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Behavioral Determinants as Predictors of Return to Work After Long-Term Sickness Absence: An Application of the Theory of Planned Behavior

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Abstract *Background* The aim of this prospective, longitudinal cohort study was to analyze the association between the three behavioral determinants of the theory of planned behavior (TPB) model—attitude, subjective norm and self-efficacy—and the time to return-to-work (RTW) in employees on long-term sick leave. *Methods* The study was based on a sample of 926 employees on sickness absence (maximum duration of 12 weeks). The employees filled out a baseline questionnaire and were subsequently followed until the tenth month after listing sick. The TPB-determinants were measured at baseline. Work attitude was measured with a Dutch language version of the Work Involvement Scale. Subjective norm was measured with a self-structured scale reflecting a person's perception of social support and social pressure. Self-efficacy was measured with the three subscales of a standardised Dutch version of the general self-efficacy scale (ALCOS): willingness to expend effort in completing the behavior, persistence in the face of adversity, and willingness to initiate behavior. Cox proportional hazards regression analyses were used to identify behavioral determinants of the time to RTW. *Results* Median time to RTW was 160 days. In the univariate analysis, all potential prognostic factors were significantly associated ($P < 0.15$) with time to RTW: work attitude, social support, and the three subscales of self-efficacy. The final multivariate model with time to RTW as the predicted outcome included work attitude, social support and willingness to expend effort in completing the behavior as significant predictive factors. *Conclusions* This prospective, longitudinal cohort-study showed that work attitude, social support and willingness to expend effort in completing the behavior are significantly associated with a shorter time to RTW in employees on long-term sickness absence. This provides suggestive evidence for the relevance of behavioral characteristics in the prediction of duration of sickness absence. It may be a promising approach to address the behavioral determinants in the development of interventions focusing on RTW in employees on long-term sick leave.

Keywords Return-to-work · Long-term sickness · Absence · Work · Behavior

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Introduction

Over the past decade, many determinants of work disability and return-to-work (RTW) have been identified. Several studies show that sickness absence and RTW need to be understood as a multifactorial phenomenon, influenced by personal, social and economic factors [1–3]. However, it still seems to be difficult to predict who returns to work after long-term sickness absence [3]. Return to work can be conceptualized as a complex human behavior change, with the employee taking the final decision to RTW [2]. Behavioral models can be used to understand the behavioral change construct and to investigate the determinants of RTW-related behavior among sick-listed workers.

One of the most influential models of behavior change is the theory of planned behavior (TBP) [4, 5]. This TPB model (Fig. 1) states that people's health-related behavior is based on their intention to perform that behavior. This behavioral intention is in itself influenced by attitudes (the positive and negative evaluation of the expected outcome of a certain behavior), subjective norms (the belief about what others think of the behavior, as derived from the behavior and/or direct feedback of significant others), and perceived behavioral control (the degree to which an individual believes that the behavior is under his or her control). Behavioral intention is considered as a mediating factor in the association between attitude, subjective norm, and perceived behavioral control on the one hand and behavior on the other hand. The perceived behavioral control is strongly related to the concept of Self-efficacy, which is generally defined as confidence in being able to carry out a set of specified activities [6]. Self-efficacy has recently been highlighted in the RTW literature as playing an important role in the RTW process [3, 7]. The TPB has been extensively applied to health-related problems such as smoking prevention, alcohol consumption, safe sexual behavior, health screening attendance, exercise, healthy food choice, breast and testicle self examination, and safe driving [8–11]. Meta-analytic reviews of studies using the TPB have supported its ability to predict these behaviors [11]. Despite its use for health-related behaviors, the application of the TPB to RTW behavior change is very limited. In the work context, a few studies have been found using the TPB model (or the derived ASE-model (Attitude, Social influence and self-Efficacy) [12], in developing preventive interventions to reduce occupational injuries and health problems [13–15]. Furthermore, several studies showed that a positive attitude to RTW [16–18], high social support [16, 19] and a high level of self-efficacy [3, 20] are all positively associated with RTW.

Up to now, the specific association between the three determinants—attitude, subjective norm and self-efficacy- and the time to RTW using a multifactorial model has not been studied. The aim of this longitudinal cohort study was to analyze the association of these three behavioral determinants of the TPB-model and the time to RTW in employees on long-term sick leave.

Methods

Data from the recently performed prospective cohort study on return to work in employees on long-term sickness absence [21, 22] were used to examine the effect of behavioral factors on the time to RTW in employees on long-term sick leave, during 10 months follow-up.

