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STUDIES AND
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Validation of the Return-to-Work Obstacles and Self-Efficacy Scale (ROSES) with Workers Suffering from a Common Mental Disorder or Musculoskeletal Disorder

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SUMMARY

Prolonged absences from work, especially those related to common mental disorders (CMD) and musculoskeletal disorders (MSD), impose considerable economic and human costs. Because of this, better understanding of the factors that hinder the return to work (RTW) of those affected by these two disorders is essential. According to the literature, it is well established that RTW is the result of a complex interaction between the individual and actors from various systems, such as the workplace and the healthcare and compensation systems. Apart from a few particularities or individual characteristics, including the symptoms inherent to a specific disorder or a variation in recovery time, in general, the obstacles perceived by people suffering from CMD or MSD during their RTW process overlap, to the extent that recent studies have begun to look at disabled workers as a single group, regardless of the nature of the disease or injury. The literature emphasizes the need to not only assess the obstacles perceived during RTW, but also to take into account the self-efficacy to overcome them, two essential and complementary concepts in assessing the factors involved in RTW. However, to our knowledge there is no tool adapted to those dealing with CMD or MSD in the literature that measures both the obstacles related to RTW and the self-efficacy to overcome them.

The objective of this prospective study is to validate a tool entitled *Return-to-work Obstacles and Self Efficacy Scale* (ROSES) with employees in the RTW process as a result of CMD or MSD. Specifically, it will validate the psychometric properties related to ROSES: (1) content validity (2) face validity, (3) construct validity, (4) test-retest reliability, and (5) predictive validity.

This study consisted of three phases. In phase 1, participants who met the inclusion criteria and who consented to participate in the study completed the ROSES questionnaire (CMD (n=157) or MSD (n=206)) and a sociodemographic questionnaire. Phase 2 took place two weeks later, to respond to the demands of the test-retest reliability assessment. Finally, phase 3, which took place six months after phase 1, enabled the predictive validity of ROSES to be assessed using regression analyses. All the participants in phase 1 were then re-contacted by telephone to learn whether or not they had returned to their occupational activity.

Content and face validity. The initial version of ROSES had 97 statements divided into six broad conceptual categories. *Construct validity.* In terms of factor analyses (exploratory and confirmatory) and internal reliability analyses performed for the conceptual categories that had been previously constructed, a total of 46 statements divided among 10 dimensions emerged: (1) fears of a relapse, (2) cognitive difficulties, (3) medication-related difficulties, (4) job demands, (5) feeling of organizational injustice, (6) difficult relation with immediate supervisor, (7) difficult relation with co-workers, (8) difficult relations with the insurance company, (9) difficult work/life balance, (10) loss of motivation to return to work. *Reliability.* The results of the correlation analyses showed that these 10 dimensions remain stable over time (2 weeks) in the two groups (CMD and MSD). *Predictive validity.* In addition to the number of weeks of absence from work and the perceived pain, four dimensions (perceived obstacles and self-efficacy) are predictive of RTW in people with MSD: fears of a relapse, job demands, the feeling of organizational injustice, and a difficult relationship with the immediate supervisor. Among people with a CMD, only the job demands and cognitive difficulties stood out as being significant.

To conclude, the study made it possible to validate ROSES. This tool fills a theoretical gap in the literature by showing that biopsychosocial obstacles and the self-efficacy to overcome them should be taken into account in predicting the RTW of people with CMD or MSD. Clinically, the study provides rehabilitation health professionals with a valid tool and simple administration (46 statements covering 10 dimensions), which makes it possible for them to systematically assess these two concepts among their clients. They can thus optimize their activities to facilitate their clients' RTW. ROSES is a working and dialogue tool for the two interlocutors. Once the identification of dimensions or problematic statement pairs has been settled, rehabilitation professionals can begin a discussion with their clients and establish the relevant activities and strategies. In addition, rehabilitation health professionals may decide to use ROSES as a follow-up tool in order to evaluate whether certain obstacles have disappeared or if they persist in their clients' workplaces or personal lives.

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LIST OF ACRONYMS AND ABBREVIATIONS

BECES   Barriers to Employment and Coping Efficacy Scale
           (Fr. OITES: Obstacles à l'Insertion au Travail et sentiment d'Efficacité pour
           les Surmonter)

CFA   Confirmatory factor analysis

CFI   Comparative fit index

CMD   Common mental disorder

DOA   Dialogue about ability related to work

EFA   Exploratory factor analysis

IFI   Incremental fit index

KMO   Kaiser-Meyer-Olkin measure of sampling adequacy

MSD   Musculoskeletal disorder

NNFI   Non-normed fit index

ORQ   Obstacles to Return-to-Work Questionnaire

ROSES   Return-to-work Obstacles and Self Efficacy Scale
           (Fr. ORTESES: Obstacles au retour au travail et sentiment d'efficacité pour les
           surmonter)

RTW   Return to work

RMSEA   Root mean square error of approximation

RTWSE   Return-to-work self-efficacy

SE   Self efficacy

WoDDI   Work Disability Diagnostic Interview

WRI   Worker role interview

1.   INTRODUCTION TO THE ISSUE

To say that work disability is expensive in financial and human terms is an understatement. The International Labour Organization (ILO) estimates that the direct and indirect costs of occupational diseases and industrial accidents represent about 4% of the world's GDP, or $2,800 billion in 2012 (ILO, 2013). Cardiovascular diseases and the various types of cancer, common mental disorders (CMD[1]) and musculoskeletal disorders (MSD[2]) represent the most common causes of absence from work (Dewa et al., 2010; Koopmans et al., 2011). In terms of lost productivity in Canada, CMD and MSD cost $8 billion and $7.5 billion every year, respectively (Koopmanschap et al., 2013; Loisel and Côté, 2013). In Québec, work disability due to CMD or MSD generated average overall annual costs of $1 billion over the 2005–2007 period (adapted from Lebeau et al., 2013). Over and above the economic burden, the psychological and social consequences of work disability are also very concerning. The negative effects caused by work disability and prolonged absences should be enough to convince anyone of the importance of dealing with this issue (Squires et al., 2012).

To facilitate the return to work (RTW) of employees[3] on sick leave because of CMD or MSD (while recognizing the importance of implementing interdisciplinary procedures supported by the joint actions of the actors involved in RTW), one critical step is to establish not only the factors and obstacles perceived by workers with respect to their RTW, but also what they think and how they deal with it. From this first assessment, it appears possible to adequately assist those concerned, while using the best evidence gleaned from specialized literature. Current knowledge shows that the factors that hinder the RTW of people with MSD or CMD are generally the same, and even more so as the duration of absence from work increases (Dionne et al., 2005; Frank et al., 1998; Loisel and Anema, 2013). In fact, with the exception of a few particularities or individual characteristics, such as the symptoms inherent to a specific disorder or variations in recovery time, the obstacles perceived by people with a CMD or MSD during their RTW process generally overlap (Briand et al., 2007; Shaw et al., 2013), to the point that recent studies are beginning to study workers on work disability as a single group, without regard to the nature of the disease or the accident (Vlasveld et al., 2012).

Over the years, several theoretical models have had the objective of identifying the factors inhibiting or facilitating the RTW, including the biomedical model, the biopsychosocial model (Engel, 1977; Engel, 1980) and the work disability paradigm (Loisel et al., 2001). These models will be briefly summarized in the following paragraphs. Next, the factors that proved significant in predicting the RTW of employees suffering from CMD or MSD will be studied and special attention will be paid to the concept of obstacles to RTW and the sense of efficacy to overcome them. Finally, the Return-to-work Obstacles and Self Efficacy Scale (ROSES) tool, which is the

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[1] For CMD, we include depression, adjustment disorder, anxiety disorder, post-traumatic stress disorder, and burnout syndrome.

[2] MSD are all the industrial/workplace accidents accepted by the Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST) that are not traumatic accidents, and occupational diseases, resulting from excessive effort, repetitive movements, prolonged static positions, awkward postures or vibrations that injure the musculoskeletal system of the lower and upper limbs, the back or the neck. The principal injuries are sprains, ligamentitis, bursitis, synovitis, tendinitis, back ailments, carpal tunnel syndrome, pain, rheumatoid arthritis and osteoarthritis.

[3] The terms *employee* and *worker* will be used interchangeably in this report.

subject of this report, will be described, highlighting how it differs from existing questionnaires dealing with work disability.

1.1   Biomedical Model

The biomedical model, which predominates in modern medicine, concentrates exclusively on biological and physiological factors to explain the RTW of people experiencing health problems. The logic underlying this model is that the health problem, once treated by biomedical means (e.g., physiotherapy, medication), will most likely lead to individuals being able to successfully return to their occupational activities. The solution is to treat the illness, to repair the "corporal machine" (Berquin, 2010), somewhat along the lines of a garage mechanic who knows exactly what part must be changed to get a car running smoothly again. As defined by Waddell (2006), this model includes four steps: (1) recognizing patterns of symptoms and signs via the history and examination of the patient, (2) inferring the underlying pathology from the symptoms observed, i.e., making a medical diagnosis, (3) applying therapy to treat the pathology for the purpose of rehabilitation, and (4) expecting the patient to recover from the pathology and become capable of working again. The biomedical model thus implies a simple causal relationship between the disease, the symptoms and the disability (Waddell, 2006). Although this model may be adequate for some diseases with a brief course (e.g., arthritis of the hip), it is insufficient for understanding and treating many workplace disabilities related to other nonspecific conditions, such as those linked to psychological health and musculoskeletal disorders (Waddell, 2006). With respect to back pain, for example, the disease, the functional limitations and the work disability are only weakly intercorrelated (Waddell et al., 1993).

However, it is increasingly becoming clear, after more than 2000 published articles (Crook et al., 2002), that an approach that is strictly based on the "repair" of injuries caused by an accident or disease without considering the environment is not sufficient to optimize the probability of RTW of an employee who is absent because of disease. Therefore, other important factors must be taken into account, such as psychosocial factors (e.g., the relationships with the actors in the organization) to predict RTW. From that observation, a new way of thinking about work disability and its treatment has been suggested, notably through the development of a biopsychosocial model (Engel, 1977; Mosey, 1974; Waddell, 1992). Progressively, researchers have begun to integrate variables of a psychosocial nature into their studies to more precisely explain the prognostic factors of a prolonged disability and the RTW of people on sick leave.

1.2   Biopsychosocial Model

As Berquin explains [unofficial translation], "the biopsychosocial model is both a theoretical model, i.e., a set of coherent and structured hypotheses explaining health and the disease, and a clinical tool, i.e., a directly applicable set of diagnostic and therapeutic methods" (Berquin, 2010. p. 1512). Without neglecting the biological and physiological aspects, she stipulates that psychological and social/organizational factors must be included to better explain the disease, in particular, the occupational disease and work disability that can result from it. From that perspective, chronic disease and work disability are not simply the consequences of the impairment or injury, but are the result of a complex interaction between the individual and the environment. Although the biopsychosocial model has certain limits, such as with respect to evaluation (Laisné et al., 2012) or in the applicability of its principles (Berquin, 2010; Pincus et

al., 2013), it is now recognized as being the model on which research and practice in the field of disabilities related to health problems must be based (Nachemson, 1999).

1.3   Work Disability Paradigm

With regard to the "multifactorial" perspective of the biopsychosocial model, the work disability paradigm (Loisel et al., 2001) postulates that it is the result of an interaction of actors from four systems: (1) the personal system (e.g., the worker), (2) the workplace system (e.g., the immediate supervisor, co-workers), (3) the healthcare system (e.g., the attending physician) and (4) the legislative framework and the insurance system (e.g., the compensation officer). The metaphor of the "arena of work disability" illustrates the interaction of the actors in these four systems. A number of RTW predictors related to actors in the four systems have been catalogued in the scientific literature over the past years (Nicholas et al., 2011; Shaw et al., 2009). The work disability paradigm and a review of the literature on the RTW factors of people dealing with MSD or CMD have also been very useful in the design of statements for the ROSES tool.

1.4   Return to Work Factors Among People with CMD

Since 2008, there have been three reviews of the literature concerning the RTW factors of people dealing with CMD (Blank et al., 2008; Cornelius et al., 2011; Lagerveld et al., 2010a). Several factors emerge from these reviews, among which some are modifiable (e.g., work stressors) while others are not (e.g., age). The most relevant results of these reviews are described in the following paragraphs.

Non-modifiable RTW predictors, such as age and the duration of depression, are those for which a great deal of evidence (Cornelius et al., 2011) or limited evidence (Blank et al., 2008; Lagerveld et al., 2010a) were observed. The older people are, the longer it will take before they return to work, and, in some cases, they may never return. In addition, the longer the period of depression, the lower the chance of returning to work (Blank et al., 2008).

