100 * (\text{index value} - \text{theoretical min response value}) / (\text{theoretical max response value} - \text{theoretical min response value})$ . Furthermore, to explore the possibility that WEMS and SHIS may have a positive cause and effect-relationship, a standardization of the WEMS sub-indices and the SHIS index was established. Then, the highest and the lowest quartiles of SHIS were calculated to represent the best and the worst indicators of health, respectively.

### 3. Results

The analysis was made to explore the usability of WEMS in workplace health promotion from a salutogenic perspective. Various validity analyses of congruence between the total WEMS index, the sub-indices, and the presented scales and questions were therefore established. A reliability test, internal consistency, was also established in terms of Cronbach's Alpha (CA). For the WEMS sub-indices, CA was within the interval of 0.85 to 0.96.

To estimate the degree of concept similarity, convergent validity was assessed by correlation, and as expected, WEMS as a total index had the highest correlation with UWES-9 and SHIS. When correlating the WEMS sub-indices with the UWES-9, GSE, and SHIS indices, as well as the three single health-related questions, we found a positive relationship (Table II). The highest correlation was found between UWES-9 and the internal work experience sub-index. Modest correlations of SHIS were shown with the sub-indices for supportive work conditions and internal work experience. To consider whether WEMS measures a divergent but still related concept, discriminant validity was shown by lower correlations between WEMS sub-indices and GSE, self rated health, well-being and quality of life, respectively.

*Insert Table II here*

Table III demonstrates three patterns of the potential usability of WEMS in practice by showing how WEMS and its sub-indices, as well as UWES-9, differed between age groups and professions, and whether the respondent had a managerial position or not. UWES-9 was also considered for estimation because the scale showed a correlation to WEMS (Table II), and was thereby of interest for comparison to WEMS in terms of the ability to discriminate between groups. The first pattern shown was that age groups did not differ much. Only two of the sub-indices (supportive work conditions, and management) differed. It was worth noting that respondents who were 55 years or older had the most positive experiences regarding all sub-indices except for internal work experience where the age group of 39 or younger had the highest value.

The second pattern showed that different professions experienced their workplace in different ways according to the WEMS sub-indices. Five of the sub-indices (but not management) were related to groups of profession. Worth noting was that the total WEMS index and UWES-9 did not show any differences. A remarkable result was that physicians showed high mean values on five of the six sub-indices of WEMS, and the highest mean value of the total WEMS, but the lowest mean value on the time experience sub-index.

Finally, the third pattern which showed the largest differences was between those who were managers and those not having a managerial position. All WEMS sub-indices, as well as the total index of WEMS and UWES-9 discriminated between the groups, and the ones with a managerial position had the highest mean values, except for the time experience sub-index.

*Insert Table III here*

On the one hand, further analyses (data not shown) showed that total WEMS and WEMS sub-indices differed in all groups of scopes of practice and units of internal medicine, but on the other hand, there was no difference in relation to number of years employed in medical service.

To explore the possibility that WEMS and SHIS may have a positive cause and effect relationship, the relationship between the WEMS sub-indices and SHIS was investigated. The result is demonstrated in Figure 1, which shows standardized mean values for the different WEMS sub-indices in the highest and the lowest quartiles of SHIS. The values of the WEMS sub-indices all scored higher in the fourth quartile than in the first quartile of SHIS ( $p < 0.05$ ), which means that the higher the WEMS value is, the higher the SHIS value is, and vice versa.

*Insert Figure 1 here*

## **4. Discussion**

WEMS has an adequate reliability, which was shown by the internal consistency of WEMS sub-indices in the interval 0.85 to 0.96. A previous article presenting WEMS [8], indicated reliability through acceptable values of a weighted kappa, and thereby internal consistency. The high internal consistencies in both studies indicate that the WEMS sub-indices seem to be solid.

The validation process of comparing WEMS with the scales (SHIS, GSE, UWES-9), and the three health-related questions were shown to be satisfying from a convergent and discriminant validity point of view. The correlations (Table II) showed that WEMS had a high correlation with the concept measuring positive work engagement (UWES-9), moderate correlation with the salutogenic health measure SHIS, and only weak correlations with the three traditional health-related concepts. The overall results show that WEMS does measure work experiences in relation to a salutogenic approach.

