

ORIGINAL ARTICLE

Does motivation predict return to work? A longitudinal analysis

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Abstract

Objectives: Motivation for return to work (RTW) reflects the degree of willingness to resume work activities and has been shown to be a crucial factor in long-term work disability. The satisfaction of basic psychological needs and motivation as described by the Self-Determination Theory (SDT) yield associations with outcomes such as quality of life and job satisfaction. The current study is the first study to examine whether motivation and basic psychological needs are predictive for RTW outcomes at 1-year follow-up.

Methods: About 349 people with a work disability (mean = 131.32 days off work) participated in this observational longitudinal research. Quality of motivation (MAWS) and basic psychological need satisfaction and frustration (BPNSFS) were measured at baseline. At 12-month follow-up, differences in RTW were assessed in terms of (1) time until RTW, (2) partial RTW, (3) relapse within 12 months, (4) work disability longer than 12 months. Binary logistic and cox regression analyses were used.

Results: Controlled motivation regarding the former job was related to shorter time until RTW. Autonomous motivation and amotivation did not seem predictive for RTW variables. The frustration of the basic needs was related to a longer work disability, need satisfaction was not related to the RTW variables. No significant predictors for relapse and partial RTW were found.

Conclusions: The frustration of basic psychological needs was predictive for a longer work disability. Controlled motivation on the other hand predicted faster RTW, which was an unexpected direction. SDT seems to have predictive value, yet underlying mechanisms remain unclear.

KEYWORDS

motivation, return to work, self-determination theory, work disability

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1 | INTRODUCTION

Motivation for return to work (RTW) reflects the degree of willingness to resume work activities and has been shown to be a crucial factor in work disability. We see that, in the last decades, the number of studies on the predictive value of motivation is growing, and this is visible in a variety of research domains, such as the medical and health domain, social sciences, education and pedagogical research, performance and sport, work and organizational studies, and so forth. A major part of this recent empirical work is based on the Self-Determination Theory (SDT).¹ In the current study, we will examine the predictive value of motivation as defined by SDT in the context of RTW in a sample of work-disabled individuals.

1.1 | Long-term work disability

Long-term work disability is a growing worldwide problem. In 2012 the percentage of sick-leave spending in Europe was about 1% of the gross domestic product (GDP). This percentage has been slightly increasing since then.² Long-term work disability does not only involve a high cost for society or the employer, but also for the individual. Work disabled people are particularly vulnerable to the negative effects of unemployment due to additional loss of life structure, personal purpose and financial strain.^{3,4} In addition, a longer time until RTW is associated with deteriorating psychological health⁵ and physical deconditioning.⁶

Returning to work from work disability is complex. In the current study RTW is seen as a decision-making process that is influenced by behavioral concepts.¹⁶ Previous research indicates that diagnostic factors only explain 10% of the variation in work disability. Hence, focusing on symptom management alone is not sufficient to predict who will RTW.^{7,8} Besides symptom management, RTW requires motivation and behavioral change from the work disabled.⁹ Given the fact that working after disability requires significant change and day-to-day management

of the individual itself, RTW will unlikely occur in the absence of significant motivation or readiness to retain work activities.^{10–15} There is a need to test the effects of the motivational determinants on the time until RTW.¹⁶ Hereby, RTW in Belgium is seen as a return to the labor market, that is to the previous employer, a new employer or registering for unemployment. This RTW is usually the resumption of full hours but can also be done via a part-time intermediate step according to the Belgian social security system. What is often overlooked in RTW literature is the relapse in work disability after RTW, this variable will therefore be included in the current study.

1.2 | Motivation

Motivation is derived from the Latin verb “*movere*,” which means “to set in motion.” It reflects the desire to engage in certain behavior. The Self-Determination Theory (SDT) has been put forward as the most comprehensive motivational theory of the last decades.^{16,17} SDT states that people are proactive creatures who have the intention to shape and optimize their life conditions. Within SDT, Deci and Ryan broadly define motivation as what moves people to act, what involves energy, and gives direction.¹ They argue that people can be motivated by different things and that motivation can differ in quality (i.e., “how good” is one’s motivation instead of “how motivated” is this person). We adopt the view to step away from binary thinking on motivation (people being motivated or not) to examine the impact of motivation on RTW outcomes.