For *little- or non-modifiable* significant factors that hamper RTW and for which there is a moderate or limited level of evidence, the review by Lagerveld et al. (2010a) mainly showed factors of a clinical nature, including changes in work capacity, a previous episode of depression and few clinical improvements. With respect to severity and types of depression or anxiety symptoms and the presence of psychological or physical co-morbidity, the authors of the three reviews identified them as important factors to consider in RTW. Blank et al. (2008) established certain sociodemographic variables that impede RTW, such as a low educational level, precarious or poor quality employment, and being a single male. This last variable is found in the review by Cornelius et al. (2011), which also notes that a lower socioeconomic status is a factor that significantly hampers RTW.

With respect to *modifiable* factors, for which the level of evidence remains moderate or limited, Lagerveld (2010a) established a certain number of psychosocial variables, such as a feeling of hopelessness about the future, low self-esteem and low social functioning. However, in the systematic review by Cornelius et al. (2011), in addition to people's negative expectations regarding their RTW, low-quality interaction with their physician, or interactions characterized by a lack of follow-up are both factors that have a negative impact on RTW. Finally, Blank et al.

(2008) pointed to workplace stress as an important predictor to consider in the identification of prolonged disability.

With respect to communication between the immediate supervisor and the employee, one of the few, if not the only, articles to examine this variable is that of Nieuwenhuijsen et al. (2004). That article was also found in all three of the previously mentioned reviews of the literature. The findings indicate that poor communication between the immediate supervisor and the employee is negatively associated with RTW among employees who not suffering from depression (Blank et al., 2008; Cornelius et al., 2011; Lagerveld et al., 2010a). Cornelius et al. (2011) also showed that when the immediate supervisor communicates with health professionals, it undermines the employee's RTW. According to the authors, it is possible that this negative relationship could be conflated with the severity of the employee's depression symptoms. This is because an immediate supervisor will consult the care team more often when the person on sick leave presents with more severe depression, which is itself an indicator of a lower likelihood of returning to work "rapidly" (Cornelius et al., 2011). Given that these two counterintuitive findings do not clearly designate the immediate supervisor as a significantly predictive factor in RTW, Lagerveld et al. (2010a) recommended replicating the study with that actor. For several years, research has tended to emphasize the influence that the various actors may have on RTW (Corbière et al., 2009, 2012; Durand et al., 2014), especially the immediate supervisor (Lemieux et al., 2011; Negrini et al., 2014).

In their study, Olsen et al. (2015) asked more than 1000 people who were on sickness absences or whose participation in the labour force was limited because of CMD about the three factors that they felt were the cause of their work disability. Out of the 3000 responses gathered, 19% were work-related, which made it the second highest category to be cited after psychological factors (26%). Among the work-related factors, 42% the items referred to (1) stress at work (e.g., mental load, excessive occupational demands), (2) relationship with the immediate supervisor or co-workers, such as a conflict with one of these two actors, (3) the social environment at work (e.g., negative work climate, difficulty working in a team or lack of support from co-workers), (4) instability/unpredictability of work (e.g., vague instructions, work reorganization, new tasks), (5) situations of intimidation and harassment at work (e.g., harassment by the supervisor, sexual harassment), and (6) excessive workload or disproportionate risk of injury. The "stress at work" factor supports the findings of two of the previously mentioned literature reviews (Blank et al., 2008; Cornelius et al., 2011).

To conclude, it is important to point out that the findings of the three previously mentioned literature reviews are also supported by more recent studies. Note, for example, the Hees et al. (2013) study, which shows that a low level of severity of depression symptoms, an absence of anxiety symptoms, a strong motivation to return to work and a conscientious personality are factors that correlate positively with RTW. In addition, the authors stress that when considering those psychological variables it is important to keep in mind that 25% of their sample had not yet returned to work. More recently, Løvvik et al. (2014) revealed that uncertain or negative expectations regarding RTW have a negative effect on an effective RTW. In their qualitative study, which used a "stakeholder approach," de Vries et al. (2014) showed that, over and above certain differences respecting the weighting of each factor, employees, immediate supervisors and physicians all felt that co-morbidity, the degree of severity of depression symptoms, personality traits (e.g., lack of self-confidence), inadequate coping strategies, difficult work

relationships, a low level of support at work, and insufficient access to mental health services available within the organization (for example, employee assistance programs), are factors that impede the RTW of people with CMD.

All of these findings from literature reviews or more recent studies support the importance of addressing the RTW factors of people suffering from CMD, taking into account the characteristics of the person concerned (e.g., biological, sociodemographic, clinical), organization-related factors (e.g., work stressors, work organization) and the incontestable role of stakeholders from different work disability systems, especially those from within the organization.

1.5   Factors Involved in the Return to Work of People with MSD

While only three systematic reviews have been carried out with a population suffering from CMD, the same is not true for research on factors predicting RTW of employees with MSD. In fact, a search of the main databases (e.g., Google Scholar, PubMed, PsycInfo) found 44 systematic reviews, which, in total, covered studies published between 1996 and 2015. Given the large number of reviews published on this topic, more attention was paid to reviews published in the past 15 years. Some of them were "reviews of reviews" with possible overlaps, and others did not have a sufficient level of evidence (Steenstra et al., 2013). Therefore, the synthesis of these results required cautious analysis. In addition, most of the studies about MSD were limited to low back pain (Shaw et al., 2013) and sometimes the data was processed according to pain phase: acute, subacute, chronic (Laisné et al., 2012).

Among the factors in which there is a high degree of evidence predictive of the lowest probability of returning to work are older age (Hayden et al., 2009) and a functional limitation diagnosed at the outset of the sick leave (Hayden et al., 2009; Laisné et al., 2012). *Modifiable* factors with a high degree of evidence include the duration of absence from work (Foreman et al., 2006), the lack of disability management within the organization, negative expectations regarding RTW (Laisné et al., 2012), psychological distress (Burton et al., 2003), a limited sense of control regarding one's health status (Truchon and Fillion, 2000), low job satisfaction (Hoogendoorn et al., 2000; Steenstra et al., 2013; Truchon and Fillion, 2000), dramatization and fears related to work (Iles et al., 2008; Truchon and Fillion, 2000; Wertli et al., 2014a), and beliefs that lead to the avoidance of physical activity (fear-avoidance behaviors, Wertli et al., 2014b).

The factors impeding RTW for which there is moderate or limited evidence are related to lack of control over the performance of one's work, less than two years of seniority within the organization (Crook et al., 2002; S. Shaw, 2001), being a worker in the construction sector (Shaw et al., 2001, 2013), a self-reported high workload (Hartvigsen et al., 2004; Shaw et al., 2013), the impossibility of taking breaks when desired (Crook et al., 2002, Shaw, 2001, 2013), lack of social support, social isolation and workplace stress (Shaw, 2001, 2013), and finally the perception of poor cohesion among co-workers, such as the presence of conflict (Crook et al., 2002; Shaw et al., 2013).

Other reviews that did not necessarily calculate the level of evidence of RTW prediction factors but which appear relevant are presented in this paragraph. In the systematic review of 30 studies

by Steenstra et al. (2013), the most important factors (negative and positive) in RTW include the intensity of the pain, workloads and demands, and employee expectations regarding their RTW, as well as workplace accommodations. In a knowledge transfer workshop, Steenstra et al. (2013) also asked seven groups of clinicians (n=34 clinicians) for their opinions about the importance of certain factors in terms of their impact on RTW. Out of the seven groups, at least four of them mentioned workers' expectations about their recovery, physical workload, type of care received, radiating pain and functional limitations. The recent systematic review and meta-analysis by Lee et al. (2015), which also did not indicate the level of evidence of the factors, showed that self-efficacy, psychological distress and fear play a mediating role between the pain and the work disability. The results corroborate those obtained by other authors who state that the self-efficacy and problem-solving ability are predictive factors in RTW (Corbière et al., 2011; Sullivan et al., 2005).

1.6   Factors Common to the Return to Work

While there is an abundance of literature about the assessment of biopsychosocial factors that influence RTW after a disease or specific injury, few studies have attempted to establish common RTW factors, whatever the reason for the absence from work (Brouwer et al., 2009; Franche and Krause, 2002). As we have seen, the studies have primarily dealt with the biological and physiological factors of RTW (Young, 2010), but increasingly, researchers recognize the relevance of studying the similarities or common factors that could account for RTW, whatever the origin or cause of the absence from work (Krause et al., 2001b).

As Shaw et al. (2013) point out, it appears that there are commonalities in the biopsychosocial factors among employees with CMD and those with MSD. The systematic reviews of the literature cited previously also tend to demonstrate this. First of all, it should be understood that the RTW constitutes a multifactorial phenomenon that cannot be explained by biomedical factors alone, but by a set of psychosocial variables that fit within each of the four systems of the work disability paradigm described previously (Loisel et al., 2001). Moreover, in considering the systematic reviews carried out to attempt to explain the RTW of employees with CMD or MSD, a certain number of common factors stand out. These are of a sociodemographic nature (e.g., age, being single), clinical (e.g., an absence of a long duration, a previous history of disability, the severity and persistence of symptoms), psychosocial (e.g., negative expectations about RTW, the employee's fears), or organizational (e.g., work stressors, difficult relationship with the immediate supervisor or co-workers). All of these factors refer to the potential obstacles to RTW after an absence due to ailments of a psychological or physical origin.

In order to determine the common factors among diverse populations with a health problem, other systematic reviews have recently been carried out and the factors favourable to RTW have also been identified. In the Vooijs et al. (2015) review, in which we find diverse groups on sick leave (e.g., because of a MSD or cardiovascular diseases), being absent from work for less than a year, experiencing less pain, the perception of feeling welcome when returning to work, being under 55 years old, and having positive expectations about RTW are factors that are positively associated with RTW. This last factor, positive expectations about RTW, also emerged as being most closely correlated with RTW. In fact, the study by Heijbel et al. (2006), on which the authors of the review of Vooijs et al. (2015) based their findings, notes that only six people out of the 132 with negative expectations had returned to their workplace. Also highlighted is the

fact of having positive expectations with respect to RTW increased the possibility of the employee returning to his or her position by a factor of more than eight.

The Ebrahim et al. (2015) systematic review of the literature, which focused on people with CMD, MSD, cancer or cardiovascular disease, also showed that expectations about RTW are an important factor to consider, whatever the diagnosis. Out of the 46 studies examined, (with quality varying from "high" to "low"), 44 of them (96%) confirmed a significant link between that factor and RTW. The authors of the review emphasize that while it is a highly significant concept for predicting RTW, its application remains relatively heterogeneous and the methods of measuring it run from a simple statement about the probable return date (Løvvik et al., 2014; Nieuwenhuijsen et al., 2006) to questionnaires that cover dimensions such as self-efficacy in performing tasks related to one's work. Thus, in Løvvik et al. (2014), the relative expectations about RTW are operationalized by a single statement (Likert five point scale) "I expect to return to work in a few weeks" while in Gross and Battié (2005), expectations were measured by using the *Work-related Recovery Expectations Questionnaire* (3 statements). In the latter questionnaire, workers are asked to what extent they feel physically capable of returning to their normal work tasks.

We can see from these last observations that negative or positive expectations, often related to the concepts of perceived obstacles to one's RTW and the self-efficacy to deal with them can significantly affect the RTW of people dealing with health problems, especially those with CMD or MSD. Those concepts thus represent fundamental elements that should be integrated into the creation of RTW tools for employees on sick leave. That is a frequent recommendation of researchers, who advise those working with this clientele to discuss with them the concepts of expectations, fears, perceived obstacles and self-efficacy (SE) with respect to their RTW (Ebrahim et al., 2015; Shaw et al., 2011; Vooijs et al., 2015). Several studies have shown that SE is a fundamental concept in our understanding of the RTW of people with CMD or MSD (Brouwer et al., 2009; Franche and Krause, 2002; Lagerveld et al., 2010a). Without high SE it is difficult to motivate people to reach their objective or to achieve positive results, in this case, RTW. In the next paragraphs, the concepts of self-efficacy and perceived obstacles to the RTW, two essential and complementary concepts in evaluating the significant factors of RTW, will be presented more explicitly.