Design and Study Population

In 2002, employees on sick leave with different types of symptoms were recruited from occupational health services (OHSs) covering three large regions in The Netherlands [21, 22]. During an inclusion-period of 6 months, 3,918 employees, who were absent for a maximum of 12 weeks and had received a problem analysis (i.e., a Dutch mandatory description of the (dis)abilities of the employee) from their Occupational Physician were sent a letter by the OHS in which they were invited to participate in the study. The letter also explained the purpose and the general outline of the study. The voluntary nature of participation and

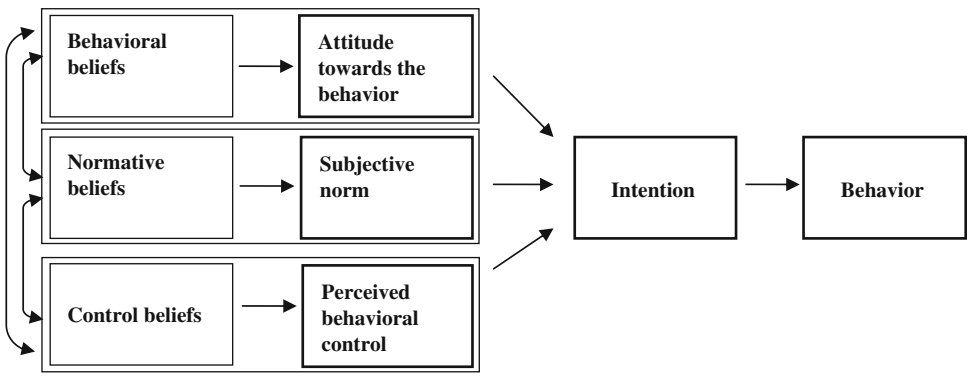

Fig. 1 Theory of planned behavior model (5)

anonymity of responses was guaranteed. Employees who did not respond within 2 weeks received a written reminder.

Procedure and Measures

A baseline questionnaire was administered at study entry. The questionnaire included items on socio-demographics (age, gender, educational level), type and severity of symptoms, health- and behavioral determinants and the time to RTW. Educational level was operationalized as very low (no education or primary school), low (lower vocational education or lower secondary school), medium (intermediate vocational education or upper secondary school) and high (upper vocational education or university). The employees were divided into three groups based on the type of symptoms presented in the baseline questionnaire as the reason for sickness absence: musculoskeletal symptoms, other physical symptoms and mental symptoms. The categorization was done with the International Classification of Functioning, Disability and Health (ICF) checklist of the WHO. Further description of this procedure has been reported elsewhere [22]. Besides the type of symptoms, employees were asked to score the intensity of the symptoms on the moment of sicklisting on a visual analogue scale ranging from not severe (0) to very severe (100).

The TPB-determinants were measured with different questionnaires. Work attitude was measured with a Dutch language version of the work involvement scale (WIS-DLV) [23], reflecting the degree to which a person wants to be engaged in work. The questionnaire consists of six items with responses on a 1–4 point scale (strongly disagree, disagree, agree, strongly agree). Higher scores on the WIS-DLV indicate more positive attitude towards work. The internal consistency (Cronbach alpha) of the WIS-DLV in the present study was 0.67.

Subjective norm was measured with a self-constructed standardized scale which consisted of two subscales. One subscale reflecting a person's perception of social support from family, friends, supervisor and co-workers, care-givers, and community regarding RTW and the other subscale reflecting a person's perception of social pressure from family, friends, supervisor and co-workers, care-givers, and community regarding RTW. The 'social support' scale includes 12 items; each item is preceded by the question "How much support did you receive during your period of sickness from…" with responses on a 1–4 point scale (no support, little support, much support or not applicable). The 'social pressure' scale consists of seven items; each item is preceded by the question "Do you perceive pressure to return to work from…", with dichotomous response possibilities (yes/no). Items from each subscale are summed up resulting in subscale scores. The internal consistency (Cronbach alpha) of social support and social pressure in the present study were 0.75 and 0.71, respectively. A Pearson correlation between both subscales of $r = -0.05$ was found, supporting the independence of the subscales.

