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OPTIMISM AND PESSIMISM AS PREDICTORS OF WORK DISABILITY WITH A DIAGNOSIS OF DEPRESSION: A PROSPECTIVE COHORT STUDY OF ONSET AND RECOVERY

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OPTIMISM AND PESSIMISM AS PREDICTORS OF WORK DISABILITY WITH A DIAGNOSIS OF DEPRESSION: A PROSPECTIVE COHORT STUDY OF ONSET AND RECOVERY

Background: Personality characteristics are assumed to affect to the vulnerability to depression and its outcomes. The aim of this study was to examine optimism and pessimism as predictors of depression-related work disability and subsequent return to work.

Methods: A prospective cohort study of 38,214 public sector employees with no record of diagnosed depression. Optimism and pessimism were measured using the Revised Life Orientation Test (LOT-R). Records of long-term (>90 days) work disability with a diagnosis of depression and subsequent return to work until the end of 2005 were obtained from national health registers.

Results: During the mean follow-up of 4.0 (SD=2.3) years, 287 employees encountered work disability with a diagnosis of depression. Of them, 164 (57%) returned to work during the follow-up. One unit increase in the optimism mean score (range 1-4) was associated with a 25% lower risk of work disability due to depression and a 37% higher probability of returning to work after a work disability period when adjusted for age and sex. In the fully-adjusted model hazard ratios per one unit increase in optimism were 0.79 (95% CI 0.66-0.96) for work disability and 1.30 (95% CI 1.01-1.66) for return to work. The pessimism mean score (range 1-4) was only associated with a lower probability of returning to work (fully–adjusted HR per 1-unit increase 0.66, 95% Cl 0.49-0.88)

Conclusion: The level of optimism was a stronger predictor of work disability with a diagnosis of depression than the level of pessimism**,** while both optimism and pessimism predicted returning to work.

Keywords: optimism; pessimism; depression; work disability

INTRODUCTION

Vulnerability to depression and the course of the depressive disorder once occurred are assumed to be affected by several factors, including personality (Major et al., 1998, Bagby et al., 2008). Dispositional optimism and pessimism are potentially relevant personality variables in this context as they conceptualize how people perceive, react, and adapt to the challenges of their lives (Scheier and Carver, 1985, Scheier et al., 1994, Hart et al., 2008, Steptoe et al., 2008, Brydon et al., 2009, Prati et al., 2009).

The majority of studies focusing on the relationship between optimism, pessimism and depression have used uni-dimensional model, where optimism and pessimism represent polar opposites of single continuum. This view has been challenged by several studies suggesting that optimism and pessimism may act more like two separate constructs (Herzberg et al., 2006, Robinson-Whelen et al., 1997, Kivimäki et al., 2005, Conway et al., 2008, Szalma, 2009, Kubzansky et al., 2004). Thus, it may be hypothesized that optimism and pessimism have distinct effects on the risk of developing depression, as well as the likelihood of depression related work disability. The aim of this study was to investigate whether optimism and/or pessimism are independent predictors of depression-related work disability and subsequent return to work in a large cohort of public sector employees.

METHOD

Study population and design

Data were from the Finnish Public Sector Study, which includes a prospective follow-up of employees in the service of ten municipalities (Vahtera et al., 2010). The eligible population for the study was all 63,460 full-time employees at work when the surveys were carried out (from 1997 to 2004). In total, 46,352 employees responded to the baseline survey (response rate 73%). We linked the participants to their records in the national health registers. We excluded the respondents with missing data on depression, optimism or pessimism, and those who were eligible to special imbursement for medication for severe mental disorders, were retired, or died during the survey year. We also excluded participants who reported that they had been diagnosed with depression or who were on a long-term work disability period at baseline for any reason (including depression), or had been hospitalized due to depression, or who had purchased antidepressants or received psychotherapy for depression in the survey year (n=6599 altogether). Thus the final cohort included 38,214 subjects with no indication of depression at the baseline. The study was approved by the Ethics Committee of the Finnish Institute of Occupational Health.

Optimism and pessimism

Dispositional optimism and pessimism were measured with the revised Life Orientation Test (LOT-R; Scheier et al., 1994) at baseline. The measure issues six statements, of which three are worded positively for optimism (e.g., "In uncertain times, I usually expect the best") and three negatively to indicate pessimism (e.g., "If something can go wrong for me, it will"). The

response scale ranges from 1 (not at all) to 4 (very much so), a 4-point modification of the standard 5-point response format (Kivimäki et al., 2005). Mean of the positively worded items was calculated to yield the level of optimism (Cronbach's alpha = 0.65) and mean of the negatively worded items comprised the level of pessimism (Cronbach's alpha = 0.74).