SDT differentiates qualitative different types of motivation, which can be ordered on a self-determination continuum (Figure 1) ranging from non-self-determined or controlled types of motivation to fully self-determined or autonomous types of motivation. In case of *intrinsic* motivation, people are motivated to work because they find their work to be interesting and fun. In case of *identified* regulation, people engage in their job because it is congruent with their own goals (e.g., a health coach strongly believing in the beneficial effects of a healthy lifestyle). Given

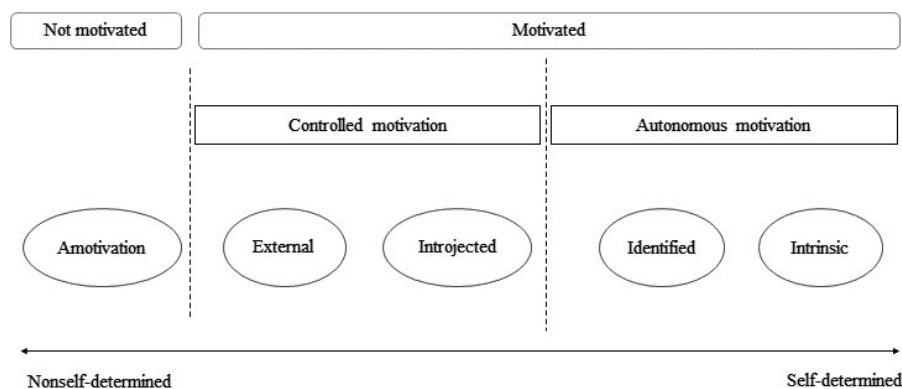


FIGURE 1 The self-determination continuum ranging from amotivation, over controlled motivation (external, introjected) to autonomous motivation (identified, intrinsic)

that they both reflect motivation that stems from within the person, intrinsic and identified motivation are both forms of autonomous motivation. *Introjected* motivation is contingent upon feelings of reward and punishment within the person itself. People with introjected motivation engage in a certain behavior to feel proud or worthy, or they avoid feelings of shame and guilt (e.g., disappointing their manager). With *external* motivation people's behavior is initiated by contingencies external to the person. People are then motivated to pursue a desired outcome (e.g., a financial bonus) or avoid an undesired one (e.g., getting fired) which is controlled by others. Given they are characterized by internal or external pressure, introjected and external motivation are both forms of controlled motivation.¹⁵ SDT recognizes that motivation toward a certain behavior can also be absent in an individual, which is called *amotivation*.

These types of motivation can be fostered through the satisfaction of basic psychological needs. These needs are as essential for our psychological functioning as is water, food, and shelter are important for our physical functioning. The need for *autonomy* reflects the phenomenon that one acts by a feeling of volition. The need for *relatedness* refers to the need to feel belongingness and connectedness with others. The need for *competence* reflects the experience of a sense of effectiveness in interactions with others.¹⁷ Whereas the satisfaction of these psychological needs fosters autonomous motivation and prevents controlled motivation,¹⁹ deprivation or frustration of these needs leads to reduced autonomous motivation, more controlled motivation, and poor well-being.²⁰

In the context of work disability—and especially in case of receiving benefit -, it is a known issue that a patient may feel forced by a system or feel pressured by surrounding networks to attend counseling or receive treatment.¹⁷ In this case, the patient may act compliant to pursue one's approval, rather than by the personal desire to RTW.¹⁸ The latter comes down to SDT-controlled motivation and is highly prevalent among people with a work disability.²⁰ Patients with controlled motivation expected a longer time until RTW and report worse mental quality of life. These negative outcomes were not buffered by the presence of autonomous motivation.²⁰

Associations are found between need satisfaction and need frustration and well-being in a general health context,^{21–23} as well as in the context of RTW.^{20,24} Psychological need satisfaction in RTW seems to be related to a better mental quality of life.²⁰ There is evidence for the relevance of cognitive-behavioral factors such as work attitude, coping skills, perceived social support in the prediction of duration of sickness absence.²⁵ One of the supposed mechanisms here is that those factors might increase motivation for RTW, leading to higher RTW in the longer term. Yet,

little to no research has been conducted to examine the value of qualitative dimensions of motivation—as conceptualized within SDT—in predicting RTW over time. The question remains whether people with autonomous motivation show better RTW rates than people who feel pressured. In addition, it has been found that individuals receiving workers' compensation benefits have a longer time until RTW, which was explained by lower motivation to RTW.²⁶ In terms of SDT, the latter would predict that people with controlled motivation would be incapacitated for a longer period of time. Despite the extensive evidence of the impact of SDT on people's well-being and recent research of SDT on well-being in RTW, the predictive value of SDT in RTW is still underexposed.^{1,19,20,22–24}