Self-efficacy was measured with the standardised Dutch version of the General self-efficacy scale [24], assessing the subjects' expectations of their general capacities [25]. This 16-item questionnaire incorporated three subscales: willingness to expend effort in completing the behavior, persistence in the face of adversity, and willingness to initiate behavior. We decided to use the three subscales in the analyses instead of the sum score, to reflect the different dimensions of this concept. The reliability and construct validity of the scale are satisfactory [24]. Confirmatory factor analyses supported the three-factor structure of the ALCOS [24, 26]. In this study, the internal consistency (Cronbach alpha) was 0.80 for willingness to expend effort in completing the behavior, 0.70 for the persistence in the face of adversity, and 0.73 for the willingness to initiate behavior scale.

To monitor RTW, employees were followed until the 10 month after listing sick. Due to the lack of accurate information in the computerized files of the OHSs about RTW dates, we decided to measure RTW by asking the participants about RTW. Follow-up questionnaires were sent 9.5 months after listing sick. RTW was measured by two questions. Firstly, employees had to indicate their current work status: full RTW, partial RTW or being on full sick leave. Full RTW was defined as working the same number of hours as in the initial work contract. Secondly, employees who indicated to have returned to work had to write down the exact RTW date. If the respondent had not written down the RTW date or the respondent was lost to follow up, the RTW date of the OHSs was used as a proxy for calculating the time to RTW.

Data Analysis

Kaplan–Meier survival analysis and Cox proportional hazards regression analyses were used to model the effect of the independent variables on time to RTW, which was defined as the time between sickness absence identification by the OHS and first full RTW. The Kaplan–Meier survival analysis was performed to calculate the median time to RTW for the whole group. Following Krause et al. [16] we refer to the hazard ratio as a relative RTW rate as we are modelling a positive outcome (RTW) instead of a negative outcome (sickness absence), which makes the term 'hazard' confusing. Prognostic variables, except social pressure, were dichotomized into "low" and "high" based on the median split [16]. Social pressure was transformed into low pressure (score 0) and high pressure (score 'yes' on one item or more) because of little variance. For all variables the low group was used as reference group. A

relative RTW rate higher than one reflects a shorter duration of sickness absence relative to the reference group.

With respect to the univariate and multivariate analyses, the Cox's proportional hazards model was used to study the prognostic factors for the time to RTW. First, the relationship between the outcome and each potential prognostic factor was assessed. Age, gender, level of education, time to identification by the OHS and intensity of symptoms were included as control variables. For the multivariate regression analysis all prognostic factors which were statistical significant at the $P < 0.15$ level in the univariate analyses were included in the model. Next, variables were omitted by backward selection, depending on their level of statistical significance ($P < 0.10$). Subsequently, we separately added the potential predictor variables to the multivariate model which were not statistically significant in the univariate analysis to determine their association with the outcome measure in the presence of other prognostic factors.

The proportional hazards assumption was graphically checked by plotting the "log minus log" survivor function. All analyses were performed with SPSS for Windows 14.0 [27].

Results

Study Population

In total, 1,170 employees (30%) returned the consent form after which the baseline questionnaire was sent. For all non-respondents, information on age, gender and region of the OHS was available. A non-response analysis showed that respondents were 2.8 years older than non-respondents (95% CI 2.16–3.61, $P = 0.00$), but did not differ according to gender or region of the OHS. The baseline questionnaire was completed by 1,004 (86%) employees. After completion, 78 employees were excluded from the study for various reasons: 38 employees had not received a problem analysis from their OP or this problem analysis was wrongly administered, 15 employees provided a date of sickness absence that deviated considerably (more than 6 months) from the date provided by the OHSs and eight employees were on sick leave due to pregnancy-related health symptoms. Because of maternity leave it was not possible to calculate the time to return to work for this group. Five employees had already returned to work before the OHS identified them as possible participants for the study. For nine employees who had returned to work the date of return was not available and three employees were excluded because it was obvious they could not have filled out the questionnaire in a reliable way (e.g., the employee reported he/she did not have the Dutch language skills required). The final sample consisted of 926 employees.

Baseline Characteristics

The characteristics of the study sample are presented in Table 1. The sample consisted of 466 (50%) men and 460 (50%) women. The mean age was 45.8 years (SD 9.5) with a range from 18 to 63 years. With respect to education level, 8% of employees had a very low level of education, 33% had a low level of education, 30% had a medium level, and 30% had a high educational level. The three subgroups based on the type of symptoms comprised 352 employees who reported 'musculoskeletal symptoms, 256 employees who reported 'other physical symptoms' and 235 employees who reported 'mental symptoms'. Of a subgroup of 55 employees the type of symptom has not be described, because in the study of Post et al. [22] this group was excluded for the analyses. Descriptives of the three symptom subgroups have been presented elsewhere [22].