Work disability

The work disability outcomes were beginning of a new period of work disability (≥90 days) and returning to work from such a period. Data on work disability were obtained from the registers kept by the Social Insurance Institution and the Finnish Centre for Pensions. Both registers require physician assigned diagnoses of disability coded according to the International Classification of Diseases, 10th Revision (ICD-10). In the present study, only periods of work disability with depression (ICD-10 codes F32-F34) as the main diagnosis were considered.

Baseline covariates

The following variables were treated as potential confounders in the analyses: age, sex, socioeconomic status (SES), and marital status. SES was categorized to upper-grade non-manual workers, lower-grade non-manual workers and manual workers. Marital status was dichotomized to married or cohabiting vs. single.

Several covariates obtained from the survey responses were treated as potential mediators for the association between optimism/pessimism and the outcomes.

Alcohol consumption was classified as low (0-210 g pure alcohol per week) or high (> 210 g per week) consumption. Current smoking and low physical activity (<2 Metabolic Equivalent Task hours per day) were coded yes/no (Vahtera et al., 2010).

Participants who had purchased, according the Drug Prescription Register, any anxiolytic or hypnotic medication during the year of the baseline survey were coded as being on that treatment.

Data on somatic disease, i.e. hypertension, cardiac failure, ischemic heart disease, diabetes, asthma or other chronic obstructive lung disease, rheumatoid arthritis and cancer, were obtained from the Drug Reimbursement Register and the Finnish Cancer register.

Statistical analysis

The associations of baseline covariates, and optimism and pessimism, with the risk of work disability due to depression and the likelihood of return to work were studied with Cox proportional hazards models. Hazard ratios (HR) and their 95% confidence intervals (CI) were sequentially adjusted for (1) age and sex, (2) socioeconomic and marital status and (3) alcohol use, smoking, physical activity, purchases of anxiolytics or hypnotics, and baseline health. Since optimism and pessimism were considered as continuous variables, HR reflected the change in the risk of work disability or probability of returning to work per one point increase in the scale measuring optimism or pessimism (range 1-4). Given the higher prevalence of depressive symptoms in women, we examined sex differences in these associations by including an interaction term “sex x optimism/pessimism” in the model

containing all main effects. Cumulative hazard rates for work disability and return to work (Figures 1 and 2) were estimated by Kaplan-Meier survival analysis. Optimism and pessimism scores were rounded to the nearest integer. In figure 2 infrequent pessimism score 4 (0,4%) was pooled together with pessimism score 3.

All statistical analyses were carried out using the SAS 9.1.3 program package (SAS Institute Inc., Cary, NC, USA).

RESULTS

During a mean follow-up of 4.0 (SD 2.3) years, 287 employees encountered work disability with a diagnosis of depression .Of those employees, 164 (57%) returned to work during the follow-up.

The baseline characteristics and their associations with optimism, pessimism and work disability are presented in table 1. After adjustment for age and sex, one unit increase in the optimism score was associated with a 25% lower risk of work disability due to depression (HR 0.75, 95% Cl 0.63-0.91) whereas the pessimism score was not associated with work disability (HR 1.19 , 95% CI 0.98-1.46)(figure 1, table 2).

Among the 287 participants who were disabled due to depression, one unit increase in optimism score was associated with a 37% higher probability of returning to work after long-term work disability in a model adjusted for age and sex (HR 1.37, 95% CI 1.08-1.73). Participants with higher pessimism scores, in turn, were less likely to return to work, with one unit increase in pessimism being associated with a 35% lower probability (age- and

sex-adjusted HR 0.65, Cl 0.49-0.85) (Figure 2, table 2). The results remained materially unchanged after further adjustments for SES, marital status, smoking, physical inactivity, alcohol or medication use, and somatic disease. These findings were replicated even when optimism and pessimism were included in the same fully adjusted model (work disability: HR 0.80, 95% CI 0.65-0.98 and 1.02, 0.81-1.28; return to work: HR 1.12, 95% CI 0.85-1.48 and 0.69, 0.50-0.96 for optimism and pessimism, respectively). Pearson correlation coefficient between optimism and pessimism scales was -0.35.

DISCUSSION

The results of this large prospective study of Finnish municipal workers show that optimism predicts the development of long-term work disability with a diagnosis of depression and both optimism and pessimism predicted the likelihood of returning to work.