1.7   Self-Efficacy and Perceived Obstacles to RTW

We have seen that people's expectations or beliefs about their capacity to return to work constitute a significant factor for success, which is common to two groups of interest, i.e., people with CMD or MSD. As noted previously, it is similar to the concept of expectations of personal efficacy/self-efficacy (SE) originally developed by Bandura (1977). SE aligns with the belief of a person in his or her ability to successfully adopt the behaviours necessary to reach an objective or an expected outcome. According to Bandura's theory, four types of information are the source of an attitude of approach or avoidance: (1) previous successful experiences, (2) vicarious learning/experience (by observation), (3) the encouragement and support received/verbal persuasion, and (4) the emotional sources related to behaviours (joy, stress, etc.). In that vein, individuals will choose to adopt a given behaviour instead of another according to their degree of SE. In other words, they tend to avoid or invest less effort in activities/behaviours in which they feel they do not have the necessary capacity to complete, but they will engage more easily in

activities/behaviours in which they believe they have a chance of succeeding. For example, workers on sick leave who have a low level of self-efficacy to deal with, for example, symptoms (or pain) inherent in the disease, will have a tendency to neglect their health condition or to exhibit avoidance behaviours, which will affect their chances of returning to their occupational activities (Corbière et al., 2011).

When applied to RTW, self-efficacy thus represents the belief that employees have in their own abilities to exhibit the behaviours and complete the activities necessary to return to their occupational activity (Lagerveld et al., 2010b). To repeat the concepts previously discussed, workers' propensity to overcome certain obstacles they perceive to their RTW will, for the most part, be influenced by their sense of self-efficacy. The higher the worker's sense of self-efficacy, the more likely it is that he or she will be able to overcome potential obstacles to RTW. For example, someone may feel that conflict with co-workers represents a significant obstacle to RTW, while feeling entirely capable of overcoming that difficulty (Hackett et Byars, 1996). Over the years, a number of measurement tools integrating the concepts of obstacles or SE have been developed to attempt to explain work disability in general and RTW in particular from a biopsychosocial perspective. In their non-exhaustive review of these tools, Durand and Hong (2013) catalogued five questionnaires that specifically focused on assessing the obstacles to RTW among people with CMD or MSD: the *Obstacles to Return-to-Work Questionnaire* (ORQ) (Marhold et al., 2002), *Worker Role Interview* (WRI) (Velozo et al., 1999), *Return-to-Work Self-Efficacy* (RTWSE) (Brouwer et al., 2011), *Dialogue about Ability Related to Work* (DOA) (Norrby and Linddahl, 2006) and the *Work Disability Diagnostic Interview* (WoDDI) (Durand et al., 2002). Of these five tools, only the ORQ and the RTWSE were self-administered questionnaires that the person would fill out in the context of sick leave.

The ORQ (Marhold et al., 2002) is the tool most often used in the field of work disability (Durand and Hong, 2013). Its advantage is that it covers a large number of psychosocial obstacles related to work, but it has the drawback of not measuring the SE required to overcome these obstacles, even though SE is a good predictor of the degree of effort and the strategies implemented to handle these obstacles (Bandura, 1977; Bandura, 1993; Bandura, 1995). The RTWSE (Brouwer et al., 2011) measures SE for a dozen potential obstacles, but without first assessing whether the statement in question truly represents an obstacle to the person in terms of his or her RTW. It would appear logical, from reading various authors (Corbière et al., 2004; Gushue et al., 2006), to first assess people's perception of the potential obstacle to RTW and then to assess their SE to overcome it, two complementary concepts. In addition, few of the statements in the RTWSE are related to RTW actors. The other drawback related to the ORQ and the RTWSE is that they only take into account one group at a time, i.e., those with CMD, or those with MSD, while the most recent literature indicates that consideration must be given to the common factors of RTW, while respecting the specificities of each group being studied (e.g., symptoms).

To overcome these gaps, it seems necessary to design a tool that will take into account, on one hand, the two central concepts of RTW: perceived obstacles to RTW, and the SE to overcome them, and on the other hand, an assessment of the factors in the work disability paradigm, especially those related to RTW actors. Finally, special attention should be paid to the common factors of RTW in the groups under study, those with CMD and those with MSD.

2.   OBJECTIVE

With regard to the theoretical foundation presented in the introduction and studies in the work disability field, the main objective of this study is to validate the questionnaire entitled *Return-to-work Obstacles and Self Efficacy Scale* (ROSES) among workers with a common mental disorder (CMD) or a musculoskeletal disorder (MSD). More specifically, this study will validate several psychometric properties of the tool, i.e., the content validity and face validity, the construct validity, test-retest reliability and predictive validity. Once validated, ROSES will be available for researchers and stakeholders in the field who wish to use it with people dealing with CMD or MSD and who are engaged in a RTW process.

3.   METHOD

To develop the ROSES measurement tool, a number of steps were required, including planning, operationalization of the concept under study and validation of its psychometric properties (Corbière and Fraccaroli, 2014). The first two steps will be presented next, followed by the description of ROSES, and finally, the tool validation step will be discussed.

3.1   Planning and Operationalization of ROSES

As noted in the introduction, ROSES was developed to fill two gaps in the scientific literature; to systematically measure the biopsychosocial obstacles that impede RTW of people with CMD or MSD and to assess the respondents' perceived self-efficacy to overcome potential obstacles. In other words, the development of ROSES integrates both the concept of obstacles to RTW and the self-efficacy to overcome them for two groups, those with CMD and those with MSD.

The ROSES statements were designed according to two theoretical frameworks, the work disability paradigm (Loisel et al., 2001) and labour participation (Corbière and Durand, 2011). The findings from literature reviews, research reports and scientific articles were also considered by the team to determine the indicators, factors and variables most often associated with RTW among people with CMD or MSD (Corbière et al., 2013; Durand et al., 2011; Laisné et al., 2012; St-Arnaud and Corbière, 2011). With respect to the choice of the ROSES structure, in particular, for integration of two concepts (obstacles and self-efficacy), our team relied on the experience already acquired during the design and validation of the *Barriers to Employment and Coping Efficacy Scale* (BECES) tool (Corbière et al., 2004). BECES is fundamentally different from ROSES. In the case of BECES, the person is seeking a job in the labour market, while in the case of ROSES, the worker is on sick leave and in the process of returning to the position he or she held before the illness. In other words, those who respond to ROSES knew their workplace before their sick leave, while for BECES, they are not yet familiar with their workplace. This means that for the ROSES respondents, it is possible to assess the psychosocial factors or risks in the work environment.

To follow a rigorous procedure in designing ROSES-CMD and ROSES-MSD, our team decided to formulate the ROSES statements for the CMD group first, and then for the MSD group, keeping in mind that RTW factors are, for the most part, common to both groups. Some 60 statements were ultimately generated for ROSES-CMD. It is important to specify that the RTW factors found in the literature, such as age, gender, education, or the self-reported severity of the symptomatology were included in the sociodemographic portion of the questionnaire. The decision to exclude these variables from the ROSES statements stems from the fact that they are not considered as modifiable (e.g., age) or because other questionnaires exist to assess certain concepts in more depth (e.g., clinical symptoms).

To ensure the relevance and clarity of the statements, four researchers from the team (CB, LSA, MC and MJD) and six occupational rehabilitation professionals examined the first version of ROSES-CMD. After discussion, certain statements were reformulated and others were added, such as those that refer to the relationship with compensation plan representatives; a system that remains important in the work disability paradigm (Loisel et al., 2001). By the end of this

process, ROSES-CMD consisted of 74 statements. That step corresponded to what is commonly known as content validity, in which the experts ensure that the statements accurately represent the concept or concepts being assessed, in order to fine-tune the application of the concept under investigation (Corbière and Fraccaroli, 2014). The step is required to demonstrate that this tool *measures what it is supposed to measure*. Always keeping in mind that the ROSES structure and statements must be well understood by the target population, 10 people with CMD who were on sick leave were asked to respond to ROSES. The instructions provided to the respondents dealt with their personal assessment of the clarity and comprehensibility of the 74 statements. After they gave their feedback, some statements were reworked to make them easier to read and understand. This step is referred to as face validity and consists of reading the statements to evaluate their clarity and relevance (Corbière and Fraccaroli, 2014). These additions and reformulations of statements by experts in the clinical research field and by the targeted group made it possible to adequately cover the elements essential to the design of ROSES-CMD.

Afterward, taking into account the specialized literature (Laisné et al., 2012) and the principle that several RTW factors are common to both groups (Loisel and Anema, 2013), ROSES-CMD was adapted for a group with MSD. To ensure the quality of adaptation of ROSES-CMD to the group with MSD, the ROSES-MSD was presented to four clinicians and four researchers from the team with knowledge of both groups under study, to ascertain the content validity of the new version of ROSES. ROSES-MSD was also submitted to the target group to determine its face validity. Following a verification of the relevance and the clarity of the statements, our team then compared the two versions of ROSES (CMD and MSD) to verify the compatibility of the statements for the two groups. This back-and-forth work between the CMD and MSD versions of ROSES was supported by the underlying theory in which the obstacles perceived in RTW are for the most part common to both groups. The work concluded with the addition of 23 new statements, for a total of 97. While the two versions of the tool (ROSES-CMD and ROSES-MSD) each included 97 statements, eight were adapted either to the context of those with CMD or those with MSD, in order to take into account the specificities of each target group. For example, the statement "fear that your mental health problem will worsen after returning to work" in the CMD version found its equivalent in the MSD version with "fear that your musculoskeletal problem will worsen after returning to work." For information purposes, while the number of statements in ROSES remained high at this stage, it was decided to keep them all in order to test them when factor analyses were performed (see the *Analyses section*) and afterward keep those that were the most relevant for the two groups.

So that ROSES could also be validated with an English-speaking population, two independent bilingual translators translated the tool from French to English. In a twist on classic back-translation, which was also used by our team, the two professional translators were brought together to compare their translations, by asking them to explain why and how they decided on this or that interpretation. While the translators may have had certain linguistic preferences, they established a broad consensus on the English version of the ROSES (MSD and CMD). The two translators and three bilingual researchers from the team (AN, MC and MJD) then discussed these preferences. The discussions revealed that the differences in translation were often due to ambiguities in the French version. Through the translation process, and at the end of this step of linguistic adjustment, two "final" versions, one English and one French, were accepted by everyone. While this type of exchange between researchers and translators to discuss

divergences and convergences was laborious (between three and four hours), it made it possible to find certain errors and to highlight ambiguities in the original version (rough syntax, unreliable interval scale ranges, etc.). In fact, this process is very useful in the design of new tools when it is still possible to modify the original version (Corbière and Fraccaroli, 2014).

Finally, the team members were asked to carry out a concept mapping exercise of the statements (Felx et al., 2014). As Kane and Trochim (2007) explain, concept mapping is a process of structured conceptualization that helps researchers determine the key conceptual categories of the phenomenon under study (in this case, the obstacles to returning to work) by grouping statements with a common conceptual content together. At the end of the exercise, the statements were divided into six broad conceptual categories: (1) affective, cognitive and medical disturbances (26 statements), (2) job demands and feeling of organizational injustice (28 statements), (3) difficult relation with immediate supervisor and co-workers (32 statements), (4) difficult relations with the insurance company (4 statements), (5) difficult work/life balance (4 statements) and (6) lack of motivation to return to work (3 statements). This concept mapping exercise is important for conducting the factor analyses afterward and to highlight the possible dimensions for ROSES.

3.2   Description of ROSES

ROSES is designed in the form of two questions (A and B), in which the second question is conditional on the response to the first. Someone on sick leave is first asked to respond to the following question in part A: "Do you see the item below (a total of 97 statements) as an obstacle to your return to work?" The choice of responses is spread over a seven-point Likert scale (1 = "not an obstacle" to 7 = "big obstacle"). If, and only if, the participant gives a response of above 1 on this scale (i.e., the statement represents a potential obstacle to his or her RTW), he or she is then asked to respond to the second question in part B: "How capable do you feel of overcoming this obstacle?" The choice of responses is situated on seven-point Likert scale (1 = "not at all capable" to 7 = "completely capable"). The responses to these two questions enable the perceived obstacles of the person during their RTW and their self-efficacy to overcome them to be assessed. Figure 1 illustrates the structure of the questionnaire with an example of a statement in which the obstacle perceived is at a level 5 while the self-efficacy to overcome it is situated at 2.