1.3 | Hypothesis

Previous research indicated that patients with controlled motivation expected a longer time until RTW.²⁰ The aim of the current study is to unveil modifiable predictors for return to work. We hypothesize that people with amotivation and controlled motivation will remain longer on work disability whereas autonomous motivation will result in faster RTW (hypothesis 1a). We also expect people reporting amotivation or controlled motivation to be more likely to relapse in work disability (hypothesis 1b), report more long-term sickness absence (>1 year) (hypothesis 1c) and less partial RTW (hypothesis 1d).

It is expected that basic psychological need frustration is related to a longer work disability (hypothesis 2a), more relapse (hypothesis 2b), more long-term sickness (hypothesis 2c) and less partial RTW (hypothesis 2d). We expect the opposite to be true for basic psychological need satisfaction.

2 | MATERIALS AND METHODS

2.1 | Participants and procedure

To be eligible for the study, individuals had to (1) be between 18 and 65 years old, (2) be able to speak and read Dutch fluently, (3) have the right to receive a sickness benefit, (4) have cognitive and comprehensive abilities to complete a questionnaire, and (5) give informed consent. Three hundred and sixty six eligible participants filled in the questionnaire at baseline, we were not able to keep track of the participants who were invited to participate. In total, 349 participants remained included. Figure 2 shows the participant flow.

Participants were recruited via the Alliance of Christian Sickness Funds in Belgium between January 2018 and

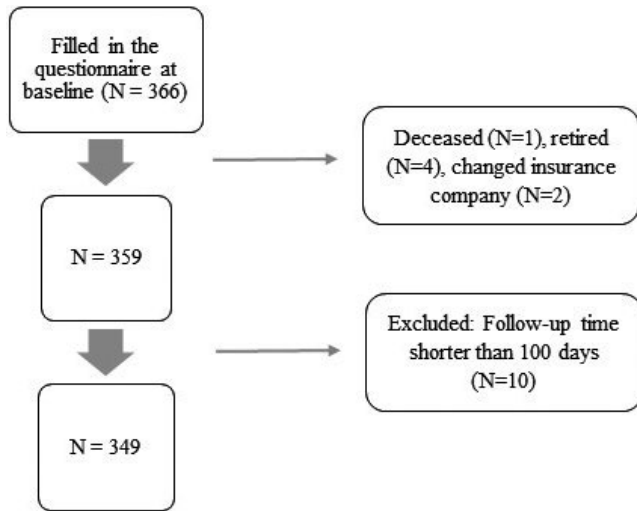


FIGURE 2 Flow of participants indicating the number of participants at baseline measurement, reasons for drop-out, reasons for exclusion of data, and final number of participants having follow-up data

April 2019. The Alliance of Christian Sickness Funds is the largest sickness fund in Belgium covering approximately 42% of the mandatory insured population. Each participant had a 12-month follow-up time since the onset of their work disability. In case of sickness or accident, a Belgian employee is entitled to sick pay during the first 30 days of absence, payable by the employer. After that period, employees receive a maximum of 60% of their capped gross salary paid by the Sickness Fund. If a Belgian blue or white collar worker is still incapable to resume work after 1 year, the sickness benefit which initially amounts to 60% of the capped gross salary, will be converted into a disability benefit which has a potential for the perpetuation of disability until retirement. The social security physician and his team of paramedic coworkers assess the criteria to receive this benefit on average after 3–6 months of work disability during a consultation. The participants in the current study were included at this consultation.

Before their consultation, people on work disability received information about the study. They were asked to read and complete the informed consent in the waiting room. After consenting, they had the opportunity to complete the questionnaire in the waiting room before the consultation with the social security physician or paramedic. Questionnaire data were coded such that participant code and data could only be linked by the researcher. Ethical approval was obtained from the Social Societal ethical committee (SMEC), code G-2017 10 955.

