

Linköping University Post Print

Return to work: the predictive value of the Worker Role Interview (WRI) over two years

Elin Ekbladh, Lars-Håkan Thorell and Lena Haglund

N.B.: When citing this work, cite the original article.

Original Publication:

Elin Ekbladh, Lars-Håkan Thorell and Lena Haglund, Return to work: the predictive value of the Worker Role Interview (WRI) over two years, 2010, Work: A journal of Prevention, Assessment and rehabilitation, (35), 2, 163-172.

<http://dx.doi.org/10.3233/WOR-2010-0968>

Copyright: IOS Press

<http://www.iospress.nl/>

Postprint available at: Linköping University Electronic Press

<http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-13272>

Return to work – the predictive value of the WRI over two years.

Return to work – the predictive value of the Worker Role Interview (WRI) over two years.

Elin Ekbladh,^{1,3} Lars-Håkan Thorell², Lena Haglund¹

Corresponding person:
Elin Ekbladh
Linköping University
Faculty of Health Sciences
Department of Social and Welfare Studies,
SE-601 74 Norrköping
Sweden
e-mail: Elin.Ekbladh@isv.liu.se
phone number: +46 11 363182
fax number: + 46 11 363189

¹ Linköping University, Faculty of Health Sciences, Department of Social and Welfare Studies, Sweden.

² Linköping University, Faculty of Health Sciences, Department of Clinical and Experimental Medicine, Division of Psychiatry, Sweden.

³ Correspondence should be directed to Elin Ekbladh, Linköping University, Faculty of Health Sciences, Department of Social and Welfare Studies, SE-601 74 Norrköping, Sweden, e-mail: Elin.Ekbladh@isv.liu.se.

Return to work – the predictive value of the WRI over two years.

Abstract

Worker Role Interview (WRI) is an assessment tool designed to identify psychosocial and environmental factors which influence a person's ability to return to work. The purpose of this study was to investigate if the Worker Role Interview (WRI) can predict return to work over a period of two years. Fifty three long-term sick-listed people were interviewed and rated with the WRI. Differences in ratings and the ability of WRI to correctly predict whether these people would fall into the working or non-working groups at 6, 12 and 24 month follow-ups were tested by Mann–Whitney test and logistic regression respectively. Eight of 17 items in WRI were rated differently between the groups at one or more of the follow-ups. The regression models based on the WRI ratings had an overall correct prediction rate ranging from 81% to 96%. 'Expectation of job success' which concerns the person's belief in abilities in relation to return to work emerged as an important predictive factor for return to work in all statistical analyses. The WRI assessment contains items that could predict return to work. This implies that the WRI could be a useful tool in vocational rehabilitation for identifying individual rehabilitation needs.

Keywords: assessment, motivation, psychosocial, RTW, sick-leave, work ability

Return to work – the predictive value of the WRI over two years.

1. Introduction

In western society, work has a central place in people's adult life and is highly valued. Work is often described as something necessary for the individual, therefore there is a risk that those who do not work may be excluded from important areas of society [8,22]. In the early forties, Marie Jahoda found that work has other important meanings besides economic compensation, such as providing a structure for how to handle time, a social status and identity, daily social contacts with others outside the family, and the possibility of taking part in working towards a common goal [28]. Work has both practical and symbolic functions since those who work have the economic possibility of participating in society in a socially accepted manner [5,35] and at the same time work is a symbol for a perfect citizenship [5]. Socially established and culturally accepted routines for the things that we do in life are important for the development of self-esteem and identity [8,35].

Knowledge is required about how to identify those at risk of taking long term sick-leave, how to help them avoid doing so, and how to support people returning to work after sick-leave [1]. Assessing the individual's work ability is an important step in vocational rehabilitation [18] and different aspects including personal, environmental and social ones have to be accounted for in an overall work ability estimation [34]. Furthermore, the individual's subjective perspective of these aspects is needed [15,36]. The use of valid assessment tools for estimating work ability is essential for these procedures [32]. However, the shortage of sufficiently reliable and valid assessment tools is a major concern in relation to the ability to make proper clinical decisions about a person's work ability [25,26].

Return to work – the predictive value of the WRI over two years.

The Worker Role Interview (WRI) is a work-related assessment tool that has been developed to identify psychosocial and environmental factors that influence the ability to return to work after sickness or injury. The WRI consists of a semi-structured interview and a four-point rating scale which indicates how each of 17 items (Table 1), impacts return to work [38]. The WRI is theoretically based on the Model of Human Occupation (MOHO) [29,30]. In the MOHO, humans' occupational behavior, and in this case work behavior, is explained as a function of motivation, lifestyle and performance capacity in interaction with the surrounding environment. In the WRI the person's motivation for work is conceptualized by three theoretical constructs; personal causation, values, and interests (items 1-7). Lifestyle with its influence on work is conceptualized by two theoretical constructs; roles and habits (items 8-13). The theoretical construct of the environment (items 14-17) includes the person's perception of the physical and social environment in relation to his or her work situation (Table 1). Performance capacities are not identified by the WRI since these are better assessed by observation [29,30,38].