Figure 1 ROSES Structure

3.3   Validation of ROSES

3.3.1 Study Phases for Responding to Validity and Reliability Types

In addition to the face and content validity described in the previous section, in this study, ROSES was also subjected to an assessment of the new psychometric properties: construct validity, test-retest reliability and predictive validity. In the first phase (phase 1), the participants who met the inclusion criteria (see below) and who agreed to participate in the study completed the ROSES questionnaire (CMD or MSD) and the sociodemographic questionnaire (e.g., age, gender, education). During that phase, a sample of 150 respondents or more for each version of ROSES (MSD or CMD) was required to conduct the factor analyses (construct validity). The dimensions that emerged from the factor analyses underwent a calculation of internal reliability to ensure the homogeneity of their content. The second phase (phase 2) took place one or two weeks later, to meet the demands of the test-retest reliability assessment. A sample of 20 to 30 randomly selected participants responded a second time to ROSES (CMD or MSD), following the same process as in phase 1 (however, the sociodemographic questionnaire was not re-administered). Finally a third phase (phase 3), i.e., six months after phase 1, made it possible to assess the predictive validity of ROSES. All of the participants in phase 1 were re-contacted by telephone to see whether or not they had returned to their occupational activities (the duration of the interview was approximately 5 minutes). The predictive validity made it possible to assess whether the ROSES dimensions (assessed in phase 1) were able to predict the *performance criteria*, i.e., the return or non-return to work after six months of absence (phase 3).

3.3.2 Data Collection

The project coordinator (JPL) gave the work rehabilitation counsellors an overview of the ROSES study by telephone. The project coordinator and the principal investigator also met with

health professionals in clinics and rehabilitation centres to provide more details about the project. If health professionals agreed to contribute, they were asked to explain the study to their clients with CMD or MSD who met the inclusion and exclusion criteria presented below. When clients expressed interest in participating in the study, the coordinator contacted them. After explaining the study procedures and other details related to their potential participation, the coordinator asked the clients to read the consent form, which they had to sign to authorize their participation in the three phases of the study.

The administration of ROSES (CMD or MSD) and the sociodemographic questionnaire took approximately 45 minutes. Depending on the respondent's choice, it could be completed using the *SurveyMonkey* platform,[4] by telephone, or with a paper version available at the clinic. Besides the time required to complete the questionnaires, which could be inconvenient for some respondents, the only known risk was that some of the statements in ROSES could trigger some emotionally-charged memories in the participants. To ensure the smooth conduct of the study, the interviewer remained available to respond to questions from the respondents, either in person, when the paper version of the questionnaire was completed at the clinic, or by telephone. When participants decided to respond online, it was also possible for them to reach the project coordinator at any time by telephone. Once the questionnaire was completed, participants sent an email or called the coordinator to let him know. That procedure also helped the coordinator ensure that the study ran smoothly. In addition, people who agreed to participate in the first phase were entered in a draw to win three prizes (first prize: $300; second prize $200; third prize $100). The draw was also offered to participants in phase 3 of the study. The ROSES project was approved by the Comité d'éthique de la recherche en santé chez l'humain of the Centre hospitalier universitaire de Sherbrooke and by the ethics committee of the five health institutions that took part in the study.

The ROSES questionnaire was given to people on sick leave related to their health condition, i.e., MSD or CMD, in Québec between 2011 and 2015. The two samples, people with CMD or MSD, came from private rehabilitation clinics in Québec, from hospitals and from public or private clinics. To participate in the study, those recruited had to meet the following inclusion criteria: (1) be on sick leave or a progressive return because of CMD or MSD, (2) have preserved an employment relationship with their employer (i.e., on sick leave with the objective of returning to work for the same employer) (3) be aged between 18 and 65, and (4) read French or English. Exclusion criteria were also considered: (1) being self-employed, (2) not to have been working when diagnosed (MSD or CMD) and, (3) having been diagnosed with an intellectual disability or severe cognitive impairment (e.g., memory problem).

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[4] *SurveyMonkey* is an easy to use and economical web platform that respects the rigorous confidentiality measures of the field of research (Coutu et al., 2011). The study questionnaires were integrated into the *SurveyMonkey* platform to allow participants to complete them online. Afterward, the data collected were directly transferred into an SPSS database to make statistical analyses possible.

3.3.3 Sociodemographic Description of Participants

As indicated in Table 1, the CMD sample was made up of 157 people (75.8% female) and the MSD sample was made up of 206 people (53% male). Their average age was 44 (s.d. = 9.9) for people with CMD and 42 (s.d. = 12) for those with MSD, respectively. Depression (57%) was by far the most common diagnosis in the CMD sample, followed by burnout (23%), personality disorders (6%) and adaptation disorders (6%). Among those with MSD, the most frequent pain sites, which counted for three quarters of the injuries, were in the upper limbs (46%) and back (29%). With respect to education, more than half of the CMD sample had a college-level diploma (DEC) (24%) or a university degree (34%) while among those with MSD, more than a quarter of the participants had a vocational training (27%) and 12% had a university degree. Almost an even number of people had spouses (married or de facto) among those with CMD (54%) and those with MSD (49%), but there were fewer single people in the first group (28%) than in the second (38%). Note that twice as many people with CMD than people with MSD worked in the public sector (59% compared to 30%), with most of the latter (70%) working for a private business. Also, twice as many people with MSD (33%) as those with CMD (4.5%) worked more than 40 hours a week, while at the other extreme, four times more employees with CMD (45%) than those with MSD (12%) worked 35 hours or less a week. In addition, in the same proportions, 41% of the MSD sample was on a progressive return, and 11% of the CMD sample had the same status. Finally, the average sick leave duration for the participants with CMD was 49.6 weeks (s.d.= 45.5) and it was 33.5 weeks (s.d. = 36) for those with MSD.

Table 1 Sociodemographic characteristics of participants

	Original Sample			
	CMD N = 157		MSD N = 206	
	N	%	N	%
Gender (male)	38	24.2	111	53.0
Age	M = 44.4	s.d. = 9.9	M = 41.6	s.d. = 11.9
20-29	12	7.6	41	19.9
30-39	45	28.7	49	23.8
40-49	46	29.3	46	22.3
≥ 50	54	34.4	70	34.0
Highest academic level				
Primary	12	7.6	8	3.88
Secondary	37	23.6	82	39.8
Vocational diploma	18	11.5	56	27.2
College	37	23.6	35	17.0
University	53	33.8	25	12.1
Civil status				
Single	44	28.0	78	37.9
Married/de facto spouse	84	53.5	102	49.5
Separated/divorced/widowed	29	18.5	26	12.6
Employment status when responding to ROSES				
On progressive return	18	11.5	85	41.3

	Original Sample			
	CMD		MSD	
	N = 157		N = 206	
	N	%	N	%
On complete sick leave	139	88.5	121	58.7
Household income since the worker was on sick leave (in thousands of $)				
< 20	10	6.4	32	15.5
20-40	38	24.2	67	32.5
41-60	39	24.9	53	25.7
61-80	26	16.6	28	13.6
> 80	41	26.1	22	10.7
Missing	3	1.9	4	1.9
Diagnosis				
Depression	90	57.3		
Burnout	23	14.6		
Obsessive-compulsive disorder	1	0.6		
Personality disorder	10	6.4		
Adjustment disorder	10	6.4		
Panic disorder	4	2.6		
Post-traumatic stress disorder	5	3.2		
Other (substance abuse, bipolar disorder)	11	7.0		
Missing	3	1.9		
Site of the physical pain				
Upper limbs (head, shoulders, arms, hands)			95	46.1
Back (lower and thoracic)			60	29.1
Lower limbs (legs, knees, feet)			17	8.3
Multisite (mix of the three previous categories)			34	16.5
Severity of symptoms in the past week*	M = 5.9	s.d. = 2.2	M = 5.3	s.d. = 2.1
Number of weeks of absence from work	M = 49.6	s.d. = 45.5	M = 33.5	s.d. = 36.0
Number of hours worked per week before sick leave began				
≤ 35	71	45.2	24	11.7
36-40	79	50.3	112	54.4
> 40	7	4.5	68	33.0
Size of the company				
1 to 4 employees	0	0.0	9	4.4
5 to 99 employees	31	19.8	70	34.0
100 to 499 employees	25	15.9	51	24.8
500 employees or more	101	64.3	75	36.4
Sector				
Public	93	59.2	62	30.1
Private	60	38.2	144	69.9
Other (e.g., community)	3	1.9	0	0.0
Missing	1	0.6	0	0.0
Sector of economic activity				
Art, literature and communications	3	1.9	1	0.5

	Original Sample			
	CMD N = 157		MSD N = 206	
	N	%	N	%
Education and child care services	22	14.0	13	6.3
Business entities (retail and wholesale)	15	9.6	56	27.2
Service businesses	26	16.6	33	16.0
Civil service	23	14.7	10	4.9
Agriculture and agrifood industries	4	2.6	20	9.7
Construction industries and companies	13	8.3	25	12.1
Liberal professions and consultants	12	7.6	1	0.5
Health and social services	38	24.2	43	20.9
Missing	1	0.6	2	1.0

Notes. M = mean; s.d. = standard deviation
* The severity of symptoms over the past week is measured using a visual analogue ten-point scale, in which 10 corresponds to the most severe symptoms.

3.3.4 Analyses

3.3.4.1 Exploratory and Confirmatory Factor Analyses (Construct Validity)

While content and face validity are essential preliminary steps in the validation of a tool, factor analysis validity constitutes the cornerstone of construct validity. There are two types of factor analysis: *exploratory* and *confirmatory*. As their adjectives imply, the first type imposes no pre-established factor solution, while the second enables the confirmation or rejection of the factor solution being tested (Corbière, 2014, p. 518). Exploratory factor analysis (EFA) makes it possible to validate measurement tools (e.g. ROSES), and, in particular, to explore the conceptual dimensions inherent in a construct (search for a conceptual multidimensionality), and to reduce the number of statements in each dimension, along the lines of the principle of parsimony (Corbière, 2014). In this study, exploratory factor analysis (EFA) was first chosen to verify the potential presence of dimensions for each of the three conceptual categories (affective, cognitive and medical disturbances, job demands and a feeling of organizational injustice, difficult relation with the immediate supervisor and co-workers), and to reduce the number of statements. The three other conceptual categories (difficult relations with the insurance company, difficult work/life balance, loss of motivation to return to work) did not contain enough statements to undergo an EFA. Cronbach's alpha was therefore chosen to determine the level of internal homogeneity of the last three conceptual categories. With respect to the sample size required for the EFA, several authors indicate that the statement/subject ratio should be at least 1 to 5 (Bryant and Yarnold, 1995; Gorsuch, 1983; Tabachnick and Fidell, 2001) with a sample that is always more than 100 individuals (Corbière, 2014). These statistical criteria are respected, as there is not only a sample of 157 individuals with CMD, but also three conceptual categories (affective, cognitive and medical disturbances, job demands and a feeling of organizational injustice, difficult relation with the immediate supervisor and co-workers) that include 26, 28 and 32 statements, respectively.

For theoretical reasons focused on examining the perceived obstacles to RTW before assessing the self-efficacy to overcome them, but also in terms of feasibility (a lower rate of response to part B of ROSES—response conditional on question A), the EFA (principal axis factoring) with orthogonal rotation (Varimax) were only performed with the responses to the statements in Part A of ROSES (see Figure 1 in subsection 3.2: "ROSES structure"). Using SPSS software, an EFA was conducted on each of the three conceptual categories in Part A of ROSES-CMD. To do this, preliminary steps were performed to identify potential issues in data collection (e.g., outliers or missing data) and the multicollinearity of statements (Tabachnick and Fidell, 2007). Afterward, Bartlett's Test of Sphericity (Bartlett, 1954), in which the value of p must be below 0.05, and the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) (Thompson, 2004), in which a coefficient of at least 0.60 is sought (Tabachnick and Fidell, 2001), constitute two criteria that must be considered during the realization of the initial EFA. The number of factors to extract was then determined by observing the elbows (Cattell's scree test) and eigenvalues above 1, as well as the total accumulated variance, which must be above or equal to 50% (Corbière, 2014). Once that information is known and those steps completed, new EFA were performed on the three above-mentioned conceptual categories. The respective statements of these three factor solutions were retained if their loading factor was at least equal to 0.40 and, as much as possible, they did not load on more than one factor. (Corbière, 2014).

Cronbach's coefficient alpha was then calculated to obtain the degree of internal reliability of conceptual dimensions (or factors) that emerged from the EFAs in the CMD sample. As Corbière and Fraccaroli (2014) indicate, the calculation of internal reliability reinforces the results of the factor analyses, in that it supports the homogeneity of the statements that belong to the dimension in question. It should be noted that the coefficient might vary according to the number of statements per dimension. According to the analysis grid for the interpretation of results provided by DeVellis (2001), homogeneity coefficients (or Cronbach's alpha) can be considered as "very good" when they fluctuate between 0.80 and 0.90, as "acceptable" when they are situated between 0.70 and 0.80, and "minimally acceptable" when they are between 0.60 and 0.70. Internal reliability coefficients can also indicate the presence of some redundancy when they reach 0.90 or more. These qualifications must be interpreted with caution to the extent that Cronbach's alpha is mainly determined by the number of statements retained for analysis (Streiner et Normand, 2008). To explain, Corbière and Fraccaroli (2014) also stress that fewer than five statements can often lead to an alpha coefficient of around 0.65 and it is probable that ten or more statements will produce an alpha close to 0.90 or more. In addition [translation], "even though a coefficient that is too high may indicate that there is a redundancy of items (Vallerand, 1989) […], in some contexts, such as in the clinical environment, a very high coefficient is recommended when, for example, the health professional desires to reduce errors to make a diagnosis (DeVellis, 2001; Streiner and Normand, 2008)" (Corbière and Fraccaroli, 2014, p. 601).