At baseline, participants completed a set of measures assessing motivation and work-related basic psychological needs as defined by SDT. Demographic variables (sex, age), medical diagnosis, occupational sector and RTW

data (time until RTW limited up to 12 months, partial RTW within 12 months, relapse and duration of relapse within the 12-month follow-up, and being work disabled for over 12 months) were retrieved from the administrative database of the Sickness Funds.

2.2 | Measures

2.2.1 | Motivation at work

The Motivation at work scale (MAWS)²⁷ measures the four subscales of motivation (external, introjected, identified, and intrinsic) and amotivation. Participants were asked about their motivation for work, with reference to their job before they fell out. Responses were made on a seven-point scale from 1 (*strongly disagree*) to 7 (*totally agree*). The scales for external (e.g., to earn a bonus) and introjected (e.g., to make others proud) motivation were aggregated into the subscale of controlled motivation. Identified (e.g., this job represents my personal values) and intrinsic (e.g., I enjoy doing my job/enjoy being unemployed) motivation were aggregated into the subscale of autonomous motivation. Amotivation (e.g., my job feels like a waste of time) was rated as a separate scale. In a reference group of a general Dutch speaking population,²⁷ means were 5.12 (1.31) for intrinsic motivation, 5.54 (0.96) for identified motivation, 4.40 (1.24) for introjected motivation, 2.64 (1.15) for external motivation and 1.06 (0.20) for amotivation. The internal consistency was $\alpha = 0.84$ for controlled motivation, $\alpha = 0.82$ for autonomous motivation and $\alpha = 0.76$ for amotivation in the current study.

2.2.2 | Basic psychological needs

The Basic Psychological Needs Satisfaction and Frustration Scale (BPNSFS)²⁸ assesses basic psychological needs *satisfaction* and basic psychological needs *frustration*. Responses were made on a five-point scale from 1 (*not true at all*) to 5 (*completely true*). The subscales of autonomy satisfaction (e.g., I feel that my decisions reflect what I really want), relatedness satisfaction (e.g., I feel that the people I care about also care about me) and competence satisfaction (e.g., I feel confident that I can do things well) were aggregated into the bigger subscale of need satisfaction. The subscales of autonomy frustration (e.g., I feel pressured to do too many things), relatedness frustration (e.g., I feel the relationships I have are just superficial) and competence frustration (e.g., I feel insecure about my abilities) were aggregated into the bigger subscale of need frustration. Means in a general Dutch population are 3.43 for autonomy, 4.1 for

relatedness and 3.67 for competence. The internal consistency for need satisfaction was $\alpha=0.87$ and for need frustration $\alpha=0.88$.

2.2.3 | RTW outcomes: time until RTW, relapse, partial RTW and long-term sickness

The time until RTW (number of days between the first day of work disability and a full return to work), data on relapse (a new period of work disability within the year after returning to work), data on partial RTW (resuming a part of the working hours and maintaining on work disability for the remaining hours) data on long-term sickness (a work disability for longer than a year) were retrieved from the administration of the Social Sickness Funds. RTW was defined as no longer receiving disability allowances.

2.3 | Data analysis

Independent variables are motivation, basic psychological needs satisfaction and need frustration. *Cox regression analyses* are performed to measure the association between motivation and the time until RTW (H1a) and duration of relapse as dependent variables (H1b). *Cox time-dependent analyses* are performed to measure the association between basic psychological needs satisfaction and frustration and the dependent variable of the time until RTW (H2a) and the dependent variable of the duration of relapse (H2b). All Cox regression analyses above were adjusted for age, sex and diagnosis. *Binary logistic regression analyses* are performed to measure the association between basic psychological needs satisfaction/frustration and motivation as independent variables and long-term sickness as dependent variable (H1c; H2c) as well as partial RTW as dependent variable (H1d; H2d). These analyses were adjusted for age, sex, diagnosis and number of work disabled days at baseline. Data were analyzed using the Statistical Package Software for the Social Sciences (SPSS version 26.0). All tests were two-sided, and p -values $<.05$ were considered significant. Missing data were handled by listwise deletion.