[Insert table 1 about here]

The first version of the WRI was developed at the University of Illinois in Chicago in 1991 and the assessment tool has been tested for validity [9,12,14,16,19,39] and reliability [3,9]. The WRI was subsequently revised to take account of the results of these tests. In 1996 the WRI was translated and adapted to Swedish culture and this current study is based on the second version of the Swedish WRI [10] which in turn is based on the ninth version of the US WRI [38].

Return to work – the predictive value of the WRI over two years.

The predictive validity of the WRI for return to work has been investigated in a study with people who had attended an insurance medicine investigation [12]. All three items related to the ‘Personal causation’ theoretical construct in WRI (item 1-3), and WRI item 14 ‘Apprises work expectations’ and 15 ‘Perceptions of work setting’ were found to be tentatively predictive for return to work. The predictive validity of the WRI for return to work was also investigated by Velozo and co-workers (1999). They found that neither the WRI nor other variables such as chronicity, diagnosis, number of surgical operations, attorney involvement or age were useful in predicting return to work. However they suggested further investigations.

There is a need to develop and investigate the validity of work-related assessment tools [25,26] and in particular assessments concerned with psychosocial aspects in relation to return to work [24]. When investigating the predictive validity of assessment tools some kind of related criterion is required. For investigating work ability, a highly valued criterion is return to work [26]. This study is an attempt to further determine the predictive value of the WRI for return to work.

2. Aims

The aims of the present study were to investigate if and how the WRI can predict return to work, and to investigate how the predictive validity of the WRI for return to work changes over a two-year period.

Return to work – the predictive value of the WRI over two years.

3. Method

Study Population

The study population was derived from the Swedish Social Insurance Board register. It included all employed workers aged between 20 and 60 in a Swedish municipality with about 130,000 inhabitants, who at one specific day in 2004 were on a sick leave period between 60 and 89 days long on at least half time. People with cancer (n=3) or pregnancy-related diagnoses (n=7) and people with protected personal information (n=1) or those who did not have a phone-number (n=6) were excluded. In total 130 people were asked by mail to participate in the study. Information about their addresses was obtained from the Swedish taxation authorities. Twenty-two of the people declined participation in the study by a reply letter, and 43 others declined when they were called by telephone. Twelve people did not answer by mail and could not be reached by telephone.

In total 53 people (41%), 34 women and 19 men agreed to participate in the study. Their mean age was 43 years. The most common professions represented among the participants were service workers and shop sales workers (n=12), and technicians and associate professionals (n=11) (Table 2). The most common diagnoses were diseases of the musculoskeletal system and connective tissue (n=27) and mental, behavioural disorders (n=14) (Table 3).

Return to work – the predictive value of the WRI over two years.

[Insert table 2 and 3 about here]

Data Collection

The present study is part of a research project in which various types of written and verbal data concerning work and life situations have been collected from the study participants four times over a period of two years, i.e. at baseline and at the 6, 12 and 24-month follow-ups. This study concerns data collected from telephone interviews. In the baseline interview the study participants were interviewed with the WRI. The first author interviewed 25 and two occupational therapists who have a sound knowledge of MOHO and WRI interviewed 15 and 13 of the study participants respectively.

The four-point rating scale was used for each of the 17 WRI items. In this, a value of ‘1’ implies that the item strongly interferes with returning to work, ‘2’ implies that the item interferes, a value of ‘3’ implies that the item supports return to work, and value ‘4’ implies that the item strongly supports returning to work. Not all WRI items were applicable to all participants. For example, when a person did not have a boss and/or coworkers, items 16 and/or 17 were rated ‘not applicable’, thus the number of rated participants varied over the WRI items. The participants also answered interview questions about actual occupational status at baseline and at all the follow-up occasions.

On the inclusion day, 45 of the study participants were full-time sick-listed and eight were part-time sick-listed. When the WRI interview was conducted at baseline, two to three months after the inclusion day, 14 participants were full-time sick-listed, 17 participants were part-time sick-listed, and 22 participants were working full time.

Return to work – the predictive value of the WRI over two years.

Ethics

Approval for the study was given from the ethical research committee at the Faculty of Health Sciences at Linköping University, Sweden.

4. Statistical analysis

For statistical analysis the study population was dichotomised into working or non-working groups. Participants in full or part-time work, in education or unemployed were classified into the working group, and those that were full-time sick-listed were classified into the non-working group in each of the follow-ups.