Convergent validity was shown by total WEMS and the sub-index internal work experience correlating (0.61) with the UWES-9 [15]. The sub-index internal work experience reflects questions about work satisfaction, and meaningfulness of work, which resembles the content of UWES-9. This could explain the correlation between the sub-index and UWES-9. Total WEMS correlated moderately (0.51) with SHIS [12]. The WEMS relation with SHIS is an indication that the WEMS content is connected to a salutogenic perspective. However, it also confirms that WEMS does not primarily measure health. Rather, the content of WEMS is secondarily related to health as work is supposed to be a potential resource that influences individuals' health positively [20,21]. Correlations between the sub-indices of WEMS and the SHIS index were in the interval of 0.30-0.43, showing more of discriminant validity [19]. Discriminant validity was also indicated by correlations between the WEMS sub-indices and the GSE-scale (0.08-0.21), as well as the questions of self rated health (0.10-0.27), well-being (0.18-0.28), and quality of life (0.17-0.29). All these also showed discriminant validity to the WEMS sub-indices. Thus, these weak relationships show that WEMS measures a related (salutogenic) but more divergent concept (work-related) than the health measurements of SHIS, GSE, and the three single questions.

The validity process demonstrated that WEMS is a questionnaire that has the potential to measure work experiences from a salutogenic point of view. From a practical point of view, it could be useful in workplace health promotion, where it is often practical and useful to see if there are any differences between groups. WEMS sub-indices showed a better ability to discriminate between groups than the other scales used in this study (Table III). This shows that WEMS could be used to compare work experiences between different groups at a workplace. Using sub-indices of the WEMS proved to be advantageous, for example the age groups and profession showed differences that the total WEMS and UWES-9 [15] did not indicate. Thus, a total index is useful when an overall perspective is required, but the risk that differences could be hidden in a total index should be considered. Furthermore, total WEMS and its sub-indices demonstrate their ability to reflect unique contexts by discriminating well between larger and smaller groups, demonstrated here by different scopes of practice and different sizes of the internal medicine wards.

Previous studies have shown differences between various health care professions regarding, for example, work characteristics and well-being [22], burnout [23], and motivational work factors [24]. From the perspective of workplace health promotion, it is important to get a picture of the differences between various groups at the workplace. This information could be used at managerial level to prioritize efforts towards health promotion, and at a workgroup level it could be used as a basis for discussions about the employees' opinions of their workplace experiences. WEMS demonstrates great potential for such use in practice.

Examples are presented in Table III by groups of profession, age, and whether the respondent had a managerial position or not. In this study, physicians had high mean values on five of the six sub-indices of WEMS, and the highest mean value of total WEMS, but the lowest mean value for the time experience sub-index. The findings indicate that physicians experience their

work positively overall, for example as supporting and motivating, but experience that they have less time to manage and dispatch their work tasks. This is supported by results from Jansson von Vultée et al. [25], who highlight issues of the physicians' work situation, for instance in terms of control over the work situation and extrinsic work-related stress factors. Physicians' negative time experience is a significant issue that should be dealt with, as it is related both to the physicians' health and to patient safety.

The results of this study also showed that respondents who were 55 years or older had the most positive experiences regarding support for their work conditions and regarding the management. In research on work motivation related to age [26], knowledge sharing, collaboration, and positive effects from the work situation are reported as work-related rewards for older employees. Thus, the WEMS ability to discriminate between age groups could be used to elucidate how and what motivational work factors are seen as significant for different age groups. Motivational work factors are resources that contribute to improved health, and our results show that the managers also identified these resources.

In a comparison between managers and non-managers, the managers demonstrated higher mean values for all but one of the WEMS sub-indices, but a lower mean value for the time experience sub-index. This indicates that managers see their work situation as positive, even if they are less able to manage their work tasks within their working hours than their employees. Our results, together with other research that highlight the significance of managers' development of occupational empowerment [27], show that enhancement of the managers' experienced work resources contributes to improve their ability to cope with their work situation.