3 | RESULTS

3.1 | Descriptive statistics and sociodemographic variables

Descriptives, frequencies and sociodemographic variables can be found in Table 1. Compared to the mean in

a random sample of Dutch-speaking participants,²⁹ the mean scores in this sample were higher for amotivation (1.09 in the general population) and for controlled motivation (3.52). The mean score for autonomous motivation in the current study was slightly lower than the average in the population (5.33). About one third (33.7%) were male and 66.3% female. And 7.9% of the participants did not have a high school degree, 43.9% had a professional education, 20.2% had a high school degree, 18% had a bachelor's degree and 9.8% had a master's degree. The largest group had a profession in service and sales (21.8%), followed by manual labor (20.4%), craft and related trades workers (16.3%), scientific personnel and teachers (15.8%), clerical support workers (8.7%), unemployed people (4.4%), managers (3.8%), machine operators and assemblers (3.8%), technicians and associate professionals (3%) and farmers (2%). No distinction was made between people who had a full-time or part-time contract. Diagnoses were prescribed by a physician of the curative sector, based on the ICD-10 (International Classification of Diseases version 10): 41.2% of the participants were on sick leave because of a mental illness (ICD-10 V)²⁸, 45.6% had a musculoskeletal condition (ICD-10 XIII "diseases of the musculoskeletal system and connective tissue" and XIX "injuries"), 4.1% had a chronic fatigue or chronic pain condition, 2.2% had deviant laboratory results ICD-10 XVIII), 1.9% had a neurologic condition (ICD-10 VI), 1.1% had cancer (ICD-10 II), 1.1% had a disease of the circulatory system (ICD-10 IX). To avoid multicollinearity, only diagnosis with code V, XIII, XIX and chronic fatigue or chronic pain condition were withheld since the other diagnosis groups only covered $<5\%$ of the sample.

3.2 | Cox regression analysis: time until RTW and relapse

Cox regression analyses were performed to shed a light on hypotheses 1a, 1b, 2a and 2b. The results are shown in Table 2. The omnibus tests of model coefficients were significant ($p < .001$). The presence of controlled motivation was a predictor for a shorter *time to RTW*. This contrasts with the presupposed hypothesis 1a, which was thus not corroborated. No significant association was found for amotivation and autonomous motivation. Basic psychological need frustration resulted in a longer time until RTW; basic psychological need satisfaction did not predict the RTW. This is mainly in line with hypothesis 2a.

There were no significant predictors for *relapse*. Amotivation, controlled motivation, autonomous motivation and basic psychological need satisfaction and frustration were not related to relapse. This leads us to reject hypotheses 1b and 2b.

TABLE 1 Descriptives and frequencies

	N	Min	Max	Mean	SD
Age	349	19	63	40.52	9.68
Sex					
Male	114 (32%)				
Female	238 (68%)				
Time until RTW	349	64	682	283.75	91.21
Relapse	17 (5%)				
Long-term sickness (>1 year)	137 (39%)				
Days WD at measurement	349	18	299	131.32	39.67
Diagnoses					
Mental	135 (38%)				
Musculoskeletal	107 (30%)				
Injuries	34 (10%)				
Chronic fatigue/fibromyalgia	10 (3%)				
Controlled	258	1.00	7.00	4.24	1.24
Extrinsic	258	1.00	7.00	3.79	1.53
Introjection	253	1.00	7.00	4.59	1.36
Autonomous	254	2.50	7.00	5.03	1.10
Identified	251	2.00	7.00	5.18	1.17
Intrinsic	251	1.00	7.00	4.87	1.43
Amotivation	243	1.00	7.00	1.98	1.22
Need for autonomy Sat	287	1.00	5.00	3.34	0.79
Need for autonomy Fru	289	1.00	5.00	2.88	0.99
Need for relatedness Sat	289	1.25	5.00	3.96	0.84
Need for relatedness Fru	290	1.00	4.50	2.00	0.87
Need for competence Sat	288	1.00	5.00	3.50	0.90
Need for competence Fru	286	1.00	5.00	2.49	0.97
Total need satisfaction	285	4.92	15.00	10.80	2.07
Total need frustration	286	3.00	13.25	7.35	2.31

Abbreviations: Fru, frustration; Sat, satisfaction; SD, standard deviation; WD, work disability.