To our knowledge, there are only two previous longitudinal studies on depression and separate effects of optimism and pessimism. In those studies, depression was either not predicted by optimism or pessimism (Robinson-Whelen et al., 1997) or was predicted only by pessimism (Chang and Bridewell, 1998). The result of the former study conflicts with the previous studies using uni-dimensional model for optimism and pessimism, where being in the optimism-end of the continuum has repeatedly been shown to be associated with a reduced likelihood of the development of depression (Carver and Gaines, 1987, Achat et al., 2000, Brissette et al., 2002, Giltay et al., 2006). A drawback in the latter study is that baseline depression symptoms were not evaluated which, in addition to the short follow-up time (six weeks), limits the longitudinal nature of the study. Our findings support the distinction

between optimism and pessimism as these concepts seemed to have different predictive validity on depression-related work disability outcomes. This finding is in agreement with a previous study showing that low optimism, but not high pessimism, predicts an increased likelihood of sickness absence after major negative life events (Kivimäki et al., 2005).

It is possible that lack of optimism predisposes to depression by weakening individual resources to cope with the burden of life and leads to longer periods of work disability. Previous studies have reported that childhood adversities (Korkeila et al., 2004), lower education, and discontinuous working history (Ellen et al., 2004) are all associated with decreased optimism and a higher probability of developing depression (Danese et al., 2009, Ritchie et al., 2009, Andersen et al., 2009). Thus, there are common risk factors behind both optimism and depression, and this could explain in part the increased depression-related work disability among those with low optimism. According to the study by Plomin et al. (1992), individuals with genetic propensity towards low optimism and high pessimism are also at risk for depression with heritability accounting about a third of the phenotypic associations between optimism, pessimism, and depression. High optimism is associated with lower levels of stress, increased social support (Brissette el al., 2002, Hakanen and Lindbohm, 2008, Bozo et al., 2009) and superior coping strategies (Scheier et al., 1994, Szalma, 2009, Fry, 1995), which all may protect against depression and its outcomes, such as increased rates of sick leaves and work disability. High optimism may enhance placebo effects (Geers et al., 2005, Geers et al., 2007, Morton et al., 2009, Brunoni et al., 2009) to the treatment interventions received. Furthermore, it is possible that a high level of optimism affects the person's own or treating physicians´ judgment on the working ability, which could lead to faster return to work after a depressive episode.

This study benefitted from a large sample size, longitudinal study design and high response rate (73%). Due to the use of extensive national health registers, there was practically no loss to follow-up. The severity of depression has previously been reported to associate with the risk and duration of sickness absence (Rytsälä et al., 2005, Bültman et al., 2006, Lerner and Henke, 2008, Lagerveld et al., 2010). Our outcome measures on risk of and recovery from depression-related work disability are clinically highly relevant and provide complementary evidence for studies based on self-report depression scales. However, our study population was relatively homogeneous and therefore our results cannot be generalized to non-European non-white populations. Despite the high response rate, we cannot exclude the possibility of selection bias. Although we excluded baseline respondents with evidence of previous or ongoing depression, it is possible that some individuals experienced subclinical depressive symptoms at baseline potentially introducing reverse causation bias with depression affecting optimism rather than vice verse.

In conclusion, this longitudinal study suggests that personality variables, such as optimism and pessimism are associated with the onset of depression-related work disability and returning to work. The level of optimism seems to be a stronger predictor of work disability with a diagnosis of depression than the level of pessimism**,** while both optimism and pessimism predicted returning to work. These findings may implicate that more emphasis should be put on supporting persons with low optimism or high pessimism in their efforts to return to work

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Table 1. Baseline characteristics and the risk of work disability due to depression and return to work.