To verify whether the factor solutions produced by the EFA on the CMD sample are well adjusted to the data in the MSD sample, two of the team's researchers (AN and MC) performed confirmatory factor analyses (CFA), using EQS software (Bentler, 1995). *CFA is different than EFA (see above), because the former requires the researcher to issue specific expectations about results, in particular, the number of factors to keep (whether they are correlated or not) and the number of observables (or statements) that load the factor(s). In other words, in the scope of a*

CFA, all the implicit parameters of the model to be tested must be estimated (Corbière, 2014, p. 529). First of all, the Maximum Likelihood-Robust method was used to test the models with the CFA. This method enables the non-normality of data to be mitigated. Afterward, the adjustment of the model to empirical data from the MSD sample was assessed according to several adjustment indices such as chi-square, the chi-square/degree of freedom ratio, the Root Mean Square Error of Approximation (RMSEA), le Non-Normed Fit Index (NNFI), the Comparative Fit Index (CFI) and the Incremental Fit Index (IFI) (Corbière, 2014). A model is generally well-adjusted to empirical data when the chi-square/degree of freedom ratio is equal to or below 2 (Byrne, 1989; Hofmann, 1995), and when the NNFI, IFI and CFI robust indices are higher than 0.90 (Jöreskog et Sörbom, 1993; Mueller, 1996), and the RMSEA is lower than or equal to 0.08. With respect to the sample size required for this type of analysis, Corbière (2014) notes that many authors set the threshold at a minimum of 200 individuals, in order to respect the demands of the above-mentioned adjustment indices (Bollen, 2014; Chou and Bentler, 1995). Finally, as was done with the CMD sample, the Cronbach's alphas were calculated for each of the dimensions, to measure their internal reliability.

3.3.4.2 Correlation Analyses (Test-retest Reliability)

The second psychometric property was tested using the test-retest method, which [translation] "assesses the stability of a measurement tool over time" (Corbière and Fraccaroli, 2014, p. 602). It consists of presenting the questionnaire to the same subjects on two different occasions, and measuring the temporal stability (DeVellis, 2001) of their responses using a correlation coefficient (e.g., the Pearson correlation coefficient). It is important that there be at least 20 subjects, that the situation or condition of these people did not change significantly between the two assessments (e.g., hospitalization), and that there is no more than a two-week interval between the two assessments (Streiner and Normand, 2008). When these three conditions are respected, the questionnaire will be more reliable and there should be less fluctuation in the same subject's responses between phases 1 and 2 of the study. Thus, one would expect a high correlation coefficient between the two assessments. More specifically, a coefficient of over 0.60 generally indicates that the tool has a satisfactory degree of reliability (Vallerand, 1989). Test-retest reliability will be calculated for dimensions that have emerged from the exploratory and confirmatory factor analyses (CFA) or from those with a satisfactory internal reliability coefficient (conceptual categories that were not tested by factor analyses). By using these statistical guides, some 20 participants (n=20) randomly selected from the 157 subjects responded a second time to the ROSES-CMD questionnaire one or two weeks after phase 1. With respect to participants with MSD, about 30 (n=33) were selected in phase 2.

3.3.4.3 Logistic Regressions (Predictive Validity)

As Corbière and Fraccaroli (2014) pointed out, predictive validity consists of determining whether a predictor (e.g., job demand) makes it possible to meaningfully predict a criteria (e.g., return to work six months later), which constitutes the variable that is the subject of the prediction. One of the techniques used to test the predictive validity of the tool is logistic regression, particularly when the criteria or the dependent variable is categorical or dichotomous (Houlfort and Laurent, 2014). To assess the predictive validity of the dimensions of ROSES, CMD and MSD, logistic regression (enter method), using the dependent dichotomous variable of

returning to work (return compared to non-return)[5] for the same employer six months after phase 1 of the study, was performed on each of the dimensions of ROSES (parts A and B) that emerged from the EFA and that were confirmed by the CFA, in addition to three conceptual categories that were not suited to the EFA (but tested with the Cronbach index). The gender, age, education, duration of absence from work following CMD or MSD (assessed in number of weeks), level of pain (MSD) or severity of clinical symptoms (CMD) observed during the week before phase 1, and the presence of a progressive return in phase 1 are variables that were included in each of the regression analyses as controlled variables. In other words, the results of the logistic regression analyses made it possible to assess the unique contribution of each of the conceptual dimensions of ROSES in the prediction of the RTW, by considering the controlled variables. It also appeared relevant to test the issue of complementarity and salience of concepts (obstacles and self-efficacy) to predict RTW. In that respect, when the univariate regression analyses indicated that "obstacles" and "self-efficacy" were significant in predicting the RTW separately, new regression analyses were performed simultaneously on the two types of response. In other words, when the results of univariate regressions were suitable, the two types of scales (obstacles and self-efficacy) were included in a single regression analysis, in order to take note of their complementarity or their salience.

Table 2 Caracteristics of the study in terms of the three phases

	Phase 1 (*Reference*)	Phase 2 (*2 weeks after*)	Phase 3 (*6 months after phase 1*)
Psychometric property	Construct validity	Reliability or stability (test-retest)	Predictive validity
Statistical analyses	Exploratory and confirmatory factor analyses	Pearson correlations	Logistic regression
Variables studied	ROSES T1 and sociodemographic questions	ROSES T1 and ROSES T2	Variable to be predicted or performance criteria: Employment status (return/non-return)
Questionnaire duration (min.)	45	30	5
Questionnaire methodology	SurveyMonkey, telephone or face-to-face	The same as phase 1	Telephone

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[5] Return to work is defined in this study as a complete return to work for the same employer, which means that a progressive return is excluded. Only those who returned to work for the same employer (without a progressive return) have a *return to work* status. People who have not returned to their positions (thus excluding those who are on a progressive return) have a *non-return to work* status.

4.   RESULTS

4.1   Construct Validity

4.1.1 Exploratory Factor Analyses (EFA)

As noted previously, certain preliminary steps were considered before carrying out the EFA. In the scope of this study, few outliers or missing data were found. Moreover, the calculation of correlations between the statements in each of the conceptual categories indicated coefficients that fluctuated between 0.30 and 0.70, thus respecting an acceptable level of multicollinearity between the statements (Tabachnick and Fidell, 2001). Three initial exploratory factor analyses (EFA) were carried out with the CMD sample on three conceptual categories constructed *a priori* (see concept mapping above). The three initial EFA presented *p* values lower than 0.05 (in general *p*=0.01) for Bartlett's Test of Sphericity (Bartlett, 1954) and coefficients varying from 0.85 to 0.90 for the KMO (Tabachnick et Fidell, 2001), proving the relevance of using EFA in this study.

The EFA results by principal axis factoring with varimax rotation indicate eigenvalues varying from 1.47 to 5.05. The percentage of explained total variance is 59.8%, 50.4% and 53.7% respectively for the three conceptual categories: (1) affective, cognitive and medical disturbances (26 statements), (2) job demands and feeling of organizational injustice (28 statements) and (3) difficult relation with the immediate supervisor and co-workers (32 statements) (tables 3 to 5). In total, 35 statements distributed among seven conceptual dimensions emerged from the three factor analyses. This means that 50 statements were removed from the EFA because they loaded on more than one factor or had loading factors lower than 0.40 (Corbière, 2014). Upon reading Table 3, we note, however, that the item entitled *Difficulties thinking, reflecting and making decisions like you could before the occurrence of your mental health problem* presents double saturation in the *Cognitive difficulties* and *Fears of a relapse* dimensions. Double loading indicates that the statement is related to (or exerts a weight over) to conceptual dimensions or factors. As the EFA remains a statistical tool that requires reasoning from the researchers, especially for interpretation of the results, we believe that on the conceptual level, the statement corresponds more to the *Cognitive difficulties* scale. It must be understood that, statistically, a dimension or a factor with fewer than three statements is not solid on its own and does not make calculation of the internal reliability of that same dimension possible (minimum of three statements required to calculate the internal reliability). Because of these conceptual and statistical reasons, a decision was made to keep the statement *Difficulties thinking, reflecting and making decisions like you could before the occurrence of your mental health problem* in the *Cognitive difficulties* dimension.

As stated above, the three major conceptual categories (difficult relations with the insurance company, work/life balance and loss of motivation to return to work) had fewer than six statements, and therefore the EFA were not performed on them. However, the internal reliability calculations were performed for each of the conceptual categories, as was done for the emerging dimensions of the EFA, as well. Ultimately, 10 conceptual dimensions emerged from the EFA, or were refined using the internal reliability calculation. The 10 conceptual dimensions, presented in tables 3 to 6 were entitled as follows: fears of a relapse (4 statements), cognitive

difficulties (3 statements), medication-related difficulties (3 statements), job demands (7 statements), feeling of organizational injustice (4 statements), difficult relation with immediate supervisor (7 statements), difficult relation with co-workers (7 statements), difficult relations with the insurance company (4 statements), difficult work/life balance (4 statements), loss of motivation to return to work (3 statements).

4.1.2 Confirmatory Factor Analyses (CFA)

Confirmatory factor analysis (CFA) was performed on the MSD sample to verify whether the model previously obtained with the CMD sample (seven dimensions that emerged from the three EFAs) also agreed with the MSD data. As indicated in Table 7, the results of the three CFAs were satisfactory because all of the indices respected the required thresholds. In other words, the chi-square/degree of freedom and RMSEA indices were below 2 (1.29; 1.10; 1.53) and to 0.08 (0.04; 0.02; 0.05), respectively. In addition, the NNFI (0.97; 0.99; 0.92), IFI (0.98; 0.99; 0.94) and robust CFI (0.98; 0.99; 0.94) indices were all higher than the recommended threshold of 0.90. As an example, the models tested with the CFA were tested under the premise that the dimensions were inter-correlated. The results of the correlations among the 10 dimensions are presented in Table 8. As illustrated in Table 8, the Cronbach's alpha coefficients oscillated between 0.69 and 0.93. This constitutes a satisfactory level of internal reliability, keeping in mind, on one hand, that the number of statements could be low (lower than five) and, on the other, it is a clinical environment where it is preferable to have some redundancy to represent a conceptual dimension.

Table 3 Exploratory factor analysis of the "affective, cognitive and medical disturbances"
conceptual category—CMD (n = 157)

ROSES statements	Dimension		
	Fears of a relapse	Cognitive difficulties	Medication-related difficulties
	4 statements α = 0.87	3 statements α = 0.79	3 statements α = 0.74
75. Fear that your mental health problem will worsen after returning to work.	0.79		
71. Fear that new symptoms will appear after you return to work.	0.71		
89. Having difficulty recovering after a day's work.	0.63		
65. Fear of having a relapse due to the demands of your job.	0.57		
7. Possible difficulty concentrating or staying focused at work.		0.85	
25. Memory problems.		0.80	
43. Difficulties thinking, reflecting and making decisions like you could before the occurrence of your mental health problem.	0.57	0.58	
31. The effects of changes in the medication you take for your mental health problem when returning to work.			0.69
13. Your concerns about taking medication in your workplace.			0.67
48. The side effects of your medication (e.g., difficulty sleeping, trembling, weight gain).			0.60
Eigenvalues	2.45	2.06	1.47
% of variance (cumulative = 59.81%)	24.52	20.60	14.70

Note. ROSES = Return-to-work Obstacles and Self Efficacy Scale. CMD = common mental disorder.
The loading of statements with factors lower than 0.40 are not presented.