The use of WEMS as a workplace questionnaire is in line with the Luxemburg declaration [1] that argues for an enhancement of possible health-improving factors, conditions and processes in the workplace. WEMS could be a tool in such a health-promoting process. The correlation between WEMS and SHIS in Figure 1 shows that the WEMS sub-indices means are all higher in the fourth quartile than in the first quartile of SHIS. This shows that high mean values of WEMS sub-indices are related to positive health aspects. Hypothetically, this connection could predict a relationship between health-promotion efforts in the workplace and experienced employee health. In combination, WEMS and SHIS [12] have the potential to be used as such an assessment dialogue tool [28]. Further research is required to investigate the relationships between these effects in a long-term perspective.

The methods used could be discussed in various ways. This study was a cross-sectional study, which often is seen as a limitation. However, due to the aim of this study to explore validity, reliability, and usability of the WEMS questionnaire, cross-sectional data are useful for this purpose. Although the response rate was 66%, and no analysis of dropouts was done, all work groups and professions were represented. The number of respondents for some of the categorical variables in Table III were low due to small groups, not because of low response rates.

Thus, the possible dropout effects on the findings are estimated as small. Data comes from one hospital setting only, which of course is a limitation from a wider workplace health-promotion perspective. However, several occupational groups were represented in this study, which mean that a more detailed analysis has been possible in this setting. Furthermore, WEMS and the additional measurements and questions were all collected at the same time,

which is advantageous. Further studies are required to assess possible transferability to other workplaces outside the hospital setting.

The measurements and questions used in the validity procedures of WEMS are measurements from the field of positive psychology and public health. They were chosen because of their proven positive relationships to work experience and to enable interpretation of health from a salutogenic point of view. Another positive factor is that the measurements and questions were established in previous research, and UWES-9, for instance, is a recommended measurement of occupational health [15,29].

## **5. Conclusion**

In this study, reliability and validity arguments of WEMS and its sub-indices have been demonstrated to be adequate. WEMS has shown to be a workplace questionnaire that is useful in workplace health promotion as it measures work experiences from a salutogenic perspective. This is shown by the correlations to other measurements that have positive facets of work and health. Instruments with focus on positive health or positive work experience were used in the study, as no other completely comparable instrument with a salutogenic approach to work aspects was found. In relation to the EUHPID model by Bauer et al. [6], which asserts that health development should be stated with a clear focus on prevention or promotion intention, WEMS contains salutogenic features relating to work experience and is therefore considered a useful instrument for interventions with a promotional focus. WEMS, and especially its sub-indices, has shown its ability to discriminate between groups, for example between different professions and age groups. The ability to discriminate between groups strengthens its usefulness in workplace health promotion practice. On the basis of the

presented validity results, WEMS has the potential of being a useful tool in workplace health promotion to enhance positive human capabilities and resources in order to improve work performance.

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## **7. Conflicts of Interest**

None declared.

## 8. References

- [1] European Network for Workplace Health Promotion (ENWHP) [homepage on the Internet], Luxembourg Declaration on Workplace Health Promotion in the European Union 1997. European Network for Workplace Health Promotion [updated 2007 Aug 15, cited 2009 Dec 21]. Available from: <http://www.enwhp.org>.
- [2] Arnetz JE, Arnetz B. The development and application of patient satisfaction measurement system for hospital-wide quality improvement. *J Qual Health Care* 1996; (32):555-566.
- [3] Sanne B, Torp S, Mykletun A, Dahl AA. The Swedish Demand-Control-Support Questionnaire (DCSQ): Factor structure, item analyses, and internal consistency in a large population. *Scand J Public Health*. 2005; (33):166-174.
- [4] Shikier R, Halpern MT, Rentz AM, Khan ZM. Development of the Health and Work Questionnaire (HWQ): An instrument for assessing workplace productivity in relation to worker health. *Work* 2004; (22):219-229.
- [5] Antonovsky A. The salutogenic model as a theory to guide health promotion. *Health Promot Int*. 1996; (11):1-18.
- [6] Bauer G, Davies JK, Pelikan J. The EUHPID Health Development Model for the classification of public health indicators. *Health Promot Int*. 2006; (21):153-159.
- [7] Luthans F. The need for and meaning of positive organizational behavior. *J Organ Behav* 2002; (23):695-706.
- [8] Nilsson P, Bringsén Å, Andersson, HI, Ejlertsson G. Development and Quality Analysis of the Work Experience Measurement Scale (WEMS). *Work* 2010; (35):153-161.
- [9] Karasek R, Brisson C, Kawakami N, Houtman I, Bongers P, Amick B. The Job Content Questionnaire (JCQ): An instrument for Internationally Comparative