At the end of the study period 598 employees (65%) had returned to work, whereas, 257 employees (28%) were still sick-listed. Seventy-one employees (8%) were lost to follow up and were thus coded as censored cases for the analyses. For the 74 employees who had returned to work and had not written down the date of RTW, we used the proxy date of RTW provided by the OHSs. The median time from identification by the OHSs to RTW was 160 days (Fig. 2).

Predictors for RTW

The results of the uni- and multivariate analyses are presented in Table 2. In the univariate analysis four potential prognostic factors were significantly associated ($P < 0.15$) with the time to RTW after control for age, gender, level of education, time to identification by the OHS and intensity of symptoms: work attitude, social support, and the three subscales of self-efficacy—willingness to expend effort in completing the behavior, persistence in the face of adversity, and willingness to initiate. After applying the backward selection procedure ($P < 0.10$), three factors remained in the multivariate model: work attitude (HR 1.19, 95% 1.00–1.52, $P = 0.05$), social support (HR 1.23, 95% CI 1.04–1.47, $P = 0.02$), and willingness to expend effort in completing the behavior (HR 1.42, 95% CI 1.17–1.74, $P = 0.00$). Separately adding the social pressure variable to the multivariate model which was not statistical significant in the univariate analysis did not result in the inclusion of this factor in the model.

Discussion and Conclusion

The results of this study show that high work attitude, high social support (subscale of subjective norm) during sickness absence and high willingness to expend effort in

Table 1 Characteristics of the study sample ($n = 926$)

	N (%)	Median (IQR)	Mean (SD)
Sex (male)	466 (50)		
Age (in years)			
18–34	127 (13.7)		
35–44	250 (27.0)		
45–54	362 (39.1)		
55–64	187 (20.2)		
Educational level			
Very low	74 (8.1)		
Low	299 (32.8)		
Medium	269 (29.5)		
High	270 (29.6)		
Duration to identification by the OHS (4 categories; days)			
0–42	218 (23.9)		
43–54	235 (25.7)		
55–70	232 (25.4)		
≥71	229 (25.1)		
Severity of complaints (0–100)			74.9 (18.6)
Work attitude (high)	437 (48.1)	19 (17–21)	
Subjective norm			
Social support (high)	419 (48.2)	20 (17–23)	
Social pressure (high)	329 (35.5)		
Self-efficacy			
Willingness to expend effort in completing a behavior (high)	396 (44.2)	24 (22–28)	
Persistence in the face of adversity (high)	426 (47.3)	15 (12–18)	
Willingness to initiate behavior (high)	424 (47.6)	25 (22–28)	

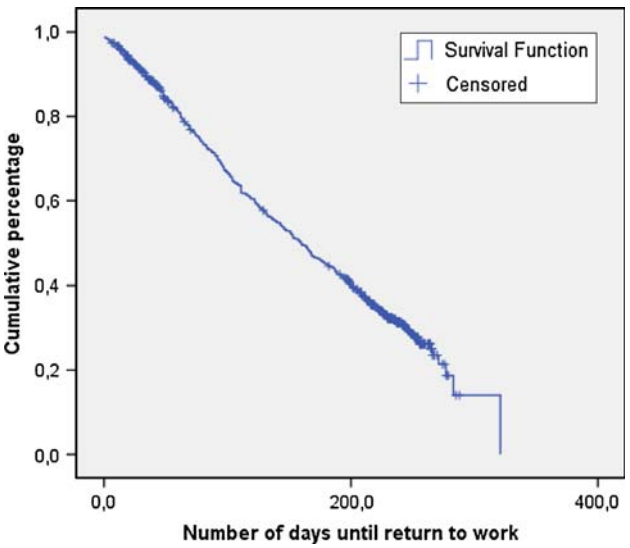

Fig. 2 Kaplan–Meier curve: cumulative percentage of RTW

performing a specific behavior (subscale of self-efficacy measure) were significantly associated with a shorter time to RTW. Moreover, the study suggests that using the TPB-model, may be a promising approach to better understand the duration of sickness absence and the time to RTW.

The results of this study provide suggestive evidence for the usefulness of the TPB-model in the prediction of the time to RTW in long-term sickness absence, because three of the three behavioral factors were statistically associated with the outcome. It should be noted that this is a first explorative study using the TPB-model. However, conceptually similar variables in relation to the TBP have been examined extensively in previous studies. For example, in a review of Krause et al. [1], the three determinants of the TPB-model have all been described separately as predictors for the duration of disability and RTW: higher levels of *attitudes*, *beliefs* and *expectations*, and perceived *social support* of supervisor and colleagues resulted in shorter disability endurances.