Table 4 Exploratory factor analysis of the "Job demands and feeling of organizational injustice" conceptual category—CMD (n = 157)

ROSES statements	Dimension	
	Job demands	Feeling of organizational injustice
	n = 7 statements α = 0.88	n = 4 statements α = 0.74
17. Responsibilities associated with your job.	0.78	
23. Pressure related to your job (e.g., productivity).	0.78	
11. Once again having to deal with the demands of your job.	0.74	
26. Difficulties achieving your work goals by the established deadlines after returning to work.	0.71	
5. Being overloaded the first few days after returning to work.	0.66	
44. Fear of no longer having all the skills and abilities needed to perform at your job.	0.55	
34. Lack of accommodation measures (e.g., schedules, performance requirements) in your workplace.	0.42	
85. Fear of no longer qualifying for all internal career moves (e.g., promotions, training) after returning to work.		0.73
90. Fear of no longer being involved in stimulating tasks or projects in your workplace.		0.71
45. Fear of losing your job after returning to work (e.g., contract not renewed).		0.61
83. Lack of recognition in your workplace for the efforts you make to return to work.	0.43	0.51
Eigenvalues	3.43	2.12
% of variance (cumulative = 50.44%)	31.14	19.30

Table 5 Exploratory factor analysis on the "Difficult relation with the immediate supervisor and co-workers" conceptual category—CMD (n=157)

ROSES statements	Dimension	
	Immediate supervisor	Co-worker
	n = 7 statements α = 0.91	n = 7 statements α = 0.86
58. Lack of communication with your immediate supervisor.	0.82	
81. Lack of support from your immediate supervisor after returning to work.	0.82	
61. Your immediate supervisor's negative view of your personal health issue.	0.76	
95. Your immediate supervisor's lack of knowledge about the return-to-work process of employees with mental health problems.	0.66	
70. Your immediate supervisor's lack of availability to give you feedback on your work.	0.66	
24. Your immediate supervisor's reluctance about reintegrating you at work.	0.62	
42. Feeing pressure from your immediate supervisor to be more productive as soon as you return to work.	0.62	
80. Negative reactions from your co-workers after telling them about your mental health problems.		0.83
36. Fears about re-establishing contact with your co-workers.		0.72
76. Feeling obliged to reveal the reasons for your absence to your co-workers.		0.66
91. Noticing a change in your co-workers' attitude toward you (e.g., hypocritical, not genuine) when you return to work.		0.67
82. Fear of being watched by your co-workers after returning to work.		0.66
21. Lack of support from your co-workers when you return to work.		0.59
84. Your co-workers' indifference to your return to work.		0.50
Eigenvalues	4.05	3.46
% of variance (cumulative = 53.65%)	28.90	24.74

Note. ROSES = Return-to-work Obstacles and Self Efficacy Scale. CMD = common mental disorder.
The loading of statements with factors lower than 0.40 are not presented.

Table 6 The three conceptual categories that have not undergone exploratory factor analyses (n=157)

Difficult relations with the insurance company (n = 4 statements)

78. A poor relationship with the insurance company agent (e.g., problems communicating).

16. Problems understanding the insurance company documents relating to your mental health problem.

97. Difficulties getting information from your insurance company about your sick leave.

52. Feeling pressure from the insurance company agent to return to work quickly.

Difficult work/life balance (n = 4 statements)

3. People in your circle (family, friends) do not think that it is a good idea for you to return to work.

9. Lack of support from the people in your circle (family, friends).

28. Family obligations (dependent relative or child).

40. Difficulties handling job demands and family obligations at the same time.

Loss of motivation to return to work (n = 3 statements)

2. Low motivation, lack of interest in returning to work.

54. Having lost interest in working.

14. Not being sure you want to return to work.

Note. Cronbach's alpha coefficients for these three dimensions are indicated diagonally in Table 8, for both groups (CMD, MSD)

Table 7 Confirmatory factor analyses for ROSES-MSD (n = 206)

Model	Df	χ2	χ2/df	NNFI	Robust CFI	IFI	RMSEA (Confidence interval at 90)
					Adjustment index		
ROSES MSD – Three dimensions							
Affective, cognitive and medical disturbances (3 correlated factors; 10 statements)	32	41.39	1.29	.97	.98	.98	.04 (0.00 – 0.07)
Job and workplace demands (2 correlated factors; 11 statements)	43	47.18	1.10	.99	.99	.99	.02 (0.00 – 0.05)
Difficult relation with immediate supervisor/co-workers (2 correlated factors; 14 statements)	76	116.11	1.53	.92	.94	.94	.05 (0.03 – 0.07)

Table 8 Correlations and internal reliability of the ten dimensions of ROSES (Part A)—CMD (n=157) and MSD (n=206)

CMD/MSD Dimension	1	2	3	4	5	6	7	8	9	10
1. Fears of a relapse	α = .87 r = .76 α = .82 r = .77	0.39	0.43	0.77	0.53	0.55	0.45	0.43	0.36	0.44
2. Cognitive difficulties	0.57	α = .79 r = .89 α = .86 r = .91	0.54	0.42	0.38	0.34	0.29	0.30	0.36	0.32
3. Medication-related difficulties	0.44	0.45	α = .74 r = .83 α = .74 r = .87	0.44	0.43	0.33	0.33	0.30	0.34	0.33
4. Job demands	0.69	0.58	0.38	α = .88 r = .85 α = .86 r = .91	0.57	0.62	0.49	0.40	0.41	0.49
5. Feeling of organizational injustice	0.48	0.42	0.37	0.49	α = .74 r = .81 α = .76 r = .83	0.79	0.69	0.51	0.36	0.42
6. Difficult relation—immediate supervisor	0.36	0.20	0.23	0.47	0.64	α = .91 r = .83 α = .89 r = .91	0.63	0.47	0.39	0.46
7. Difficult relation—co-workers	0.45	0.42	0.44	0.52	0.58	0.52	α = .86 r = .91 α = .87 r = .78	0.39	0.34	0.49
8. Difficult relations—insurance	0.36	0.35	0.39	0.25	0.43	0.3	0.37	α = .64 r = .72 α = .74 r = .88	0.29	0.25
9. Difficult work/life balance	0.57	0.48	0.40	0.41	0.35	0.31	0.44	0.44	α = .62 r = .80 α = .63 r = .90	0.38
10. Loss of motivation to return to work	0.57	0.41	0.32	0.57	0.32	0.35	0.39	0.16	0.40	α = .84 r = .87 α = .82 r = .91

Notes. ROSES = Return-to-work Obstacles and Self Efficacy Scale. CMD = Common mental disorder. MSD = Musculoskeletal disorder. The correlations for the CMD sample are presented below the diagonal, while those for the MSD sample appear above the diagonal. The alphas and the Pearson coefficients (r) test-retest diagonally at the top correspond to the MSD sample. All the coefficients are significant to < 0.01 with the exception of the 0.16 coefficient, for which the p value is 0.05.
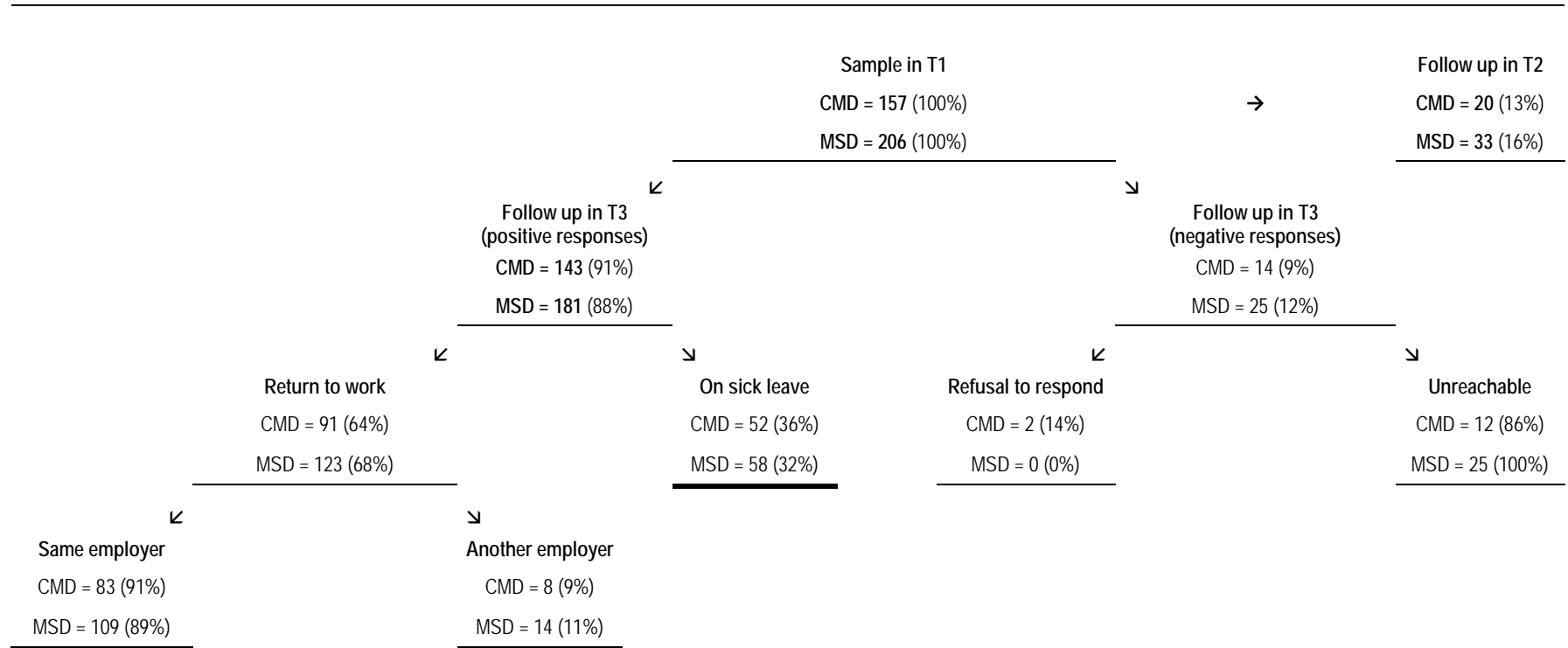
4.2   Test-retest Reliability

As indicated diagonally in Table 8, the correlation coefficients that were all significant to $p < 0.01$ fluctuated between 0.77 and 0.91 among people with CMD, and between 0.72 and 0.91 among people with MSD. As the satisfaction threshold is generally set at 0.60 (Vallerand, 1989), the 10 conceptual dimensions of ROSES could be considered as stable measurements in a two-week time span.

4.3   Predictive Validity

A total of 143 people (90%) with CMD agreed to participate in the third phase, which consisted of providing information about their return (or non-return) to work. There were 181 people with MSD who participated, i.e., 88%, which is an excellent rate of response (see Figure 2). The responses to the telephone interview showed that 64% of people with CMD and 68% with MSD returned to work six months after responding to the ROSES questionnaire. Among those who had returned to their occupational activity, 91% of people with CMD and 89% with MSD returned to the same employer they had worked for before the sick leave. Figure 2 illustrates the trajectory of participants in the three phases. Given that there was a loss of participants in the six-month follow-up and because of the inclusion criteria (e.g., return to work for the same employer) for assessing the predictive validity of ROSES, regression analyses were performed on more limited samples (CMD=135 and MSD=167). In Table 9, the means of the 10 dimensions for the CMD and MSD samples (the obstacles and self-efficacy scales) were presented for the two subgroups, i.e., those who had returned to work and those who were still on sick leave.

	Sample in T1			Follow up in T2
	CMD = **157** (100%)		→	CMD = **20** (13%)
	MSD = **206** (100%)			MSD = **33** (16%)

Follow up in T3 (positive responses)		Follow up in T3 (negative responses)
CMD = **143** (91%)		CMD = 14 (9%)
MSD = **181** (88%)		MSD = 25 (12%)

Return to work	On sick leave	Refusal to respond	Unreachable
CMD = 91 (64%)	CMD = 52 (36%)	CMD = 2 (14%)	CMD = 12 (86%)
MSD = 123 (68%)	__MSD = 58 (32%)__	MSD = 0 (0%)	MSD = 25 (100%)

Same employer	Another employer
CMD = 83 (91%)	CMD = 8 (9%)
__MSD = 109 (89%)__	MSD = 14 (11%)

Notes. The calculation of the percentage of samples (between parentheses) is based on the previous cell.

The dependant dichotomous variable "RTW status," used in the regression analyses, is composed of the terms "Same employer" and "On sick leave" underlined with a thick black line.