- Assessments of Psychosocial Job Characteristics. *J Occup Health Psychol* 1998; (3): 322-355.
- [10] Arnetz JE, Arnetz BB. The development and application of patient satisfaction measurement system for hospital-wide quality improvement. *J Qual Health Care* 1996; (8): 555–566.
- [11] Shikiar R, Halpern MT, Rentz AM, Khan ZM. Development of the Health and Work Questionnaire (HWQ): An instrument for assessing workplace productivity in relation to worker health. *Work* 2004; (22): 219–229.
- [12] Bringsén Å, Andersson HI, Ejlertsson G. Development and quality analysis of the Salutogenic Health Indicator Scale (SHIS). *Scand J Public Health* 2009; (37):13-20.
- [13] Schwarzer R, Jerusalem M. Generalized Self-Efficacy scale. In: Weinman J, Wright S, Johnston M. Measures in health psychology: A user's portfolio. Causal and control beliefs. Windsor: NFER-NELSON; 1995
- [14] Schwarzer R, Hallum S. Perceived Teacher Self-Efficacy as a Predictor of Job Stress and Burnout: Mediation Analyses. *J Appl Psychol* 2008; (57):152-171.
- [15] Schaufeli W, Bakker A, Salanova M. The Measurement of Work Engagement With a Short Questionnaire. A Cross-National Study. *Educ Psychol Meas* 2006; (66):701-716.
- [16] Eriksson M, Lindström B. Antonovsky's Sense of coherence scale and its relation with quality of life: a systematic review. *Epidemiol Community Health* 2007; (61):938-945.
- [17] Ejlertsson G, Edén L, Leden I. Predictors of positive health in disability pensioners: a population-based questionnaire study using Positive Odds Ratio. *BMC Public Health* 2002; (2):20-29.

- [18] Field A. Discovering statistics using SPSS (2<sup>nd</sup> ed.). London: Sage Publications Inc; 2005.
- [19] van Saane J, Sluiter K, Verbeek JHAM, Frings-Dresen MHV. Reliability and validity of instruments measuring job satisfaction – a systematic review. *Occup Med.* 2003; (53):191-200.
- [20] Kira M. From Good Work to Sustainable Development. Department of Industrial Economics and Management, Doctoral Thesis, Royal Institute of Technology Stockholm; 2003.
- [21] Docherty P, Forslin J, Shani AB. Creating sustainable work systems: emerging perspectives and practice. London: Routledge; 2002.
- [22] Parkes RK, von Rabenau C. Work characteristics and well-being among psychiatric health-care staff. *J Community Appl Soc.* 1993; (3):243-259.
- [23] Alacacioglu A, Yavuzsen T, Divioz M, Oztop I, Yilmaz U. Burnout in nurses and psysicians working at an oncology department. *Psycho-Oncol.* 2009; (18):543-548.
- [24] Kantodimopoulos N, Paleologu V, Niakas D. Identifying important motivational factors for professionals in Greek hospitals. *BMC Health Service Research.* 2009; (9):164.
- [25] Jansson von Vultée P, Axelsson R, Arnetz, B. The impact of organisational setting on physician wellbeing. *Int J Health Care Qual Assur* 2007; (20):506-515.
- [26] Kanfer R, Ackerman PL. Aging, Adult development, and work motivation. *Acad Manage Rev* 2004; (29):440-459.
- [27] Souminen, T, Savikko, N, Puukka, P, Irvine Doran, D, Leino-Kilpi, H. Work empowerment as experienced by head nurses. *J Nursing Manage* 2005; (13):147-153.

- [28] Nilsson P, Andersson I, Ejlertsson G, Blomqvist K. How to make a workplace health promotion questionnaire process applicable, meaningful, and sustainable. *J Nursing Manage*, 2011; (19): 906–914.
- [29] Seppälä P, Mauno S, Feldt T, Hakanen J, Kinnunen U, Tolvanen A, Schaufeli W. The construct Validity of the Utrecht Work Engagement Scale: Multisample and Longitudinal Evidence. *J Happiness Stud* 2009; (10):459-481.