Focusing on conceptual similar variables it is intesting to see the differences in concepts used for measuring work attitude. In the TPB-model attitude is defined as 'the positive and negative evaluation of the expected outcome of a certain behavior' [5]. In the review of Krause et al. [1], studies about attitude were split up in groups which used different definitions of attitude: (1) individual prediction of continued disability, which prolonged duration of work disability [28–30], (2) perception of inability to change job, which prolonged duration of work disability [30], and (3)

Table 2 Results of Cox's proportional hazard analyses

Outcome time to RTW[a]	Univariate RTW			Multivariate RTW		
	HR[b]	95% CI	*P* value	HR	95% CI	*P* value
Sex (female)	0.87	0.74–1.02	0.09			
Age (4 categories) years						
18–34	1.00		0.66			
35–44	1.01	0.78–1.32	0.95			
45–54	0.90	0.70–1.16	0.95			
55–64	0.95	0.72–1.26	0.72			
Educational level (4 categories)						
Very low	1.00		0.02			
Low	1.10	0.72–1.52	0.57			
Medium	1.06	0.76–1.47	0.73			
High	0.80	0.57–1.11	0.18			
Duration to identification by the OHS (4 categories) days						
0–42	1.00		0.82			
43–54	1.00	0.80–1.25	1.00			
55–70	0.98	0.78–1.23	0.85			
≥71	0.90	0.71–1.15	0.41			
Subjective severity of complaints[c]	0.91	0.87–0.95	<0.00			
Work attitude (high)	1.19	1.01–1.40	0.03	1.19	1.00–1.52	0.05
Subjective norm						
Social support (high)	1.12	0.94–1.32	0.14	1.23	1.04–1.47	0.02
Social pressure (high)	1.14	0.95–1.39	0.16			
Self-efficacy						
Willingness to expend effort in completing a behavior (high)	1.49	1.26–1.77	0.00	1.42	1.17–1.74	0.00
Willingness to initiate behavior (high)	1.26	1.06–1.48	0.01	1.09	0.89–1.52	0.40
Persistence in the face of adversity (high)	1.10	0.93–1.31	0.25			

All analyses on the behavioral determinants are adjusted for age, level of education, time to identification by the OHS and severity of complaints

[a] The reference category for each indicator is the contrast (male vs. female)

[b] A HR of >1 indicates a shorter time to RTW

[c] HR for every 10 points extra on a scale from 0 to 10

understanding of medical condition, which shortened the duration of work disability [31]. In the intervention study of Arnetz [17], attitude was assessed by asking reasons why the respondents had chosen to RTW (after 6 months follow-up). Arnetz et al. [17] used specific questions about attitude to RTW, in our study we used a questionnaire which contains rather general statements about work attitude. Although the results of the present study are strongly related to results of other studies [16, 17], in further research it is recommendable to explore the theoretical construct of work attitude to RTW and to identify the specific definition of attitude to RTW which should be used.

In the present study only a significant association between one self-efficacy subscale (willingness to expend effort) and time to RTW was found in the multivariate model. The other two subscales were significantly associated with the time to RTW in the univariate model. Labriola et al. [3] and Lötters et al. [32], however, found no statistically significant association between self-efficacy and sickness absence or RTW. A companion construct of self-efficacy, self-reported outcome expectancy as the belief of the injured worker's ability to resume work, has repeatedly been shown to be an important predictor of RTW [2, 7, 16, 33].

By exploring the theoretical construct of self-efficacy, Shaw and Huang [7] and Lackner et al. [33] both emphasize the multiple dimensions of the construct. Shaw and Huang [7] defined self-efficacy expectancies in two primary constructs: self-efficacy resuming physical activities and self-efficacy for resuming work. Lackner et al. [33] discriminate between pain efficacy expectations (i.e., the ability to tolerate or control pain) and functional self-efficacy expectations (i.e., the ability to execute or achieve tasks of physical performance). In the present study, but also in the studies of Labriola et al. [3] and Lötters et al.

[32], we did not take into account the multiple dimensions of self-efficacy. In future research it would be of interest to assess the multiple dimensions of self-efficacy and to investigate the association between these dimensions with the time to RTW.