The Mann-Whitney U test was used to test statistical differences in the WRI ratings between the working and non-working groups on the three follow-up occasions. Fisher's exact probability test was used to test differences in sex and the Student's t -test was used for testing differences in age between the working and non-working groups.

Forward stepwise wald logistic regression analysis was used to identify WRI items useful in making predictions of return to work. All WRI items that showed a statistically significant difference in the ratings between the working and non-working groups were included in the logistic regression analysis for each of the follow-ups at 6, 12 and 24 months.

Return to work – the predictive value of the WRI over two years.

The whole study population was classified into the following three diagnostic groups: diseases related to the musculoskeletal system and connective tissues (n=47), diseases related to mental and behavioural disorders (n=42), and other diseases, disorders or symptoms (n=41). The chi-square (χ^2) test was used to test differences concerning diagnosis group and differences in sex and the Student's *t*-test was used to test differences in age between the study participants and those who did not participate.

The rejection limit of the null hypothesis for the statistical tests was set to $\alpha = 0.05$. All tests were two sided. The data were analyzed using the SPSS, version 14.0 [37].

5. Results

The first follow-up took place 6 months after baseline i.e. 6 months after the WRI interview had been conducted. At the first follow-up 45 participants were in the working group and eight in the non-working group (Table 4). At the 12-month follow-up there were 40 participants in the working group and 11 participants in the non-working group, and after 24 months there were 41 participants in the working group and 6 participants in the non-working group. There were six drop-outs at the 24 month follow-up five participants could not be reached either by mail or telephone and one participant declined further participation. The occupational status of the participants at the three follow-ups at 6, 12 and 24 months is reported in table 4. Five of the participants had been sick-listed full-time and 15 had been working full-time since the WRI interview was conducted at baseline and until the 24-month follow-up.

Return to work – the predictive value of the WRI over two years.

[Insert table 4 about here]

Four of the WRI items, namely item 2 ‘Expectations of job success’, item 3 ‘Takes responsibility’, item 13 ‘Adapts routine to minimize difficulties’ and item 15 ‘Perception of family and peers’, showed statistically significant differences in the ratings between the working and non-working groups on all three follow-up occasions (Table 5). Two WRI items, namely item 7 ‘Pursues interests’ and item 12 ‘Daily routines’, showed statistically significant differences in the ratings between the working and non-working groups at the 6-month and 24-month follow-ups. Two WRI items, namely item 4 ‘Commitment to work’ and item 10 ‘Influence of other roles’, showed statistically significant differences in ratings between the groups at the 24-month follow-up. The remaining nine WRI items (items 1,5,6,8,9,11,14,16,17) showed no statistically significant differences in the ratings between the groups at any of the three follow-ups (Table 5). All the WRI items which showed a statistically significant difference between the groups were rated as more supportive of returning to work for the working than for the non-working group.

[Insert table 5 about here]

At the 6-month follow-up, six of the 17 WRI items showed statistically significant differences in ratings between the working and non-working groups, and at the 12-month follow-up there were differences in the ratings for four of the WRI items. When the 24-month follow-up took place, eight of the WRI items showed statistically significant differences in ratings between the working and non-working groups (Table 5).

Return to work – the predictive value of the WRI over two years.

The results of the logistic regression analysis at the 6-month follow-up showed that WRI item 2 ‘Expectations of job success’ ($B=-2.138$; $p=0.01$) together with WRI item 12 ‘Daily routines’ ($B=-1.410$; $p=0.05$) explained 56% of the variance of the outcome (Nagelkirke $R^2=0.56$). At the 12-month follow-up, item 2 in WRI ‘Expectations of job success’ ($B=-1.183$; $p=0.01$) explained 24% (Nagelkirke $R^2=0.24$) of the variance of the outcome. At the 24-month follow-up, WRI item 2 ‘Expectations of job success’ ($B=-1.901$; $p=0.05$) together with WRI item 12 ‘Daily routines’ ($B=-1.885$; $p=0.05$) explained 62% of the variance of the outcome (Nagelkirke $R^2=0.62$).

In Table 6 the observed and predicted group membership are shown in relation to the regression model at each follow-up. At the 6-month follow-up the model correctly predicts 49 of the 53 participants into the working or non-working groups, with an overall correct prediction rate of 92.5%. The regression model at the 12-month follow-up had an overall correct prediction rate of 81.1%, whereas the model correctly predicted 42 of the participants. At the 24-month follow-up the model correctly predicted all except two of the participants, which gave a final overall correct prediction rate of 95.7% (Table 6).

[Insert table 6 about here]

No statistically significant difference could be found between the working and non-working groups concerning age or sex at any of the three follow-ups (Table 7).

[Insert table 7 about here]

Return to work – the predictive value of the WRI over two years.