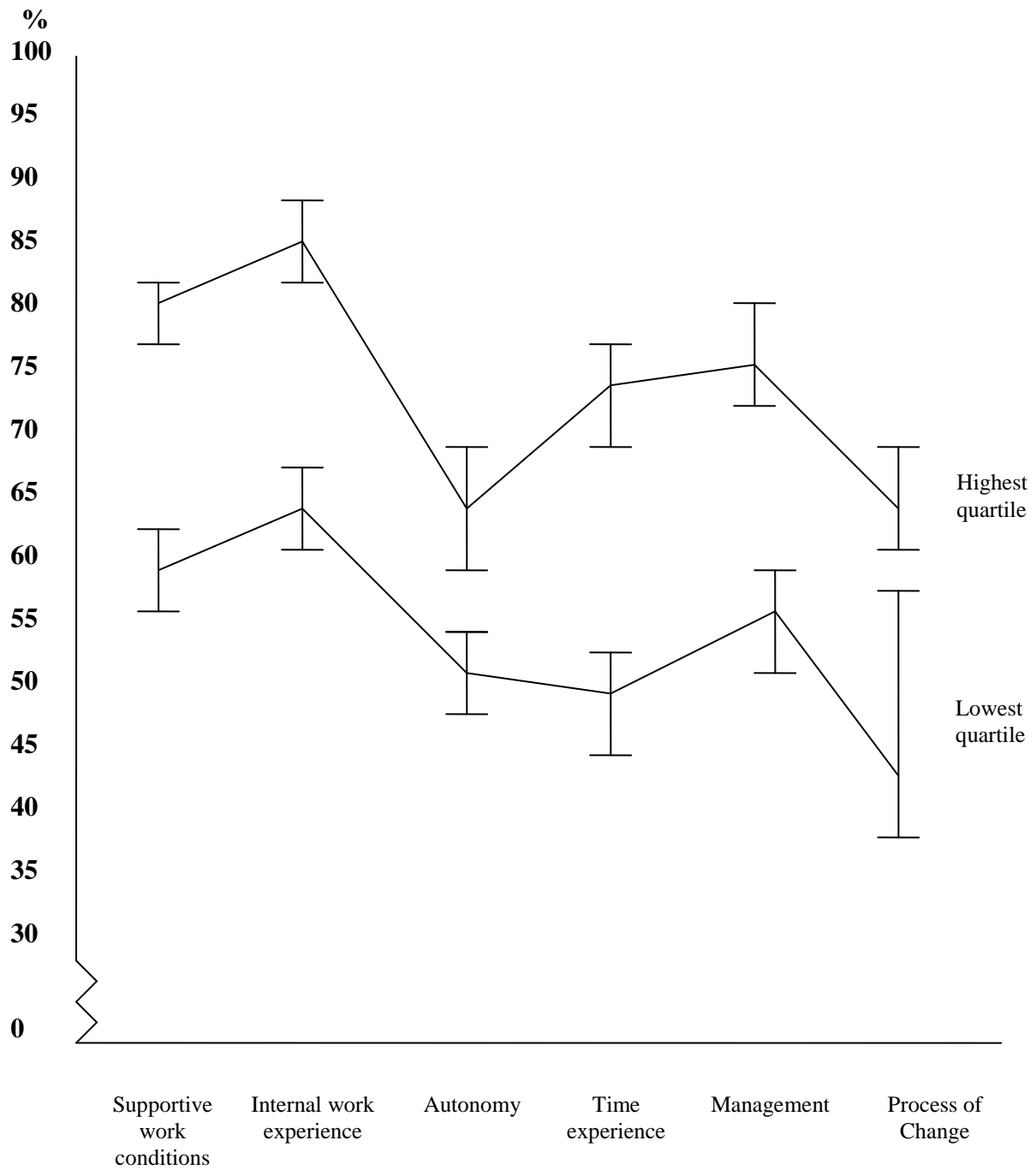


Figure 1. Standardized mean values and 95 % confidence intervals for WEMS sub-indices among individuals in the highest and lowest quartiles of SHIS ( $p < 0.05$ ).



Table I. Description of the study population (n=505).

