The Associations Between Personality Characteristics and Absenteeism: a Cross-Sectional Study in Workers With and Without Depressive and Anxiety Disorders

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Abstract *Purpose* Although numerous studies have identified risk factors for sickness absence, few studies have addressed the role of personality characteristics in absenteeism. The aim of this study was to examine the associations of the Big 5 personality characteristics (neuroticism, extraversion, openness, agreeableness and conscientiousness) and locus of control with absenteeism, taking the presence of depressive and anxiety disorders into account. *Methods* Cross-sectional data from the baseline measurement of the Netherlands Study of Depression and Anxiety (NESDA) were examined. NESDA includes persons with current or remitted depressive and anxiety disorders and healthy controls, of which 1883 working participants were selected. Personality characteristics were included as predictor variables, short-term (0–2 weeks) and long-term (>2 weeks) absenteeism as outcome measure.

The presence of depressive and anxiety disorders was considered as modifying covariate. *Results* In healthy workers, high neuroticism, external locus of control, low extraversion, low agreeableness and low conscientiousness were associated with short-term absenteeism. In addition, high neuroticism, low extraversion and low openness were related to long-term absenteeism in healthy workers. In workers with psychopathology, similar associations were found for persons with this profile (high neuroticism, external locus of control, low extraversion and low conscientiousness) with long-term absenteeism, but no associations of these characteristics were found with short-term absenteeism. *Conclusions* Personality characteristics were significantly associated with work absenteeism in both workers with and without anxiety or depression. Interventions aimed at preventing sickness absence may focus on

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reducing neuroticism and strengthening extraversion, conscientiousness and locus of control.

Introduction

Sickness absence from work is an important public health and economic problem [1]. Besides incurring huge financial costs for society, for the Netherlands estimated at almost 20 billion Euros annually, being absent from work has important implications for the individual worker [2]. The ability to work is an important aspect of quality of life by providing meaningful activity, daily structure and social contacts [3, 4]. It is widely recognized that sickness absence is influenced by a wide variety of health-related, personal and job-related factors. Numerous studies have been conducted to identify those factors [5–8]. For example, being unmarried, experiencing psychosomatic complaints, using medication, having a burnout, suffering from psychological problems, having low decision latitude, having low job control, experiencing unfairness at work, work-family role conflict, and a lack of attentive managerial leadership were reported to be significant predictors for sickness absence [6, 9, 10].

In addition to these factors, specific personality characteristics of the worker may be associated with absenteeism. Although these associations have not been addressed in many studies, some personality characteristics have been shown to be predictors for other work outcomes than absenteeism [11, 12]. For example, an internal locus of control, emotional stability and self-efficacy were found to be positively associated with job satisfaction and job performance [13]. In addition, workers with high neuroticism, low self-esteem and an external locus of control, a combination that is often labelled as 'psychological vulnerability,' were found to have a greater risk of impaired functioning at work, regardless of the risk from any mental disorder [14]. Moreover, most of the costs of neuroticism are due to absenteeism, even after adjustment for mental and somatic disorders [15].

Knowledge on the specific associations of personality characteristics with absenteeism is important because it may contribute to the development of interventions aimed at preventing sickness absence. This knowledge will be particularly valuable for employers, occupational physicians (OPs) and other professionals working in occupational healthcare. It may support them in identifying workers at increased risk for (long-term) sickness absence and in determining the focus and intensity of interventions. When studying the associations between personality characteristics and absenteeism, mental disorders need to be taken into account as they are strongly associated with both personality characteristics and absenteeism [1, 16–20]. Of the associations between personality characteristics and mental disorders, particularly high neuroticism, low extraversion, low conscientiousness and low agreeableness have often been linked to mental disorders [19]. Together with openness these factors are referred to as the Big 5 personality domains and are assumed to represent core personality characteristics or 'traits' [19]. Whereas the Big 5 personality characteristics are known are the 'higher order' characteristics, locus of control, another important trait-like personality characteristic, might be perceived as one of the 'lower order' characteristics. Locus of control is the extent to which a person perceives the control or responsibility for events and ongoing situations in their lives in their own hands (internal locus of control) or in the hands of others or 'chance' (external locus of control) [14].