3.3 | Binary logistic regression analysis: long-term sickness and partial RTW

A binary logistic regression analysis was used to examine the remaining hypotheses 1c, 1d, 2c and 2d. Results are shown in Table 3. The omnibus tests of model coefficients were significant ($p < .001$).

Table 3 shows that the presence of controlled motivation was related to less *long-term sickness*. Hypothesis 1c could not be confirmed. No association was found for amotivation and autonomous motivation. Basic psychological need frustration is related to more long-term sickness, while basic psychological need satisfaction is not. This partly supports hypothesis 2c. Concerning the control variables, a higher age predicted more long-term sickness.

No significant predictors were found for *partial RTW*. Motivation nor basic psychological need satisfaction or frustration was related to partial RTW. Concerning the control variables, being male was related to less partial RTW.

4 | DISCUSSION

The current research focused on the predictive value of SDT on long-term work disability. Controlled motivation regarding their former job was related to a shorter time until RTW. A frustration of basic psychological needs was related to a longer time until RTW. No significant predictors for relapse and partial RTW were found. Long-term sickness (work disability >1 year) was related to lower controlled motivation and more frustration of the basic psychological needs.

It was hypothesized that people with amotivation and controlled motivation would remain longer on work disability, report more relapse, less partial RTW and more long-term sickness. The opposite was expected for autonomous motivation. Surprisingly, controlled motivation was predictive for a *faster* RTW and less long-term sickness. Autonomous motivation and amotivation did not show significant associations. In the current research, controlled motivation was measured after 3–6 months of work disability. It is unknown what the level of controlled motivation was at the start of work disability. It is thus unclear whether people with a work disability may develop controlled motivation during their disability: They may experience guilt or shame regarding their job because they have dropped out or feel pressurized to return to work.²⁰ It should be noted that motivation was measured in relation to their job *before* the period of work disability. If motivation would be measured in relation to the job perspective *after* the period of work disability, this could result in different outcomes. This can be further examined in future research.

Concerning partial RTW, results pointed in the direction of less RTW in case of controlled motivation, yet they were not statistically significant. It is known that most people who partially return to work, resume work at the previous employer. People are reluctant to progressively

TABLE 2 Cox regression analysis with age, sex and diagnosis as control variables, controlled motivation, autonomous motivation, amotivation, need satisfaction and need frustration as independent variables and RTW and relapse as dependent variable

	Return to work				Relapse			
	Parameter estimate	HR	95% CI for HR		Parameter estimate	HR	95% CI for HR	
			Lower	Upper			Lower	Upper
Age (years)	-0.03**	0.97	0.10	0.99	-0.02	0.98	0.57	1.70
Sex (1 = female)	0.20	1.12	0.76	1.66	-0.54	0.00	0.00	—
Mental disorder	-0.75 ^a	0.47	0.21	1.09	3.80	44.84	0.00	—
Muskuloskeletal	-0.075 [†]	0.47	0.21	1.07	25.54	—	—	—
Injuries	-1.47**	0.23	0.09	0.57	—	—	—	—
Chronic fatigue	0.00	1.00	0.30	3.34	—	—	—	—
Controlled	0.24*	1.27	1.05	1.53	-15.09 [†]	0.00	.00	14.02
Autonomous	-0.13	0.88	0.72	1.07	2.82	16.73	.00	—
Amotivation	0.09	1.09	0.91	1.31	-3.54	0.03	.00	—
Total need Sat	-0.006	0.94	0.82	1.08	-10.67	0.00	.00	45.32
Total need Fru	-0.26***	0.77	0.68	0.88	9.75	17110	.01	—

Abbreviations: CI, confidence interval; Fru, frustration; HR, hazard ratio; Sat, satisfaction.

[†]*p* < .10.

p* < .05; *p* < .01; ****p* < .001.