Figure 2 Flow chart of participants (CMD, MSD) according to the three phases of the study (T1, T2, T3)

Table 9 Mean of the ROSES dimensions according to health problem (CMD and MSD) and employment status

ROSES Dimensions	CMD (RTW: N = 83; STOP: N = 52)								MSD (RTW: N = 109; STOP: N = 58)							
	Perceived obstacle				Self-efficacy				Perceived obstacle				Self-efficacy			
	RTW		SL		RTW		SL		RTW		SL		RTW		SL	
	M	(s.d.)	M	(s.d.)	M	(s.d.)	M	(s.d.)	M	(s.d.)	M	(s.d.)	M	(s.d.)	M	(s.d.)
Fears of a relapse	4.7	(1.8)	5.2	(1.5)	3.4	(1.4)	3.0	(1.4)	3.2	(1.6)	4.0	(1.9)	4.8	(1.2)	3.9	(1.6)
Cognitive difficulties	4.7	(1.8)	5.2	(1.9)	3.7	(1.4)	3.0	(1.3)	1.6	(1.0)	2.1	(1.5)	5.0	(1.4)	4.6	(1.4)
Medication-related difficulties	3.1	(1.8)	3.1	(1.8)	4.0	(1.5)	3.7	(1.2)	1.7	(1.1)	2.1	(1.7)	4.5	(1.5)	3.5	(1.9)
Job demands	4.3	(1.6)	5.1	(1.5)	3.8	(1.2)	3.1	(1.3)	2.5	(1.3)	3.3	(1.8)	4.8	(1.1)	3.9	(1.5)
Feeling of organizational injustice	3.2	(1.8)	3.6	(1.9)	3.5	(1.1)	3.4	(1.6)	1.7	(1.0)	2.5	(1.7)	4.7	(1.3)	3.7	(1.6)
Difficult relation—immediate supervisor	3.5	(1.9)	3.9	(1.8)	3.6	(1.4)	3.2	(1.5)	1.9	(1.2)	2.9	(1.9)	4.5	(1.0)	3.4	(1.6)
Difficult relation—co-workers	3.4	(1.6)	4.1	(1.9)	3.8	(1.3)	3.2	(1.3)	1.6	(1.0)	2.0	(1.3)	5.0	(0.9)	4.4	(1.8)
Difficult relations—insurance	2.3	(1.4)	2.4	(1.5)	3.8	(1.2)	3.9	(1.2)	1.6	(0.9)	2.0	(1.2)	4.6	(1.5)	4.1	(1.6)
Work/life balance	2.6	(1.4)	2.9	(1.4)	4.2	(1.5)	3.8	(1.3)	1.5	(0.8)	1.7	(1.0)	5.4	(1.1)	4.5	(1.5)
Loss of motivation to return to work	3.3	(2.0)	4.1	(1.9)	4.0	(1.4)	3.7	(1.4)	1.6	(1.2)	1.8	(1.3)	4.9	(1.4)	4.5	(1.6)

CMD = common mental disorder, MSD = musculoskeletal disorder, RTW = return to work group, SL = group on sick leave, M = mean, s.d. = standard deviation

4.4   CMD and MSD Univariate Regressions

For the CMD and MSD samples, the logistic regression analyses (enter method) indicate that none of the three controlled variables (gender, age, education) are significantly associated with RTW. It was only among people with MSD that the sociodemographic variables of **number of weeks of absence from work** (OR = 0.99; 95% CI = 0.98-1.00; $p < 0.03$), **pain experienced in the past week** (OR = 0.79; 95% CI = 0.68-0.93; $p < 0.01$) and **progressive return to work** (OR = 2.1; 95% CI = 0.25-0.93; $p < 0.03$) were found to be significant. An odds ratio (OR) lower than one of these predictors (0.99 and 0.79) means, for example, that a greater number of weeks away from work increases the probability of not returning (to the same employer) after six months.

When these logistic regressions (enter method) are performed on each of the ROSES-CMD dimensions for part A (obstacles to the RTW) and by integrating the five control variables, only the **Job demands** dimension significantly predicted RTW among people with CMD, with an odds ratio of 0.71 (Table 10). We also observed that among people with MSD, four dimensions of part A of ROSES were found to be statistically significant in predicting RTW. They are **fears of a relapse**, **job demands**, **feeling of organizational injustice**, and **difficult relation with the immediate supervisor**. The odds ratios for these four dimensions are, in order, 0.77, 0.65, 0.68, and 0.69. For instance, an odds ratio of 0.5 would mean that the possibility of someone not returning to work doubles every time their score increases by one point on the seven-point scale of the dimension in question.

Using self-efficacy (part B) instead of obstacles as a predictor, the logistic regression analyses (enter method) revealed that **cognitive difficulties** and **job demands** are significant predictors of RTW in the CMD sample. Their positive odds ratio of 1.45 and 1.59 indicates that the probability of returning to work increases at the same rate as the sense of self-efficacy over these two dimensions. Among people with MSD, **fears of a relapse**, **feeling of organizational injustice,** and **difficult relation with the immediate supervisor** can be added to **job demands**. For those dimensions, the odds ratio is respectively 1.62, 1.52, 1.79 and 2.75. A strong sense of self-efficacy for the last two dimensions of ROSES indicates that the chance of returning to one's occupational activities increases from one and a half to more than two times for each additional unit obtained on the seven-point scale.

Finally, taking into account the significant results of the regression analyses performed over each of the dimensions of ROSES, new logistic regression analyses include both the obstacle (part A) and sense of self-efficacy (part B) scales as predictors that reveal that **job demands—part B** (OR = 1.67; $p < 0.02$) and **job demands—part A** (OR = 0.52; $p < 0.01$) were significantly related to RTW of people with CMD and MSD, respectively. For people with only MSD, and still including parts A and B of ROSES, the dimensions that were found to be significant were **fears of a relapse—part B** (OR = 1.52; $p < 0.003$), **feeling of organizational injustice—part A** (OR = 0.38; $p < 0.002$) and **difficult relation with the immediate supervisor—part A** (OR = 0.35; $p < 0.001$).

Table 10 Logistic regressions predicting the le RTW (CMD: N = 135; MSD: N = 167)

	Perceived obstacle RTW*			Self efficacy*			Obstacle (A) and self efficacy (B)**			
	OR	95 IC	P Value	OR	95 IC	P Value	(A) or (B)	OR	95 IC	P Value
CMD										
Fears of a relapse	0.84	0.66-1.08	0.17	1.13	0.84-1.51	0.42				
Cognitive difficulties	0.93	0.74-1.17	0.52	**1.45**	**1.04-2.01**	**0.03**				
Medication-related difficulties	1.12	0.90-1.39	0.32	1.01	0.65-1.56	0.97				
Job demands	**0.71**	**0.54-0.93**	**0.01**	**1.59**	**1.11-2.28**	**0.01**	(B)	1.67	1.20-2.29	0.02
Feeling of organizational injustice	0.93	0.76-1.15	0.52	0.99	0.70-1.41	0.95				
Difficult relation—immediate supervisor	0.90	0.73-1.10	0.31	1.20	0.84-1.71	0.31				
Difficult relation—co-workers	0.83	0.66-1.05	0.12	1.43	0.99-2.07	0.06				
Difficult relations—insurance	1	0.76-1.31	0.98	0.99	0.57-1.70	0.96				
Difficult work/life balance	0.98	0.74-1.31	0.90	1.34	0.89-2.01	0.16				
Loss of motivation to return to work	0.82	0.67-1.00	0.06	1.04	0.75-1.44	0.80				
MSD										
Fears of a relapse	**0.77**	**0.61-0.97**	**0.03**	**1.52**	**1.13-2.03**	**0.01**	(B)	1.52	1.15-2.00	0.003
Cognitive difficulties	0.75	0.56-1.02	0.06	1.27	0.77-2.08	0.35				
Medication-related difficulties	0.87	0.66-1.15	0.34	1.50	0.91-2.48	0.11				
Job demands	**0.65**	**0.50-0.86**	**0.01**	**1.62**	**1.09-2.42**	**0.02**	(A)	0.52	0.36-0.75	0.001
Feeling of organizational injustice	**0.68**	**0.51-0.91**	**0.01**	**1.79**	**1.12-2.85**	**0.02**	(A)	0.38	0.21-0.71	0.002
Difficult relation—immediate supervisor	**0.69**	**0.54-0.88**	**0.01**	**2.75**	**1.45-5.21**	**0.01**	(A)	0.35	0.20-0.63	0.001
Difficult relation—co-workers	0.72	0.51-1.01	0.06	1.55	0.77-3.13	0.22				
Difficult relations—insurance	0.83	0.59-1.16	0.27	1.20	0.66-2.16	0.56				
Difficult work/life balance	0.75	0.49-1.13	0.17	1.80	0.98-3.29	0.06				
Loss of motivation to return to work	0.90	0.66-1.22	0.49	1.19	0.66-2.16	0.56				

CMD = common mental disorder; MSD = musculoskeletal disorder
* The enter method was used for these logistic regressions.
** The BSTEP method was used for these logistic regressions.
All the logistic regressions include gender, age, education, the number of weeks of absence from work, the symptoms experienced in the past week and the progressive return to work as controlled variables.
The coefficients in bold are significant to $p < .05$

5.   DISCUSSION

The *Return-to-work Obstacles and Self Efficacy Scale* (ROSES) as a result of shortcomings observed in specialized literature, especially regarding the assessment of the biopsychosocial factors of RTW for people with CMD or MSD. These shortcomings can be explained in three ways. First, to our knowledge, there are no tools that measure both the perception of obstacles to RTW and the self-efficacy to overcome them, although these two concepts emerged in the study as essential and complementary, especially in terms of understanding the RTW of people with health problems. Next, among these factors, it is important to consider those that relate to the biopsychosocial model, and in particular, those that concern RTW actors in various systems of the work disability paradigm. According to the literature reviews presented in this report's introduction, the immediate supervisor, co-workers, and the representatives from compensation plans appear to have a significant influence on the RTW of people with MSD or CMD. Finally, new approaches in the field of occupational disability point to the importance of considering the common factors of RTW, whatever the health problem, while paying attention to the specificities of the groups under study, for example, the clinical symptoms linked to a specific health problem. This means, therefore, that the clinical symptoms of a mental disorder must be taken into account (e.g., the severity of depression symptoms), while among people with MSD, it would be important to assess the intensity of their pain. In light of these observations, the main objective of this study was to validate ROSES among people with CMD or MSD. Following on the rigorous efforts of the team to design the content and structure of ROSES and thus respect the concepts of face and content validity, three other psychometric properties of the tool were assessed in this study: construct validity, test-retest reliability (temporal stability) and predictive validity.

The findings indicate that the 10 dimensions of ROSES are valid in the scope of a multidimensional theoretical construct (construct validity) and that they show stability within a short period (<= 2 weeks) (test-retest reliability). Several dimensions also enabled the RTW of an employee on sick leave to be predicted six months later (predictive validity), while controlling for certain sociodemographic and clinical variables recognized in the literature as being significant. In the next paragraphs, the principal findings from the validation of ROSES will be discussed, followed by theoretical and practical implications. Finally, the advantages and limits of the study and future avenues in the field of workplace disability will be discussed.

5.1   Construct Validity, Test-retest Reliability and Theoretical Implications

The construct validity step is essential to highlight the dimensions that will enable a systematic and precise assessment of perceived obstacles in the RTW process, as well as the self-efficacy to overcome them. As the responses to the second question in ROSES (self-efficacy) are contingent upon the responses to the first question (perceived obstacles to the RTW), it appeared essential to perform the factor analyses on the responses to the question about perceived obstacles to the RTW. First, exploratory factor analysis uncovered seven dimensions from the CMD sample, which were later confirmed with the MSD sample. The seven dimensions and the three conceptual categories (the latter did not undergo factor analyses because there were fewer than five statements), all presented very satisfactory internal consistency, thus ensuring the desired

conceptual homogeneity (Corbière and Fraccaroli, 2014). In total, there were 10 conceptual dimensions (46 statements): (1) fears of a relapse, (2) cognitive difficulties, (3) medication-related difficulties, (4) job demands, (5) feeling of organizational injustice, (6) difficult relation with the immediate supervisor, (7) difficult relation with co-workers, (8) difficult relations with the insurance company, (9) difficult work/life balance, and (10) loss of motivation to return to work. It should be noted that these dimensions are moderately intercorrelated, which indicates that each provides specific information in evaluating the RTW aspects that are different. For the most part, these ten dimensions refer to the occupational disability paradigm developed by Loisel et al. (2001), especially with regard to the person's characteristics, and organizational, health and legislative/insurance systems. To our knowledge, no questionnaire deals with all of these elements or assesses perceived obstacles to RTW and the self-efficacy to overcome them.