In the present study, the associations of the Big 5 personality characteristics and locus of control with absenteeism were examined, taking into account the effect of depressive and anxiety disorders. Data from the Netherlands Study on Depression and Anxiety (NESDA) were used in this study [21]. We built on previous findings from NESDA, in which current and remitted depressive disorders and current anxiety disorders were found to be associated with absenteeism [20]. Considering earlier findings that high neuroticism and external locus of control were found to be related to impaired work functioning, it could be expected that these factors would also be associated with absenteeism [14]. Moreover, the associations between personality characteristics and absenteeism could be expected to differ between workers with and without depressive and anxiety disorders. Given the strong associations between depressive and anxiety disorders and absenteeism, the influence of disorder-related factors might predominate in workers with a depressive or anxiety disorder, thereby reducing the influence of personality characteristics in these workers [20]. On the other hand, given the large impact of their disorder, workers with a depressive or anxiety disorders might be more vulnerable to other risk factors for absenteeism as well, thereby increasing the influence of a vulnerable personality. The objective of the present study was to examine the specific cross-sectional associations of personality characteristics with absenteeism in both workers with and without depressive and/or anxiety disorders.

Methods

Study Population

We examined cross-sectional data from the baseline measurement of NESDA. NESDA is a multi-site cohort study

among 2981 participants, examining the long-term course and consequences of depressive and anxiety disorders in adults. NESDA has been designed to be representative of those with depressive and anxiety disorders in different health care settings and different stages and to have a control group without a depressive or anxiety disorder. Therefore, the NESDA sample was set up to consist of persons with a current diagnosis of depressive disorder and/ or anxiety disorder, persons with remitted diagnoses, and healthy controls. Participants were recruited in the general population, in general practices, and in mental health organizations. Participants with depressive and anxiety disorders were recruited in all three of these settings, whereas healthy individuals were only recruited in the general population and the general practices. In the general practices a screening procedure was used, in which both screen-positives and a random selection of the screen-negatives were approached for a telephone interview and were invited for participation in the NESDA study. People from the general population were recruited in a cohort that was already available from a prior study. Participants in that cohort, both with and without depressive and anxiety disorders, were approached for participation in the NESDA study. In the mental health organizations, recruitment took place among newly enrolled patients who were diagnosed with a depressive or anxiety disorder [21]. Across the recruitment settings, uniform inclusion and exclusion criteria were used. A general inclusion criterion was an age of 18 through 65 years old. Persons with a primary diagnosis of psychotic disorder, obsessive–compulsive disorder, bipolar disorder or severe addiction disorder were excluded from NESDA, as well as those with insufficient command of the Dutch language. The NESDA study protocol, including ethical approval and the informed consent procedure, is described extensively elsewhere [21]. In the present study, 1883 NESDA participants with a paid job for more than 8 h a week were selected. Seven participants were excluded because of missing data on the outcome measure. Furthermore, 21 participants were excluded because of missing data on all independent variables, resulting in a study population of 1855 participants. Of these 1855 participants, 56.7 % was recruited from the general practice, 25.3 from the specialised mental health care, and 18.0 % from the general population.

Measures

Outcome Measure

The outcome measure absenteeism was defined as the number of work weeks absent in the past 6 months, as measured at baseline by the TiC-P [22]. This variable did not have a normal distribution and was therefore categorised, as done before in NESDA, into 3 categories: no absenteeism, short-term absenteeism (≤2 weeks) and long-term absenteeism (>2 weeks) [20]. By using this categorization, long-term absenteeism (which probably involves more chronic conditions and higher costs) was distinguished from short-term absenteeism (which is probably due to rather common health conditions such as the flu) and from no absenteeism [20, 23].