TABLE 3 Binary logistic regression analyses with age, sex and diagnosis as control variables, controlled motivation, autonomous motivation, amotivation, need satisfaction and need frustration as independent variables and long-term sickness and part-time RTW as a dependent variable

	Long-term sickness (>1 year)				Part-time RTW			
	Parameter estimate	OR	95% CI for OR		Parameter estimate	OR	95% CI for OR	
			Lower	Upper			Lower	Upper
Age (years)	0.05**	1.05	1.01	1.08	0.01	1.01	0.98	1.04
Sex (1 = female)	-0.60	0.55	0.27	1.13	-0.78**	0.46	0.26	0.80
Mental disorder	0.48	1.61	0.49	5.35	0.02	1.02	0.38	2.78
Muskuloskeletal	0.61	1.85	0.56	6.06	-0.62	0.54	0.20	1.42
Injuries	1.37 [†]	3.93	0.81	19.17	-0.38	0.68	0.21	2.20
Chronic fatigue	-0.68	0.51	0.10	2.71	0.70	2.01	0.43	9.26
Controlled	-0.38*	0.68	0.49	0.96	-0.24 [†]	0.79	0.62	1.01
Autonomous	0.12	1.12	0.79	1.49	0.08	1.08	0.81	1.45
Amotivation	-0.14	0.87	0.63	1.19	-0.14	0.87	0.67	1.13
Total need Sat	0.36	1.14	0.90	1.43	-0.01	0.99	0.84	1.18
Total need Fru	0.41***	1.44	1.15	1.80	-0.15 [†]	0.86	0.73	1.01

Abbreviations: CI, Confidence Interval; Fru, Frustration; OR, Odds Ratio; Sat, Satisfaction.

[†]*p* < .10.

p* < .05; *p* < .01; ****p* < .001 (reference group and case numbers between brackets).

resume work at a new employer as they ought to explain that they have been sick in the period before the new job. The effect can therefore possibly be explained by the fact that, in case of controlled motivation, there may be more job turnover after work disability. This can be further investigated in future research. Furthermore, it is a known

phenomenon that a longer time until RTW is often linked to a higher threshold to return to work. Part-time resumption of work can therefore lower this threshold.³⁰

Finally, we would also like to cast a meta-perspective on the preceding. SDT assumes that people are active organisms who have a tendency to grow in a society that

provides freedom of choice. Nowadays, the process of evaluating work disability rather falls back on principles as punishment and reward. A highly controlling environment provokes controlled motivation. People may especially engage in the expectations of others when it comes to the right to receive vital resources such as money. The hypotheses put forward can therefore be called naïve in the current context. Future research could investigate whether paying out compensation benefits in the context of work disability encourages controlled motivation. Although controlled motivation thus appears to be linked to a faster RTW and thus seems beneficial for the social cost, the question remains how sustainable this RTW will be and what the compromises are on the level of quality of life of the individual as well as the indirect social costs such as job turnover, unemployment, medication use, ... The quality of motivation in the population of work disabled people is less compared to averages in the general population. Research has demonstrated that the indirect costs between the highly motivated and the less motivated patients was calculated at 4:1 in favor of the highly motivated patients.¹¹

We expected basic psychological need frustration to be predictive for longer work disability, more relapse, less partial RTW and more long-term sickness. For basic psychological need satisfaction, the opposite was hypothesized. Our expectations were partially met given that only basic psychological need frustration seemed to be predictive for a longer time until RTW and more long-term sickness. Basic psychological need satisfaction showed no significant relation with the RTW outcomes. However, basic psychological need satisfaction and frustration were measured regarding the current context (i.e., after 3–6 months of work disability). It seems that being stuck in the negativity of a frustrating work-related situation has a paralyzing effect. From an SDT-perspective it is expected that work disability results from need frustration.³¹ In case of chronic need frustration, people do not only develop more ill-being but might also be at risk for engaging in compensatory behaviors (e.g., avoiding situations, self-medication, drinking, ...) which in many cases sustain a situation of need frustration and might precipitate a negative cycle of vulnerabilities.³¹ In order to prevent the frustration of the need for *relatedness*, supportive behavior is desirable. Supervisor's support³² and social support³³ were found to be a good predictor for successful RTW in previous research. Social support in general (family, work environment, doctors, ...) is beneficial for the overall need for relatedness. Berglind and Gerner found that the will to RTW depends on the feeling of *competence* ("can manage" my RTW).¹³ A substantial part of people with a work disability feel insecure about their needs and possibilities in the context of RTW, which slows down the process of an

actual return. Future research could focus on the relative contribution of each of the three needs in their predictive value for RTW.