There were no statistically significant differences between the participants ($n=53$) and those in the study population who did not participate ($n = 77$) concerning sex ($\chi^2 = 0.90$, $df = 1$, $p = 0.34$), age (participants: mean \pm SD = 42.5 ± 10.58 , $n = 53$; non participants: mean \pm SD = 43.8 ± 9.64 , $n = 77$; $t = 0.70$, $df = 105$, $p = 0.48$) and diagnosis groups ($\chi^2 = 4.710$, $df = 2$, $p = 0.095$).

6. Discussion

The present study investigated the value of WRI for predicting return to work after long term sick-leave. Eight of the 17 WRI items were predictive for returning to work at one or more of the three follow-ups. The most important items in WRI for predicting return to work after six months and two years were ‘Expectations of job success’ and ‘Daily routines’. These two items together predicted correctly 96% ($n=45$) of the study participants into either the working or the non-working groups two years after the WRI interview took place. That the WRI assessment could predict return to work to that extent and after a period as long as two years indicates that WRI seems to be a useful tool for assessing factors that are significant for returning to work.

Methodological considerations

The most common way to accomplish WRI with clients in vocational rehabilitation units or in primary care is face-to-face interviewing. In this study, telephone interviews

Return to work – the predictive value of the WRI over two years.

were used for practical and economic reasons since several of the participants were working during the day and/or had difficulties travelling, and did not receive any compensation for participation. However, our experience of doing the WRI interviews by telephone was positive because it seemed the interviewees responded honestly and were willing to share experiences by telephone. The participants knew they had nothing to gain or lose from the interview responses because they had been informed that participation in the study would have no impact on possible rehabilitation and/or economic compensation from the Swedish Social Insurance Board. Young and Murphy (2002) found that there were very few differences in responses when comparing face-to-face interviewing and telephone interviewing. The main difference between the data collection methods was face-to-face interviewing took a longer time since it included more social niceties [41].

When dichotomising the participants into the working and non-working groups questions arose about the classification of the unemployed. None of the participants were both unemployed and full-time sick-listed which implied that the unemployed participants were available to the labour market. This was the reason for classifying them into the working group. A similar discussion and decision was reported in a study by Marhold, Linton and Melin (2002) in which obstacles to returning to work were identified [31].

The large rate of external dropouts is a problem for the generalizability of the results. However, there were no statistically significant differences concerning age, sex and diagnosis group between those who participated in the study and those who did not. The most common diagnosis groups among the study population were those related to

Return to work – the predictive value of the WRI over two years.

diseases of the musculoskeletal system and connective tissues (n=47) and mental and behavioural disorders (n=42) (Table 3) corresponding with the most common diagnoses among the long-term sick-listed (more than 60 days) in Sweden. Further, service workers and shop sales workers are over-represented among long-term sick-listed persons in Sweden in general and also formed the most common professional group among the participants (Table 2).

The regression coefficients are bound to the present sample, since the regression model seeks the best fit of the accounted for sample [7]. However, they are valid for this study and in spite of the methodological considerations described here we maintain that the results are truly interesting and motivating for further investigation of the use of the WRI assessment in vocational rehabilitation contexts.

WRI and predicting return to work

Item 2 ‘Expectations of job success’ showed differences in ratings that were statistically significant in the working and non-working groups. It emerged as a significant predictor for returning to work by the regression model in all the follow-ups. It concerns how people believe in abilities in relation to returning to work. This finding is in line with results from other studies [2,12,15,20,21,27,31] in which people’s motivation in the form of belief in ability to work has been shown to be of vital importance for returning to work after sick-leave. At the 6 and 12-month follow-ups the WRI item 12, ‘Daily routines’, was rated significantly differently between the working and non-working groups and it emerged from the regression model as a predictor for return to work together with ‘Expectations of job success’. The item ‘Daily routines’

Return to work – the predictive value of the WRI over two years.

concerns how the person manages time outside work i.e. if the person perceives it as chaotic or organised and if the person's routines outside work support or interfere with the worker role. To our knowledge, daily routines outside work have not previously been found to be a predictor for returning to work after sick-leave.

At the 12-month follow-up, 'Expectations of job success' alone was found to correctly predict 81% (n=43) of the participants into the working versus non-working group. At the 6-month follow-up the items 'Expectations of job success' and 'Daily routines' together correctly predicted the participant into the working or non-working groups with 92.5 % (n=49) accuracy. Only four study participants were incorrectly classified by the prediction model. At the 24-month follow-up the same two WRI items correctly classified 95.7 % (n=45) of the participants, and classified only two participants incorrectly. These findings indicate that WRI is a useful assessment tool for identifying factors relevant to returning to work. The WRI could be a useful assessment tool for identifying rehabilitation needs.