Predictor Variables

Personality characteristics were the predictor variables. The Big 5 personality characteristics were assessed with the NEO-FFI, measuring 5 domains of personality: neuroticism, extraversion, openness, agreeableness and conscientiousness. This questionnaire contains 60 items, 12 items per domain, measured on a 5-point scale [24]. Locus of control, defined as the extent to which a person perceives himself to be in control of events and ongoing situations, was assessed with the 5-item version of the Pearlin Mastery Scale, ranging from 5 to 25 [25]. Higher scores indicate more feelings of mastery, or an internal locus of control, whereas lower scores indicate a lower sense of mastery, or an external locus of control. The Cronbach's alpha's of the predictor variables were as follows: neuroticism .903, extraversion .839, openness .620, agreeableness .706, conscientiousness .808, and internal locus of control .872. The fact that openness and agreeableness had the lowest internal reliability is consistent with previous research and might result in lower correlations with other variables [26]. Personality characteristics were modestly to highly correlated with each other, with 4 out of the 15 correlations ranging between (−).500 and (−)1. The lowest correlation was between neuroticism and openness ($r = -.044$), the highest correlation was between neuroticism and internal locus of control ($r = -.704$). The personality variables were standardised into z-scores. All these variables are conceptualized as more or less stable and lifelong 'trait' characteristics.

Effect Modifiers

The modifying variables were the diagnoses of depressive and anxiety disorders. Depressive and anxiety disorders were established with the CIDI interview (WHO lifetime version 2.1), which were conducted by trained clinical research staff. The CIDI is a reliable, worldwide used instrument which classifies diagnoses according to the DSM-IV criteria [21]. Depressive disorders were classified in the categories current (6-month recency) depressive disorder and remitted depressive disorder, encompassing major depressive disorders as well as dysthymic disorders. Anxiety disorders were classified in current (6-month

recency) and remitted anxiety disorders, encompassing panic disorders, generalized anxiety disorders and social phobias.

Covariates

The following potential confounders were taken into account in the analyses: age, gender, education (in years attained), marital status, the number of dependent children (defined as the number of children living in the same household), the number of working hours per week, the number of somatic conditions and job characteristics. The number of somatic conditions was assessed with the chronic diseases interview, a 21-item face to face interview instrument that was designed for NESDA. In the chronic diseases interview, the presence of diseases and conditions such as asthma, chronic bronchitis or pulmonary emphysema, heart diseases or infarct, diabetes, stroke or CVA, high blood pressure, allergies, intestinal disorders, and arthritis is assessed. In addition, participants could mention up to 5 additional chronic diseases that were not listed yet [21]. Given the skewed distribution of this variable, it was dichotomized into (0) no somatic condition and (1) at least one somatic condition. Job characteristics were measured with the Job Content Questionnaire (JCQ), including job demands, decision authority, skill discretion, social support at work and job insecurity [27].

Statistical Analyses

Exploring the characteristics of the study population, differences between workers with a current disorder, a remitted disorder and those without a disorder were analyzed with ANOVA for continuous variables and χ^2 tests for categorical variables.

Since absenteeism was categorised into 3 categories, multinomial logistic regression models were used. The personality variables were analysed separately from each other, in separate regression models to avoid possible multicollinearity between personality variables that quite strongly correlate with each other. First, it was checked whether depressive and anxiety disorders acted as effect modifiers in the associations of the Big 5 personality characteristics and internal locus of control with the presence of short-term and long-term absenteeism. This was done by entering interaction terms between personality characteristics and depression/anxiety status to the models, that also included the main effects of personality and depression/anxiety status. In case of significant interaction terms ($p < .10$), subgroup analyses were performed in order to calculate separate odds ratios (OR) for the subgroups. It was checked whether the effects for workers with current psychopathology were similar to those for workers

with remitted psychopathology, by first performing the analyses separately for the current and remitted subgroups. If they showed similar results, the final subgroup analyses were performed for those without psychopathology (i.e. 'healthy workers') and for those with psychopathology (i.e. current and remitted depressive and/or anxiety disorders). Finally, the overall effect of personality characteristics was compared with that of job characteristics, by providing Nagelkerkes R^2 of both sets of variables. To calculate the overall R^2 for personality variables, all personality variables and socio-demographic variables were entered in one analysis simultaneously, whereas to calculate the overall R^2 for job characteristics, all job characteristics and socio-demographic variables were entered in one analysis simultaneously.