The opposing outcomes for motivation and the basic psychological needs contradict both our expectations and the literature. A statistic artifact is likely. Probably multicollinearity plays a role in these results, or at least suppression could be the case, measuring motivation and the basic psychological needs in opposite directions. On the other hand, the motivational scales of autonomous, controlled motivation and amotivation were measured in relation to the job they were performing before dropping out of work (or the last job for unemployed people). The basic psychological needs were measured in their current context of work disability and not in relation to a previous or current employer. Thirdly, as mentioned before, the current context of social security is a controlling environment, provoking both controlled motivation and basic psychological need frustration. Future research should take these considerations into account.

By any means, there is a lack of a universal and validated conceptualization *and* measurement of motivation. Research on motivational measurement instruments points out that instruments for assessing motivation for RTW found in the literature possess low reliability.^{12,16} These studies are rarely guided by theory and thus provide only limited operationalizations of motivation. The current research focused on the predictive value of a well-defined conceptualization of motivation including a validated measurement, by relying on SDT, yet needs more finetuning.

4.1 | Limitations and strengths

Some limitations have to be considered. No notice was taken whether people returned to their own employer or to a new employer. This makes it more difficult to interpret the results, especially in the case of the MAWS where participants were questioned about their motivation regarding the previous employer. Concerning the BPNSFS, the measurement of the needs was in a general context instead of a working context. The latter would provide more information. Both scales have not yet been extensively tested in a sample of people in long-term work disability, study averages could be studied more thoroughly. Also, we were not able to keep track of the participants who were invited to participate, and patient's health needed to be sufficient to visit the social security physician; therefore, a selection bias cannot be ruled out. The current study withholds a risk for unmeasured confounders. Lastly, we need to consider the possibility of social desirability in their responses,

despite the explicit assurance that the social security physician would not know their answers. The impact of motivation on return to work has been predominantly studied in the Belgian mandatory social security system. Any extrapolation to other social security schemes should be approached with due caution.

This study has certain strengths. Register data on disability benefits were used to measure RTW, excluding possible biases. The sampling was random, including all diagnoses whereas most studies focus on one or more diagnoses. There was a large follow-up period of 1 year.

4.2 | Practical implications

Although the controlling environment ensures a faster RTW, it can be expected that the indirect harmful effects of an intermediate controlled motivation are large in terms of people's quality of life, job perspective, mental health, and others. The latter may entail a social cost greater than the effect of a quick RTW. These remarks should be borne in mind before engaging in controlled motivation to accelerate RTW.

Basic psychological need satisfaction frustration yields a cost in terms of ill-being.²⁸ It is thus important to discuss basic psychological need frustrating experiences with the patient in order to address the frustration of the basic psychological needs and to encourage the patient to engage in activities that satisfy their needs.²⁰

Previous research already accentuated the poor reliability of mere intuitively estimations of motivation and state that measurements should not be based on the knowledge and experience of physicians.³⁴ The current research confirms the predictive value of SDT in the context of RTW.

5 | CONCLUSION

The frustration of basic psychological needs was predictive for a longer work disability. Controlled motivation on the other hand predicted faster RTW, which was an unexpected direction. Yet, we have no insight into long-term effects on both RTW as individual well-being since controlled motivation is invariably accompanied by poor outcomes. At the same time, basic psychological need frustration, which is also accompanied by detrimental outcomes, predicts longer work disability. Underlying mechanisms remain unclear. For example, effects of the educational level, work-floor characteristics, advices from medical practitioners etc. are not taken into account in the current research. Future research could focus on these underlying mechanisms as well as the explanatory mechanisms in the social security context.

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AUTHOR CONTRIBUTIONS

C.V. conceived the original idea, M.D.B., E.L. and A.V.D.B. supervised the project; C.V. collected the data; C.V. and M.D.B. analysed the data; C.V. led the writing, E.L. and A.V.D.B. provided crucial input for the writing and data collection; all authors discussed the results and contributed to the final manuscript.

DISCLOSURE

Ethical approval was obtained from the Social Societal ethical committee (SMEC), code G-2017 10 955. The researchers ensure correct informed consent. Registry of the trial is N/A. Animal study is N/A. Partial funding for the study was provided by the Alliance of Christian Sickness funds. The authors report no conflict of interest. The data that support the findings of this study are available from the corresponding author upon reasonable request.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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