Variable	Groups	Frequency	Percent
<i>Age</i>	39 or younger	109	22.1
	40-54	222	44.9
	55 or older	163	33.0
<i>Profession</i>	Registered nurse	162	32.3
	Assistant nurse	109	21.8
	Physician	31	6.2
	Paramedic	74	14.8
	Administrative	74	14.8
	Other <sup>a)</sup>	51	10.2
<i>Position as manager</i>	Yes	41	8.3
	No	452	91.7
<i>Scopes of practice</i>	Administration	52	10.3
	Internal medicine	154	30.5
	Emergency ward	36	7.1
	Surgery units	148	29.3
	Rehabilitation units	75	14.9
	Maintenance	40	7.9
<i>Years in medical service</i>	Less than 4	32	6.4
	4-9	89	17.8
	10 or more	380	75.8

<sup>a)</sup> Other includes for example technicians, kitchen staff, household technicians, and building managers.

Table II. Spearman's correlation coefficients between the WEMS and its sub-indices, and UWES-9, GSE, SHIS, self rated health, well-being, and quality of life.

	Supportive work conditions	Internal work experience	Autonomy	Time experience	Management	Process of Change	WEMS
(n)	(428-484)	(432-491)	(431-490)	(435-494)	(431-487)	(421-473)	(405-453)
UWES-9	0.48	0.61	0.34	0.22	0.35	0.36	0.56
GSE	0.15 <sup>1)</sup>	0.19	0.21	0.16	0.08 <sup>2)</sup>	0.19	0.18
SHIS	0.43	0.43	0.30	0.38	0.36	0.31	0.51
Self-rated health	0.19	0.27	0.12	0.13	0.10 <sup>1)</sup>	0.18	0.24
Well-being	0.25	0.28	0.18	0.19	0.18	0.21	0.31
Quality of life	0.26	0.29	0.19	0.17	0.20	0.22	0.32

Abbreviations: WEMS – Work Experience Measurement Scale; UWES-9 – Utrecht Work Engagement Scale short version; GSE – General Self Efficacy scale, and SHIS – Salutogenic Health Indicator Scale.

Values significant at 0.01 level, but <sup>1)</sup> p<0.05, and <sup>2)</sup> N.S

Table III. Standardized indices (WEMS total; UWES-9) and sub-indices (WEMS) in relation to age, profession and position as manager or not.

Variable	Indices →	(n)	Supportive work conditions	Internal work experience	Autonomy	Time experience	Management	Process of Change	WEMS total index	UWES-9
	Groups ↓									
Age	39 or younger	(102-109)	69.6	75.4	55.8	60.1	60.0	50.2	62.7	70.2
	40-54	(198-222)	70.2	74.1	55.0	59.2	63.9	51.8	63.7	70.1
	55 or older	(129-163)	74.2	74.9	58.7	63.0	68.2	55.0	67.0	72.6
	(p)		<b>(0.034)</b>	(0.822)	(0.252)	(0.316)	<b>(0.012)</b>	(0.333)	(0.057)	(0.348)
Profession	Registered nurse	(139-162)	73.9	76.7	55.5	61.9	64.9	52.6	65.6	68.9
	Assistant nurse	(95-109)	71.9	73.0	49.5	64.8	65.6	52.9	64.3	72.2
	Physician	(22-31)	71.5	80.2	58.3	38.5	69.3	62.2	67.3	69.8
	Paramedic	(68-74)	70.8	78.1	68.4	58.2	62.4	42.5	63.9	74.6
	Administrative	(67-74)	70.2	72.3	54.2	59.2	64.0	51.0	63.1	67.4
	Other <sup>a)</sup>	(41-51)	63.5	66.3	59.6	65.6	61.0	60.1	62.1	69.4
	(p)		<b>(0.012)</b>	<b>(0.001)</b>	<b>(0.000)</b>	<b>(0.000)</b>	(0.615)	<b>(0.004)</b>	(0.636)	(0.100)
Position as manager or not	Yes	(35-41)	76.7	87.0	70.6	50.7	73.4	63.5	72.4	76.2
	No	(394-452)	70.7	73.4	55.2	61.5	63.5	51.4	63.6	70.3
	(p)		<b>(0.033)</b>	<b>(0.000)</b>	<b>(0.000)</b>	<b>(0.007)</b>	<b>(0.006)</b>	<b>(0.007)</b>	<b>(0.001)</b>	<b>(0.036)</b>

(Significant p-values &lt;0.05 in bold for differences in groups)

<sup>a)</sup> Other professions include for example technicians, kitchen staff, household technicians, building managers.