Results

Characteristics of the Study Population

Characteristics of the study population are shown in Table 1. Of the 1,855 participants, 55.1 % had a current depressive or anxiety disorder, 21.7 % had a remitted depressive or anxiety disorder, and 23.2 % had neither a current nor a remitted disorder. In the total study population, 44.9 % of the participants had had no absenteeism in the last 6 months, 28.4 % had had 0–2 weeks of absenteeism, and 26.7 % had had more than 2 weeks of absenteeism. Significant differences were found between workers with and without psychopathology on socio-demographics, absenteeism, personality variables, somatic health and job characteristics, with workers with psychopathology scoring least favourably.

The Associations of Personality Characteristics with Absenteeism

We examined whether the associations with absenteeism differed between workers with and without depressive and anxiety disorders by entering interaction terms (personality characteristic*yes/no depressive or anxiety disorder) into the analyses. Of the 12 interaction terms tested (6 personality characteristics and 2 yes/no depressive or anxiety disorder), the following interactions with depressive and anxiety disorders were found to be significant in predicting absenteeism: neuroticism ($p = .026$), agreeableness ($p = .008$) and internal locus of control ($p = .047$) in predicting short-term absenteeism, and openness ($p = .080$) in predicting long-term absenteeism. Given the statistical evidence for effect modification, subgroup analyses were carried out to explore the results in those with and without a depressive or anxiety disorder. Table 2 shows the associations of the Big 5

Table 1 Characteristics of the study population

	Current depressive or anxiety disorder (N = 1023)	Remitted depressive or anxiety disorder (N = 402)	No depressive or anxiety disorder (N = 430)	p value*
Socio-demographics				
Age	40.6 (11.2)	43.3 (11.1)	40.9 (12.9)	<.001
Gender (% male)	35.5	31.8	40.5	.033
Education in years attained	12.1 (3.3)	12.9 (3.1)	13.3 (3.1)	<.001
Marital status (% married)	37.0	42.5	44.0	.020
Number of dependent children	.61 (.92)	.74 (.97)	.59 (.96)	.036
Sickness absence				<.001
No absenteeism	32.0	54.0	67.2	–
≤2 weeks of absenteeism	30.1	30.6	22.1	–
>2 weeks of absenteeism	37.9	15.4	10.7	–
Big five personality characteristics (range 12–60)				
Neuroticism	40.5 (7.1)	32.4 (7.5)	26.6 (7.5)	<.001
Extraversion	34.9 (6.7)	39.3 (6.1)	42.6 (6.2)	<.001
Openness	38.1 (6.1)	38.8 (5.7)	37.9 (5.6)	.044
Agreeableness	42.8 (5.4)	44.2 (5.0)	45.4 (4.8)	<.001
Conscientiousness	40.5 (6.5)	43.5 (5.5)	45.3 (5.5)	<.001
Pearlin Mastery Scale (range 5–25)				
Locus of control	15.6 (4.0)	19.2 (3.6)	21.1 (3.2)	<.001
Somatic health				
% with at least 1 chronic condition	54.9	50.7	41.2	<.001
Job characteristics (range 0–1)				
Job demands	.50 (.35)	.50 (.32)	.43 (.34)	.004
Decision authority	.71 (.31)	.78 (.29)	.80 (.27)	<.001
Skill discretion	.69 (.28)	.77 (.26)	.80 (.24)	<.001
Social support at work	.65 (.31)	.72 (.28)	.77 (.27)	<.001
Job insecurity	.58 (.24)	.59 (.22)	.61 (.20)	.065