With regards to subjective norm, evidence for the association between social support and RTW has been provided in this study and other studies [16, 19]. In this study, social pressure was not associated with the time to RTW. Most respondents reported no pressure from family, friends, supervisor and co-workers, care-givers and community regarding RTW. If pressure to RTW was perceived, it was mostly from supervisors. In this study we were not able to analyze the association between social pressure of the supervisor with the time to RTW because of limited data.

To understand the employee's decision-making and behavioral change processes regarding RTW, the individual can be conceptualized as progressing through stages of change. Theories focusing on these behavioral change processes are the readiness for change model [34, 35] and the phase model of occupational disability [36]. Franche and Krause [2] proposed the readiness for change model for RTW, focusing on the stages of change in the behavior of returning to work after an injury or illness, by combining elements from both theories. This model may give more insight than the TPB-model in the role and influence of behavioral determinants in a specific phase or stage of sick leave and may provide more appropriate intervention and/or management tools for the RTW process of sick listed employees.

The strengths of our study are its prospective design, the sample of long-term sick-listed workers and the use of different behavioral determinants in a multivariate model. Furthermore, our findings demonstrate the potential usefulness of addressing behavioral determinants in the development of interventions focusing on return to work in employees on long-term sick leave.

By conceptualizing RTW as a complex human behavioral change, we decided to use the TPB-determinants to investigate the relationship with respect to the time to RTW behavior. In the TPB-model it is assumed that 'intention to change' and the specific behavior are primarily determined by attitudes, subjective norm and self-efficacy. Moreover, the model postulates that intention predicts the behavior [37]. However, the behavior is not determined by the intention only. It also depends on barriers and facilitators and on the knowledge and skills needed to achieve a certain behavior [12, 38]. In this study, we have assessed the three behavioral determinants and the RTW-behavior; no specific information about possible barriers or facilitators was available. Furthermore, because we did not measure the intention, we could not examine the intention to change compared to the actual RTW behavior.

A second limitation is the measurement of the behavioral determinants. Due to the lack of a 'gold standard', we used questionnaires to assess work attitude and self-efficacy in general. Although several studies have shown that the work involvement scale (work attitude) and the general self-efficacy scale (ALCOS) are reliable and valid instruments for measuring work attitude and self-efficacy [23, 24], they are not developed as instruments to be used in the RTW-process. This may have influenced the validity of our results, because the possibility of bias is greater for the questions that are of a more general nature [16], and may yield different results compared to more specific questionnaires. In the present study, we used a general self-efficacy questionnaire to predict RTW next to other determinants of the TPB model. Further research should be directed towards the development and validation of an instrument to measure self-efficacy specific to RTW.

Another issue pertains to the possibility of selection bias due to non-response which was rather high. This might be due to the lack of information in the computerized files of the OHS through which the participants were selected and contacted [21]. Certain groups of employees could not be excluded at the OHS (language problems, pregnancy, sheltered workplaces). These employees received an information letter, while they normally would not have been contacted. Furthermore, the information letters were sent by the OHS because of stringent privacy regulations. This might have influenced the response rate in a negative way as some employees might have felt hesitant to participate in a study which was initiated by the OHS.

The sample of this study consisted of sick listed employees with several types of health symptoms. While the behavioral process of RTW might vary across different conditions, it would be of interest to investigate whether the expectation about recovery (as related to the type of symptom) influences the relationship between the behavioral determinants and the time to RTW. For example, are there differences in the magnitude (Hazard Ratio's) of behavioral determinants on the outcome time to RTW in employees with symptoms that are expected to fully recover (e.g., upper respiratory track infections), symptoms that are expected to persist over time (e.g., musculoskeletal condition) or symptoms that might be expected to deteriorate over time (e.g., cancer). In the previous study of Post et al. [22], subgroup analyses showed differences between the subgroups on several health related determinants associated with the time to RTW. Detailed subgroup analyses in the behavioral determinants were out of the scope of the present study, but would be an interesting topic for future research.

In conclusion, this prospective, longitudinal cohort-study showed that social support and willingness to expend effort in completing the behaviour are significantly

associated with a shorter time to RTW in employees on long-term sickness absence. This provides suggestive evidence for the relevance of behavioral characteristics in the prediction of duration of sickness absence. It may be a promising approach to address the behavioral determinants in the development of interventions focusing on RTW in employees on long-term sick leave. Future research might focus on the influence of the type of symptom as a moderator on the association between the behavioral determinants and the time to RTW.

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