When comparing the present study group and that comprising people who had taken part in a social insurance investigation in the study by Ekbladh and co-workers (2004) there are considerable differences concerning the length of the period the participants had been away from work and the distributions of number of participants in the working and non-working groups. The people who had taken part in the social insurance investigation had been away from work for an average of two years before they were included, and after another two years six out of 48 people had returned to work [12]. In the present study the participants had been sick-listed between 60 and 89 days when they were included to the study, and 41 out of 47 participants were in the

Return to work – the predictive value of the WRI over two years.

working group after two years. In spite of these differences there were factors in WRI related to returning to work that were common in these two studies. Beside 'Expectations of job success' the WRI item 3 'Takes responsibility' showed a predictive value in both studies. Item 3, 'Takes responsibility', concerns to what extent the person takes responsibility for his/her work situation, and the sense of who is in charge of the situation, for example whether the person perceives internal or external control. Previous studies also show that the ability to take control over one's life and work situation is an important factor for return to work when sick-listed [23,33].

The two WRI items 'Expectations of job success' and 'Takes responsibility' are both related to the theoretical construct of personal causation in the Model of Human Occupation. Personal causation reflects a person's unique awareness of his or her capabilities for doing things that matter and what the person perceives his or her doing has on reaching desired outcomes [29,30].

However, there were WRI items (1, 9, 14) which were found to be predictive for return to work in the study by Ekbladh and co-workers (2004) which were not predictive for return to work in this study. Items 4, 7, 10, 12, 13 and 15 were predictive for returning to work in one or more of the three follow-ups in the present study but not in the study by Ekbladh and co-workers (2004). In total there were six items in WRI (items 5, 6, 8, 11, 16, 17) which were not found to be predictive for return to work in either of these two studies.

In several studies [14,16,19,39] investigating the construct validity of the WRI, items related to environment (items 14 - 17) were found to capture another construct apart

Return to work – the predictive value of the WRI over two years.

from the psychosocial ability to return to work. The reason for keeping these items in the WRI assessment was they yield vital clinical information for planning vocational rehabilitation interventions [14,16,19,39]. During the years this study was conducted, both the US and the Swedish version of the WRI were revised [4,11]. In the new versions the information obtained during the interview and the use of the rating scale for each item have been elucidated.

Clinical implications

There is an ongoing discussion among professionals in the work rehabilitation field about focusing more on the individual's motivation to work in order to reduce sick-leave [2,6,17]. This seems to be important since the present study and several others [2,12,15,20,21,23,27,31,33] have found motivation, in the form of the individual's belief in his/her ability to work, to be a significant predictor for returning to work. The fact that 'Expectations of job success' and 'Daily routines' in this study were found to be important predictors for returning to work even after as long a time as two years indicates that these factors are fairly stable over time.

In vocational rehabilitation these factors need to be accounted for in interventions aiming at supporting the person in returning to work. To do that, knowledge about how to strengthen the person's belief in his/her occupational abilities as well as knowledge about activity patterns and how to support the person in structuring his or her daily activities is needed. When using the WRI the professional user can get support from its theoretical base Model of Human Occupation [29,30] since it provides the user with

Return to work – the predictive value of the WRI over two years.

both a theoretical context and a frame for how to plan for and accomplish future interventions adapted for the unique individual.

7. Conclusions

The findings show the WRI assessment contains items that could predict return to work. This implies the WRI is probably a useful assessment tool in vocational rehabilitation for identifying individual rehabilitation needs of people who are sick-listed, in order to support the person in returning to work. The most important factor for return to work identified by WRI seems to be the item ‘Expectations of job success’. This WRI item has proved to be a stable predictor during the two years this study was conducted and in another study [12] in which the predictive validity of WRI for return to work was also investigated. The small study group weakens generalization of the results. However, the promising results should motivate further investigation of the predictive validity of WRI for returning to work with greater numbers of participants and within other groups, for example, for people who are unemployed and sick-listed.

Acknowledgements

The authors owe special thanks to the study participants. We would also like to thank Marika Metsävainio and Christin Wennersten for their help with the WRI interviews and the Swedish Social Insurance Board for help with administration of the register data and for economical support.

Return to work – the predictive value of the WRI over two years.

Return to work – the predictive value of the WRI over two years.