The numbers presented are means and standard deviations unless otherwise specified. Unstandardised values are reported

* ANOVA for continuous variables, χ^2 tests for categorical variables

personality characteristics and internal locus of control with absenteeism, adjusted for socio-demographics, number of working hours, somatic conditions and job characteristics. In workers with psychopathology, high neuroticism, low extraversion, low conscientiousness and external locus of control were associated with long-term absenteeism, but not with short-term absenteeism. In healthy workers, personality characteristics were associated with short-term as well as long-term absenteeism: all personality characteristics, except for openness, were associated with short-term absenteeism, and high neuroticism, low extraversion and low openess were associated with long-term absenteeism. In healthy workers, the overall effect of personality characteristics was larger than that of job characteristics, with Nagelkerkes R2's of respectively .202 and .132. For workers with psychopathology, the overall effect of personality characteristics was somewhat smaller than that of job

characteristics, with Nagelkerkes R^2's of respectively .101 and .108.

Discussion

Main Findings

This cross-sectional study showed that specific personality characteristics indicating psychological vulnerability were associated with both short- and long-term work absenteeism. The overall effect of personality variables was almost as large as that of job characteristics in workers with psychopathology, and even larger than that of job characteristics in healthy workers. In healthy workers, high neuroticism, external locus of control, low extraversion, low agreeableness and low conscientiousness were significantly

Table 2 Adjusted odds ratios for the associations of personality characteristics with absenteeism in subgroups with and without psychopathology

	Psychopathology (N = 1425)				No psychopathology (N = 430)			
	0–2 weeks		>2 weeks		0–2 weeks		>2 weeks	
	OR (95 % CI)	p	OR (95 % CI)	p	OR (95 % CI)	p	OR (95 % CI)	p
Neuroticism	1.076 (.898; 1.290)	.427	1.458 (1.204; 1.766)	<.001	1.747 (1.229; 2.484)	.002	2.150 (1.314; 3.518)	.002
Extraversion	.927 (.788; 1.092)	.365	.811 (.684; .960)	.015	.664 (.471; .935)	.019	.517 (.311; .857)	.011
Openness	1.042 (.886; 1.226)	.616	1.063 (.901; 1.255)	.468	1.002 (.740; 1.358)	.987	.599 (.378; .948)	.029
Agreeableness	1.038 (.886; 1.216)	.643	1.118 (.950; 1.315)	.181	.640 (.464; .884)	.007	.804 (.508; 1.275)	.354
Conscientiousness	.877 (.750; 1.027)	.103	.747 (.636; .879)	<.001	.713 (.519; .979)	.036	1.071 (.665; 1.726)	.778
Locus of control	1.011 (.851; 1.200)	.904	.744 (.625; .885)	.001	.634 (.433; .928)	.019	.689 (.400; 1.187)	.180

Reference category: no absenteeism

Analyses are adjusted for: age, gender, educational level, marital status, number of dependent children, number of working hours, somatic conditions and job characteristics

associated with short-term absenteeism. In addition, high neuroticism, low extraversion and low openness were related to long-term absenteeism in healthy workers. In workers with psychopathology, similar and significant associations were found for persons with this profile (high neuroticism, external locus of control, low extraversion and low conscientiousness) with long-term absenteeism, but no associations of these personality characteristics were found with short-term absenteeism. Low openess and low agreeableness were the only characteristics that were only associated with absenteeism in healthy workers.

Interpretation of Findings

The finding that several personality characteristics were not associated with short-term absenteeism in workers with psychopathology, whereas they were in healthy workers, suggests that in workers with psychopathology disorder-related factors may be more predictive for short-term absenteeism than personality, thereby diminishing the influence of personality characteristics. In these workers, personality characteristics were only associated with long-term absenteeism.