		Optimism	Pessimism	Work disability 287 events	Return to work 164 events
	N (%)	mean (sd)	mean (sd)	HR (95% CI) [1)]	HR (95% CI) [1)]
All		2.73 (0.61)	1.45 (0.54)		
Sex		p<.001	p<.001		
Men	9269 (24)	2.67 (0.61)	1.48 (0.56)	1.00 (ref.)	1.00 (ref.)
Women	28945 (76)	2.75 (0.61)	1.44 (0.53)	1.56 (1.14-2.13)	1.07 (0.71-1.63)
Age		p=0.111	p<.001		
mean (sd)	44.4 (9.6)	0.008[2)]	0.042 [2)]	1.54 (1.34-1.77) [3)]	0.51 (0.43-0.61) [3)]
SES		p<.001	p<.001		
Manual	8029 (21)	2.61 (0.62)	1.63 (0.61)	1.00 (ref.)	1.00 (ref.)
Lower-grade non-manual	16919 (44)	2.74 (0.61)	1.45 (0.53)	0.80 (0.59-1.09)	1.86 (1.22-2.84)
Upper-grade non-manual	13156 (35)	2.80 (0.61)	1.33 (0.47)	0.73 (0.53-1.01)	1.76 (1.12-2.75)
Marital status		p<.001	p<.001		
Married/cohabiting	29155 (77)	2.74 (0.60)	1.43 (0.52)	1.00 (ref.)	1.00 (ref.)
Single	8630 (23)	2.71 (0.64)	1.52 (0.58)	0.82 (0.61-1.11)	0.85 (0.57-1.26)
Alcohol consumption/wk		p<.001	p<.001		
0-210g	34573 (91)	2.74 (0.61)	1.44 (0.53)	1.00 (ref.)	1.00 (ref.)
>210g	3479 (9)	2.69 (0.63)	1.50 (0.58)	1.53 (1.06-2.21)	1.01 (0.62-1.64)
Smoking		p<.001	p<.001		
No	30158 (81)	2.74 (0.61)	1.43 (0.52)	1.00 (ref.)	1.00 (ref.)
Yes	7235 (19)	2.70 (0.62)	1.52 (0.58)	1.27 (0.95-1.69)	0.86 (0.58-1.28)
Physical inactivity		p<.001	p<.001		
No	29107 (77)	2.76 (0.60)	1.42 (0.52	1.00 (ref.)	1.00 (ref.)
Yes	8937 (23)	2.63 (0.63)	1.52 (0.59)	1.21 (0.93-1.57)	0.80 (0.55-1.16)
Use of anxiolytics/hypnotics		p=.003	p<.001		
No	37495 (98)	2.73 (0.61)	1.45 (0.54)	1.00 (ref.)	1.00 (ref.)
Yes	719 (2)	2.67 (0.62)	1.52 (0.58)	4.12 (2.77-6.11)	1.30 (0.79-2.14)
Somatic disease		p<.001	p<.001		
No	33732 (88)	2.74 (0.61)	1.44 (0.53)	1.00 (ref.)	1.00 (ref.)
Yes	4482 (12)	2.70 (0.61)	1.51 (0.57)	1.41 (1.03-1.94)	0.77 (0.48-1.23)

[1)] Adjusted for age and sex
[2)] Pearson correlation coefficient
[3)] HR / 10 years

Table 2. The associations between optimism/pessimism and the risk of work disability and return to work.

	Model 1 HR (95% CI)	Model 2 HR (95% CI)	Model 3 HR (95% CI)
DEPRESSION			
Work disability (287 events)			
Optimism	0.75 (0.63-0.91)	0.77 (0.64-0.93)	0.79 (0.66-0.96)
Pessimism	1.19 (0.98-1.46)	1.15 (0.93-1.42)	1.11 (0.90-1.37)
Return to work (164 events)			
Optimism	1.37 (1.08-1.73)	1.29 (1.01-1.64)	1.30 (1.01-1.66)
Pessimism	0.65 (0.49-0.85)	0.68 (0.51-0.90)	0.66 (0.49-0.88)

Model 1 adjusted for age and sex
Model 2 adjusted for age, sex, SES and marital status
Model 3 adjusted for age, sex, SES, marital status, alcohol consumption, smoking, physical inactivity, use of anxiolytics/hypnotics and somatic disease

Figure 1. Cumulative hazard rates for work disability due to depression differed by optimism and pessimism scores

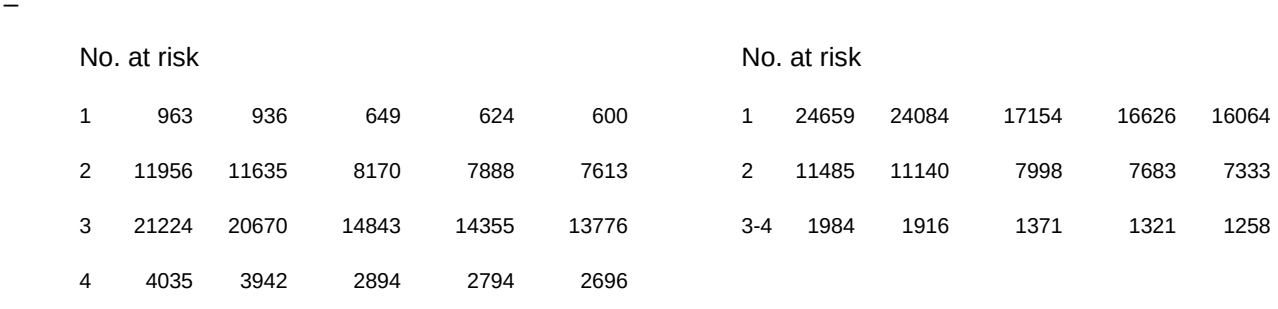

Figure 2. Cumulative hazard rates for return to work differed by optimism and pessimism scores

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No. at risk

1	13	13	11	9	9	7
2	103	101	69	42	36	30
3	151	145	97	73	56	40
4	20	20	12	7	6	4

No. at risk

1	174	169	110	74	59	45
2	93	90	64	45	36	27
3-4	20	19	14	11	9	9