References

1. K. Alexanderson, A. Norlund, Sickness absence- causes, consequences and physicians' sickness certification practice. A systematic review by the Swedish Council of Technology Assessment in Health Care. Chapter 12. Future need for research, *Scand. J. Public. Health. (Suppl. 63)*. **32** (2004), 256-258.
2. H. Berglind, U. Gerner, Motivation and return to work among the long-term sicklisted: an action theory perspective, *Disabil. Rehabil.* **14** (2002), 719-726.
3. S.D. Biernacki, Reliability of the Worker Role Interview, *Am. J. Occup. Ther.* **47** (1993), 797-803.
4. B. Braveman, M. Robson, C. Velozo, G. Kielhofner, G. Fisher, K. Forsyth, J. Kerschbaum, A User's Guide to the Worker Role Interview, Model of Human Occupation Clearinghouse, Department of Occupational Therapy, University of Illinois at Chicago; Chicago, Illinois. 2005.
5. I. Bäckström, Shifting the wheat from the chaff: On vocational rehabilitation of women and men on long-term sick-leave (In Swedish) [dissertation]. Dept of Social Welfare, Umeå University, 1997.
6. U.R. Dahle, Long term sickness absence. Motivation rather than ability to work may be the key, *B.M.J.* **330** (2005), 1087.
7. D. Dimitrov, S. Fitzgerald, P. Rumrill, Multiple regression in rehabilitation research, *Work.* **15** (2000), 209-215.
8. L. Edén, I. Andersson, G. Ejlertsson, B.I. Ekström, Y. Johansson, I. Leden, Characteristics of disability pensioners returning to work: An interview study among individuals with musculoskeletal disorders, *Disabil. Rehabil.* (2007), 1-7, i- First article, in press.

Return to work – the predictive value of the WRI over two years.

9. E. Ekbladh, Investigation of the Swedish versions of the Worker Role Interview and the Work Environment Impact Scale, (In Swedish), Unpublished Master's thesis. Linköping: Faculty of Health Sciences, Department of Neuroscience and Locomotion, 1999.
10. E. Ekbladh, L. Haglund, WRI-S version 2. (In Swedish) Linköping: Linköping University, Faculty of Health Sciences, Department of Neuroscience and Locomotion, 2000.
11. E. Ekbladh, L. Haglund, WRI-S version 3, (In Swedish) Linköping: Linköping University, Faculty of Health Sciences, Department of Social and Welfare Studies, 2007.
12. E. Ekbladh, L. Haglund, L-H. Thorell, The Worker Role Interview – Preliminary data on the predictive validity of return to work of clients after an insurance medicine investigation, *J. Occup. Rehabil.* **14** (2004), 131-141.
13. P. Elias, M. Birch, Establishment of Community-Wide Occupational Statistics. ISCO 88. A Guide for Users, University of Warwick: Institute for Employment Research, 1994.
14. K. Fenger, J.M. Kramer, Worker Role Interview: Testing the psychometric properties of the Icelandic version, *Scan. J. Occup. Ther.* **14** (2007), 160-172.
15. M. Feuerstein, R.W. Thebarger, Perceptions of disability and occupational stress as discriminators of work disability in patients with chronic pain, *J. Occup. Rehab.* **3** (1991), 185-195.
16. K. Forsyth, B. Braveman, G. Kielhofner, E. Ekbladh, L. Haglund, K. Fenger, J. Keller, Psychometric properties of the Worker Role Interview, *Work.* **27** (2006), 313-318.

Return to work – the predictive value of the WRI over two years.

17. G. Gard, A. Larsson, Focus on motivation in the work rehabilitation planning process: a qualitative study from the employer's perspective, *J. Occup. Rehabil.* **13** (2003), 159-167.
18. C. Gobelet, F. Luthi, A.T. Al-Khodairy, M.A, Chamberlain, Vocational rehabilitation: A multidisciplinary intervention, *Disabil. Rehabil.* (2007), 1-6, iFirst article, in press.
19. L. Haglund, G. Karlsson, G. Kielhofner, J.S Lai, Validity of the Swedish version of the Worker Role Interview, *Scan. J. Occup. Ther.* **4** (1997), 23-29.
20. A. Hansen, C. Edlund, I-B, Bränholm, Significant resources needed for return to work after sick-leave, *Work.* **25** (2005), 231-240.
21. A. Hansen, C. Edlund, H. Henningsson, Factors relevant to a return to work: A multivariate approach, *Work.* **26** (2006), 179-190.
22. A. Hansen-Falkdahl, Resources and obstacles for work re-entry among sick-listed. Important factors for early assessment, [dissertation]. *Community Medicine and Rehabilitation, Occupational Therapy*, Umeå University, 2005.
23. K. Holmgren, S. Dahlin Ivanoff, Women on sickness absence - views of possibilities and obstacles for returning to work, A focus group study, *Disabil. Rehabil.* **26** (2004), 213-222.
24. E. Innes, L. Straker, A clinician's guide to work-related assessments: 2 –design problems, *Work.* **11** (1998), 191-206.
25. E. Innes, L. Straker, Reliability of work-related assessments, *Work.* **13** (1999), 107-124.
26. E. Innes, L. Straker, Validity of work-related assessments, *Work.* **13** (1999), 125-152.

Return to work – the predictive value of the WRI over two years.