Of the personality characteristics, high neuroticism, low extraversion, low agreeableness and external locus of control were related to absenteeism in workers with psychopathology as well as workers without. In the present study, the importance of neuroticism in the association with sickness absence was confirmed, with neuroticism showing the largest associations with absenteeism in workers both with and without psychopathology. Our study demonstrated that the associations of neuroticism and extraversion with long-term absenteeism did not significantly differ in strength between healthy workers and those with psychopathology. Thus, regardless of whether a worker had a current or remitted depressive and/or anxiety disorder, high

neuroticism and low extraversion were correlated with long-term absenteeism. Furthermore, the associations that were found in a previous study between high neuroticism, external locus of control and impaired work functioning, were confirmed in the present study for the work outcome absenteeism [14]. The association between external locus of control and absenteeism that was found in the present study shows that the belief that one has about being able to control situations in general is related to the specific behavior of reporting sick at work. The relationship between low extraversion and absenteeism might be understood by looking at coping styles. In a previous review, high extraversion was found to be associated with engagement coping, which is dealing with or approaching the stressor or related emotions, and perhaps reporting sick at work can be perceived as a form of avoidance coping [28]. In another study, an avoidant coping style was indeed found to increase sickness absence [29]. The association that was found between low conscientiousness and absenteeism shows that workers with high responsibility, planning and persistence have less absenteeism than workers who score low on these aspects.

Low openness and low agreeableness were only associated with absenteeism in healthy workers. As described by Malouff et al., low openness reflects being conventional, rigid and not open to new experiences, while those low on agreeableness, score low on aspects such as modesty, compliance, co-operation and trust [19]. Persons with high agreeableness and high openness conform more to expectations and rules and are more flexible, and perhaps not reporting sick at work can also be perceived as conforming to expectations and reflecting flexibility. Low agreeableness and low openness in workers might also reflect having an own agenda, perhaps due to conflicts or dissatisfaction at the workplace, which may lead to increased absenteeism. The results of this study suggest that these aspects are

associated with absenteeism in healthy workers, and that in workers with psychopathology perhaps other factors, more related to the psychopathology, are of more importance.

Finally, some of the associations that were found between personality characteristics and absenteeism in the present study, might at least be partly explained by psychosomatic complaints that may not be (fully) captured by our measure of somatic complaints. For example, neuroticism has been shown to be associated with medically unfounded somatic complaints, which may also lead to absenteeism due to discomfort [15, 30]. In addition, factors such as job-related stress and job satisfaction may be mediating the associations between personality characteristics and absenteeism [31].

Strengths and Limitations

In this study, data from a large, naturalistic cohort study (NESDA) were used to examine the associations of the Big 5 personality characteristics and locus of control with absenteeism. The NESDA sample includes persons with current and remitted diagnoses as well as healthy controls, recruited from diverse settings. However, with depressed and anxious participants overrepresented, the study population is not a representative sample of the general working population, which limits the generalizability of the findings. On the other hand, a strength of the NESDA sample may be that it allows comparing the associations between personality and absenteeism across the full spectrum of depression and anxiety (from no disorders to those with a previous history to those with current disorders at different levels of severity and comorbidity).

Absenteeism was assessed by self-report, therefore, it is possible that depressed or anxious participants, or those scoring high on neuroticism, overestimated the number of absence weeks. This would result in an overestimation of the associations with absenteeism. Furthermore, we categorized absenteeism in short-term absenteeism (0–2 weeks) and long-term absenteeism (>2 weeks). This operationalization of absenteeism may be somewhat arbitrary. Studies on absenteeism often differ in the operationalizations of absenteeism, which reduces the comparability between studies [6, 32]. Moreover, data was only available on the total number of absence weeks, while data on the number of absence episodes and on the duration of those episodes were lacking. Therefore, absenteeism that was labelled as long-term, might as well have consisted of multiple, shorter episodes of absenteeism. The fact that we were unable to distinguish between long-term and frequent short-term absences, might have biased the results by overestimating the associations of personality with long-term absenteeism. For example, it might be possible that workers with particular personality characteristics might have a lower threshold to report sick than others, leading to frequent, short episodes, while reporting sickness for a long time may be more determined by the presence of a health condition such as a depressive or anxiety disorder. Furthermore, in this study cross-sectional data were used, which limits us to reporting associations between personality and absenteeism instead of causal relationships. Moreover, axis 1 psychopathology and personality characteristics were simultaneously assessed, while the reliability and validity of personality assessment during acute axis 1 psychopathology are topic of widespread debate [33–35]. If personality scores are partly explained by axis 1 psychopathology, then the unique contribution of that personality characteristic would diminish after correcting for axis 1 psychopathology. However, Costa et al. argued that it is not the question whether personality assessments during axis 1 psychopathology are accurate, but when they are accurate. Following that line of reasoning, personality assessment in a patient who suffers a depressive episode provides valuable information on the patient's personality in the midst of a depression, but will be accurate only as long as the patient is depressed [34]. This suggests a need for separate analyses for those with and without axis 1 psychopathology. In the present study, subgroup analyses are performed when statistical evidence for effect modification was found, and in those analyses indeed, personality did explain less of the variance in absenteeism in workers with a depressive or anxiety disorder.

Practical Implications and Further Research

Absenteeism is a complex, multifactorial phenomenon, that has, particularly in case of long-term absenteeism, negative consequences for the individual worker as well as for society. The findings of the present study suggest that in healthy workers as well as in workers with psychopathology, personality characteristics are associated with absenteeism. These findings may be taken into account in the development of interventions aimed at preventing sickness absence and in the sickness certification of sick-listed workers. Although personality characteristics are assumed to be relatively stable and it should not be expected that current interventions are able to substantially change personality characteristics, Cuijpers et al. [15] commented that we should not be too pessimistic about the possibility to intervene on these characteristics and that further studies need to examine this. Malouff et al. [19] noted as well that researchers might want to explore whether targeting these traits in treatment adds anything to the usual treatment, which often focuses on alleviating neurosis-related problems. Thus, for workers both with and without psychopathology, interventions aimed at preventing sickness absence may focus at reducing neuroticism and strengthening extraversion, conscientiousness and locus of control.

A problem solving approach, aimed at strengthening the worker's active problem solving skills and increasing the internal locus of control, may help in the prevention of (long-term) sickness absence [29, 36, 37]. While reporting sick can be perceived as a form of avoidance coping, being absent from work may further reinforce avoidance behaviour and hamper return to work, which underlines the importance of focusing on problem solving skills. In addition, although the subtle cross-sectional differences between healthy workers and workers with psychopathology in the associations between personality and absenteeism may not be a convincing argument for developing separate interventions, for healthy workers focusing on openness and agreeableness might benefit as well. On the other hand, perhaps a substantial change in these personality characteristics does not even need to be the purpose of interventions. To prevent sickness absence, interventions may also be specifically tailored to workers with for instance high neuroticism and an external locus of control. In that case, preventive interventions need to focus on dealing with problems that may often be encountered by workers with high neuroticism or external locus of control due to their vulnerability to stress and perceived lack of control. Also, interventions aimed at preventing stress-related illnesses may be provided to workers with a vulnerable personality, since vulnerable personalities are associated with higher job-related stress as well, which may lead to more absenteeism [31]. Furthermore, in order to prevent long-term sickness absence, OPs and employers need to pay extra attention to workers with a vulnerable personality, since these workers will most likely benefit from an early intervention. Employers also need to be alert to workers with low openness and low agreeableness, as they may be at increased risk for absenteeism. Further research may focus on the influence of personality characteristics and depressive and anxiety disorders on return to work. Like absenteeism, return to work after a long-term sickness absence is often conceptualized as a complex behaviour, influenced by multiple factors [7, 38].

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