27. B. Isaksson Mettävainio, C. Ahlgren, Facilitating factors for work return in unemployed with disabilities: a qualitative study, *Scand. J. Occup. Ther.* **11** (2004), 17-25.
28. M. Jahoda M, Incentives to work. A study of unemployed adults in a special situation, *Occupational psychology.* **16** (1942), 20-30.
29. G. Kielhofner, A model of human occupation: theory and application. 3rd ed, Philadelphia: Lippincott Williams & Wilkins, 2002.
30. G. Kielhofner, A model of human occupation: theory and application. 4th ed, Philadelphia: Lippincott Williams & Wilkins, 2008.
31. C. Marhold, S.J. Linton, L. Melin, Identification of obstacles for chronic pain patients to return to work: evaluation of a questionnaire, *J Occup Rehab.* **12** (2002), 65-75.
32. L.N. Matheson, V. Kaskutas, S. McCowan, H. Shaw, C. Webb, Development of a database of functional assessment related to work disability, *J. Occup. Rehab.* **11** (2001), 177-199.
33. J. Medin, J. Barajas, K. Ekberg, Stroke patient's experiences of return to work, *Disabil. Rehabil.* **28** (2006), 1051-1060.
34. J. Sandqvist, K. Törnquist, C. Henriksson, Assessment of work performance (AWP) – development of an instrument, *Work.* **26** (2006), 379-387.
35. J. Selander, S-U. Marnetoft, A. Bergroth, J Ekholm, Return to work following vocational rehabilitation for neck, back and shoulder problems: risk factors reviewed, *Disabil. Rehabil.* **24** (2002), 704-712.

Return to work – the predictive value of the WRI over two years.

36. L. Shaw, R Segal, H. Polatajko, K. Harburn, Understanding return to work behaviours: promoting the importance of individual perceptions in the study of return to work, *Disabil. Rehabil.* **24** (2002), 185-195.
37. Statistical Package for Social Science (SPSS). Statistics 14.0 for Windows. Stockholm, Chicago, IL: SPSS Scandinavia AB 2006.
38. C. Velozo, G. Kielhofner, G. Fisher, A User`s manual for the Worker Role Interview, University of Illinois at Chicago: Model of Human Occupation Clearinghouse, 1998.
39. C. Velozo, G. Kielhofner, A. Gern, F.L. Lin, F. Ahzar, J.S. Lai, G. Fisher, Worker Role Interview: Toward validation of a psychosocial work-related measure, *J. Occup. Rehab.* **9** (1999), 153-168.
40. World Health Organization, International statistical classification of diseases and related health problems: ICD-10, Geneva, 1992-1994.
41. A.E. Young, G.C. Murphy, A social psychology approach to measuring vocational rehabilitation intervention effectiveness, *J. Occup. Rehab.* **12** (2002), 175-189.

Return to work – the predictive value of the WRI over two years.

Table 1. Items and theoretical constructs in Worker Role Interview

Theoretical construct	Item
Personal Causation	1. Assesses abilities and limitations 2. Expectations of job success 3. Takes responsibility
Values	4. Commitment to work 5. Work-related goals
Interests	6. Enjoys work 7. Pursues interests
Roles	8. Identifies with being a worker 9. Appraises work expectations 10. Influence of other roles
Habits	11. Work habits 12. Daily routines 13. Adapts routine to minimize difficulties
Environment	14. Perception of work setting 15. Perception of family and peers 16. Perception of boss 17. Perception of co-workers

Return to work – the predictive value of the WRI over two years.

Table 2. Distribution of occupations of the persons invited to the study and the non participants and participants respectively.

	Invited persons	Non participants	Participants
Legislators, senior officials and managers	7	3	4
Professionals	16	9	7
Technicians and associate professionals	20	9	11
Clerks	16	9	7
Service workers and shop sales workers	36	23	13
Skilled agricultural and fishery workers	2	1	1
Craft and related trades workers	6	4	2
Plant and machine operators and assemblers	17	11	6
Elementary occupations (for example; cleaners, street vendors, food preparation assistants)	10	8	2

Note. The occupations are recorded according to International Classification of Occupation (ISCO, 88) [13].

Return to work – the predictive value of the WRI over two years.

Table 3. Distribution of diagnoses of the study population and the non-participants and participants respectively.

	Persons included	Non participants	Participants
Endocrine, nutritional and metabolic diseases (E)	1	1	-
Mental, behavioural disorders (F)	42	28	14
Diseases of the nervous system (G)	4	3	1
Diseases of the eye and adnexa (H)	2	1	1
Diseases of the circulatory system (I)	8	5	3
Diseases of the respiratory system (J)	2	1	1
Diseases of the digestive system (K)	4	3	1
Diseases of the skin and subcutaneous tissue (L)	3	3	-
Diseases of the musculoskeletal system and connective tissue (M)	47	22	25
Diseases of the genitourinary system (N)	1	1	-
Symptoms, signs and abnormal clinical and laboratory findings (R)	3	2	1
Injury, poisoning and certain other consequences of external causes (S and T)	13	7	6

Note. The diagnoses are recorded according to International Classification of Diseases, ICD 10 [40].

Return to work – the predictive value of the WRI over two years.

Table 4. Occupational status of the study participants at the 6, 12 and 24 month follow-ups.

	Occupational status	6-months (n)	12-months (n)	24-months (n)
Working group	Working fulltime	32	28	28
	Part-time sick-listed	10	6	7
	Education	1	1	3
	Unemployed	2	7	3
Non working group	Full-time sick-listed	8	9	4
	Disability pension	-	2	2
Drop-outs		-	-	6

Return to work – the predictive value of the WRI over two years.

Table 5. Statistical differences in WRI ratings between the working and the non-working groups at the three follow-ups.

WRI item	6 months (n=49-53)		12 months (n=48-53)		24 months (n=44-47)	
	Working (n=45) Non working (n=8)		Working (n=42) Nonworking (n=11)		Working (n=41) Non working (n=6)	
	Z	p-value	Z	p-value	Z	p-value
1. Assesses abilities and limitations	-1.452	0.147	-0.798	0.425	-0.911	0.362
2. Expectations of job success	-3.561	0.000***	-2.786	0.005**	-3.115	0.002**
3. Takes responsibility	-2.630	0.009**	-2.190	0.029*	-2.973	0.003**
4. Commitment to work	-1.887	0.059	-1.574	0.116	-2.017	0.044*
5. Work-related goals	-0.054	0.957	-0.024	0.981	-0.874	0.382
6. Enjoys work	-0.217	0.828	-0.622	0.534	-0.632	0.528
7. Pursues interests	-2.764	0.006**	-1.489	0.136	-1.994	0.046*
8. Identifies with being a worker	-1.683	0.092	-0.631	0.528	-1.874	0.061
9. Appraises work expectations	-0.909	0.363	-1.123	0.261	-0.690	0.490
10. Influence of other roles	-1.575	0.115	-1.071	0.284	-2.134	0.033*
11. Work habits	-0.706	0.480	-1.387	0.165	-0.914	0.361
12. Daily routines	-2.783	0.005**	-1.506	0.132	-3.000	0.003**
13. Adapts routine to minimize difficul.	-2.835	0.005**	-2.398	0.016*	-2.304	0.021*
14. Perception of work setting	-1.742	0.082	-0.091	0.927	-0.382	0.702
15. Perception of family and peers	-2.562	0.010**	-2.836	0.005**	-2.354	0.019*
16. Perception of boss	-1.454	0.146	-0.301	0.764	-0.809	0.418
17. Perception of co-workers	-1.346	0.178	-1.013	0.311	-1.086	0.278

Note. Mann-Whitney *U* test is used
* $p < 0.05$; ** $p < 0.01$, *** $p < 0.001$

Return to work – the predictive value of the WRI over two years.

Table 6. The extent to which the regression models for each follow-up classify the participants correctly into the working or non-working group.

Follow-up occasion	WRI items in the regression model	Observed	Predicted		Percent correct
			Working (n)	Non working (n)	
6-months	2 12	Working (n=45)	45	0	100%
		Non working (n=8)	4	4	50%
		Overall; 92.5%			
12-months	2	Working (n=42)	41	1	97.6%
		Non working (n=11)	8	3	18.2%
		Overall; 81.1%			
24-months	2 12	Working (n=41)	41	0	100%
		Non working (n=6)	2	4	66.7%
		Overall; 95.7%			

Return to work – the predictive value of the WRI over two years.

Table 7. Statistical differences in age between the working and the non-working groups at the three follow-ups.

		6-months	12-months	24-months
Age	<u>Working</u>			
	<i>n</i>	45	40	41
	mean age \pm SD	41.73 \pm 10.76	41.23 \pm 10.62	42.10 \pm 10.45
	<u>Non working</u>			
	<i>n</i>	8	13	6
	mean age \pm SD	46.88 \pm 8.87	46.46 \pm 9.82	49.67 \pm 8.09
	<i>t</i>	- 1.27	-1.57	-1.70
	df	51	51	45
	<i>p</i>	0.21	0.12	0.10
	Sex	<u>Working</u>		
Female <i>n</i>		29	26	25
Male <i>n</i>		16	14	16
<u>Non working</u>				
Female <i>n</i>		5	8	5
Male <i>n</i>		3	5	1
<i>p</i>		1.00	1.00	0.40

Note. Student's *t*- test is used for comparisons in age and Fisher's exact probability test is used for comparisons in sex.