The ROSES "fears of a relapse," dimension, which comes under the personal system, is a psychological factor that can be found in various studies, often labeled as "fear of returning to work" (CMD: Andersen et al., 2012; St-Arnaud et al., 2006; MSD: Pélissier et al., 2014) or "fear-avoidance belief" (Corbière et al., 2011; Iles et al., 2008; Laisné et al., 2012; Øyeflaten et al., 2014; Wertli et al., 2014b). While there are many more studies on RTW with respect to MSD (only three systematic reviews were found about CMD), it is notable that the factor related to the fear of returning to work is rarely found in the literature about people with CMD. The "Fear Avoidance Belief Questionnaire" (Waddell et al., 1993), is one of the most often cited biopsychosocial questionnaires in the literature on occupational disability, but, to our knowledge, it has only been validated with people with MSD. In addition, the concepts of expectations and self-efficacy, closely linked to the concept of fears of a relapse, are very often taken into account in predicting RTW, as will be demonstrated later (Brouwer et al., 2015; Brouwer et al., 2011). The singularity of ROSES is that it aligns the measurement of self-efficacy with the obstacles to RTW pertaining to systems in the occupational disability paradigm, in addition to determining whether one of the two concepts is more salient in predicting RTW, according to sample type (CMD or MSD).

The second dimension, also part of the personal system and entitled "cognitive difficulties," is found in the literature about people suffering from CMD and is referred to as "severity of disorder/symptoms" (Blank et al., 2008; Lagerveld et al., 2010a). For MSD, the "Obstacles to Return to Work Questionnaire" (ORQ) is the only questionnaire with satisfactory psychometric properties (Gray et al., 2011). However, it does not deal with the cognitive aspect, but instead uses depression as a general assessment factor.

With respect to the "job demands" dimension (both psychological and physical), biopsychosocial studies have largely incorporated it, by applying it very differently. Among the CMD group, for example, Nieuwenhuijsen et al. (2006) tested the predictive validity of job demands by using the single statement "I have to work very hard" while others, such Vlasveld et al. (2012), used the psychological demands dimension taken from the "Job Content Questionnaire" (Karasek et al., 1998), which includes five items (e.g., "My job requires that I work fast"). In addition to the tools validated with people with MSD, the ORQ (Marhold et al., 2002) has a "Physical workload and harmfulness" dimension of eight statements that include "I have too much to do at work" or "One day at my job contains many heavy work tasks." For ROSES, the statements included in

the "job demands" dimension such as "being overloaded the first few days after returning to work" constitute theoretical constructs similar to those referred to previously.

Two of the key actors in the workplace, the immediate supervisor and co-workers, were also utilized as important biopsychosocial dimensions in RTW. These two actors are also considered in the Return-to-Work Self-Efficacy (RTWSE) questionnaire (Brouwer et al., 2010) and the ORQ (Marhold et al., 2002). However, these two tools for MSD differ in one way: while the ORQ has a social support dimension, which integrates statements related to both the immediate supervisor ("My job supervisor tries to support me and make things easier for me at the workplace") and co-workers ("It feels bad that my work colleagues don't understand my pain"), the RTWSE was designed with a factor solution that resulted in (as was the case for ROSES) a separation between the statements regarding the immediate supervisor and those regarding the co-workers, thus providing a more nuanced assessment of the two actors by making a clear distinction between them. Like the ORQ, the Nieuwenhuijsen et al. (2006) study, which dealt with CMD, applied the "environmental factors" dimension by melding the statements regarding the immediate supervisor and co-workers together, which resulted in a significant loss of nuance, in that the two actors do not influence an employee on sick leave's RTW in the same way.

To our knowledge, work/life balance had not yet been applied to the specific context of RTW following a psychological or musculoskeletal problem. However, some authors, who study the relations between this dimension and various factors such as stress level (Higgins et al., 2008), use the "family-to-work interference" measurement scale developed by Burley (1989). As with ROSES, it contains four items, such as, for example, "difficulties handling job demands and family obligations at the same time." The final dimension of ROSES, entitled "loss of motivation to return to work" is included under the rubric of "personal system" in Loisel et al. (2001) and has been broadly used in literature on RTW.

As we can see, several ROSES scales or dimensions are echoed in the literature, but ROSES integrates all these conceptual dimensions into a single tool, instead of them being scattered among several studies or questionnaires. Moreover, to our knowledge, three other conceptual dimensions have not been covered in this field of study or in the context of the RTW of people with MSD or CMD. These scales are "medication-related difficulties" (e.g., side effects), "difficult relations with the insurance company" and the "feeling of organizational injustice." With respect to this last conceptual dimension, it should be recognized that it is a concept that has been widely discussed in the area of psychosocial risk factors (Zawieja et al., 2014).

After the test-retest, correlation analyses performed between the two-week intervals in which the ROSES questionnaire was completed indicate that the questionnaire measurements remain stable in time, because the reliability coefficients (Pearson's r) are all higher than 0.60 (DeVellis, 2001). The relatively short two-week interval was chosen because the phenomenon under study (the perception of obstacles to the RTW and the self-efficacy to overcome them) is, by its nature, very sensitive to outside influences, such as the clinician's intervention during occupational rehabilitation sessions. Ultimately, rehabilitation professionals can rely on ROSES because their clients' perceptions will not vary greatly during this space of time. One of the premises to respect in a test-retest reliability analysis is that there should not be a major change in participants' conditions between the two questionnaires. For example, if someone was hospitalized anew for

the same health problem that had led to the sick leave, that person may readjust his or her perception of obstacles to RTW and the self-efficacy to overcome them.

5.2   Predictive Validity and Theoretical Implications

The results of the logistic regression analyses indicate that the **fears of a relapse**, **job demands**, **feeling of organizational injustice**, and **difficult relation with the immediate supervisor** constitute the four dimensions (out of ten) that predict the RTW of people with MSD despite accounting for "controlled" variables (e.g., the number of weeks off work). Among those suffering from CMD, only **job demands** and **cognitive difficulties** were found to be significant. The results also show that to more accurately predict the RTW of the two groups under study it is usually better to consider both perceived obstacles and self-efficacy. However, when new logistic regression analyses were conducted, including the two types of response (obstacles and self-efficacy), the results revealed that only one of them was significant (see below for more details). It is worth pointing out that these significant prediction relationships among the various dimensions and RTW can be considered as generalizable, as the response rate in the six-month follow-up of the CMD and MSD groups was 91% and 88%, respectively, much higher than the 70% threshold considered as minimally satisfactory (Brouwer et al., 2015; Lyles et al., 2007).

In the literature covering prospective studies of RTW of people with CMD, the findings corroborate those of ROSES (Blank et al., 2008; Busch et al., 2007). Netterstrøm et al. (2015) observe, for example, that people who have not returned to work after one year are those who are more anxious about work-related demands. These demands are measured by the "Demands at Work" scale from the "Copenhagen Psychosocial Questionnaire" (Kristensen et al., 2005). ROSES reveals that the more people perceive obstacles related to the demands of their job, the more their odds of returning to that job are reduced. The fact that it is this dimension that stands out as being significantly associated with RTW relates to the issue of burnout, a disorder directly linked to job demands and very closely associated with depression (Zawieja, 2015). These relationships are reminiscent of the concepts included in the theories of Karasek (*job demand—control*) and Siegrist (*effort—reward imbalance*), which have mainly been studied to understand or explain the occurrence of health problems in the workplace (for a review: Corbière et al., 2013; Vézina et al., 2013). Several scales in ROSES help support the predictive validity of the tool among the MSD group, with four dimensions out of ten that significantly predict RTW after six months of follow-up. Moreover, each of these dimensions is also significant with respect to the concept of self-efficacy. These dimensions are the following: fears of a relapse, job demands, feeling of organizational injustice, and difficult relation with the immediate supervisor. The findings corroborate a recent prospective study by Brouwer et al. (2015) in which the self-efficacy of the person in obtaining assistance from co-workers and the immediate supervisor is a significant predictor of RTW. The study by Boot et al. (2014) showed that the attitude of the immediate supervisor, as reported by the employee on sick leave, is also a predictive factor in RTW one year later. In addition, with respect to two dimensions of ROSES (job demands and difficult relation with the immediate supervisor), Negrini et al. (2014) showed that the only variable significantly related to the employee's RTW after depression is the immediate supervisor's motivation to undertake accommodation measures to facilitate the employee's return to occupational activities (e.g., gradual introduction of tasks, scheduling flexibility). RTW actors from major Québec corporations have also identified the immediate supervisor as the key

actor in RTW, someone who can be both the primary facilitator in or the major obstacle to RTW (Durand et al., 2016).

When the two ROSES concepts (obstacles and self-efficacy) are considered together, the results indicate that, for the dimensions entitled *feeling of organizational injustice* and *difficult relation with the immediate supervisor*, only the "obstacles" concept is significant, while for the dimension of *fears of a relapse*, only the "self efficacy" concept is significant. In other words, when the dimension is more external to the individual, the perception of obstacles is the only significant predictor of RTW, while when the dimension is internal (e.g., fears of a relapse) it is the opposite (i.e., self efficacy is the predictor). These findings point to the importance of assessing the two concepts (obstacles and self-efficacy) in terms of the nature of the dimension, and not to separate them, as is the case in other questionnaires (see above). However, we note divergent results for the *job demands* dimension. In fact, perceived obstacles are more salient in predicting the RTW of people with MSD, while perceived self-efficacy is more salient for those with CMD. One way of interpreting this may be that for people with MSD, the job demands could be reviewed in the workplace, with a physician's support (e.g., reduction of the physical workload). For those with CMD, workplace accommodations could be more difficult to implement, because the assessment of cognitive workload is more complex (the restrictions prescribed by the physician may be less explicit than those prescribed for physical workload). In that case, people with CMD may be more concerned with their self-efficacy (and use of strategies) when it comes time to look at the use and implementation of workplace accommodation measures with the immediate supervisor.

5.3   Practical Implications for Clinicians

According to Bandura (Bandura, 1977; Bandura, 1993; Bandura, 1995), an enhanced sense of self-efficacy leads people to invest more effort and to persevere more to reach their goals. Conversely, without this belief in one's capacity to succeed, people have few reasons to engage fully in the effort, thus compromising their ability to reach the goal. Self-efficacy therefore constitutes a necessary condition to consider in predicting success. In occupational rehabilitation, the goal for those on sick leave because of MSD or CMD consists of returning to occupational activities within a reasonable timeframe, given that the duration of absence is inversely correlated with the probability of returning to work (Brouwers et al., 2009; Dekkers-Sánchez et al., 2008; Frank et al., 1996; Gatchel et al., 1995; Lagerveld et al., 2010a). Therefore, to optimize workers' possibilities of returning to work, rehabilitation professionals should concentrate some of their energy on improving their clients' sense of self-efficacy, while assessing the perceived obstacles in RTW beforehand. To succeed at this, Bandura proposed four sources of information to enhance self-efficacy: performance accomplishments, vicarious experience, verbal persuasion and physiological states (Bandura, 1977, 1995, and Sterrett, 1998, for the application of these sources to the specific context of RTW preparation through a "job club"). It is also important not to omit the crucial role of the organization, through the provision of realistic work accommodations or the material and human resources that will enable the employee to handle the responsibilities of his or her job again (Corbière et al., 2013).

Because ROSES is designed so that each obstacle corresponds to a measurement of self-efficacy, the rehabilitation health professional can systematically establish "problematic ranges," or

dimensions in which major obstacles are tied to low self-efficacy. Moreover, based on the results of this study, especially those related to the means of subgroups (return and non-return to work) and to significant RTW dimensions (predictive validity), the clinician could pay special attention to them. These problematic ranges can be easily identified through the image of a rectangular box that incorporates the values of the obstacle side (on the left) and the values of the self-efficacy side (on the right). Finally, depending on the more general results from the study, a rectangular box with dotted outlines could also be used by the clinician (See Figure 3).

Figure 3 Identification of problematic ranges

 "Problematic ranges" could also be systematically identified with statements from the same dimension (see tables 3 to 6). Of course, clinicians could also examine values 5, 6 and 7 of the "obstacles" portion, without considering values 1, 2 and 3 of the "self-efficacy" portion, and vice versa. Once the dimensions or "problematic" statements have been identified, occupational rehabilitation professionals can begin a discussion with their clients and implement actions that they feel are appropriate, based on their detailed and personalized analysis of the situation. Given the importance of self-efficacy, as noted previously, they could, for example, use the four information sources proposed by Bandura to positively change their clients' sense of self-efficacy in dealing with obstacles, or implement strategies to overcome the RTW obstacles with them, thus strengthening their self-efficacy (Corbière et al., 2004). As described previously, this sense of self-efficacy can only be heightened if organizational measures are implemented to facilitate a sustainable RTW (such as through work accommodation). To illustrate, by measuring the progression of SE between the baseline assessment and at midpoint six months later, Brouwer et al. (2015) showed that people who had improved their SE during that timeframe, especially in terms of their relationships with co-workers, had a higher probability of returning to their jobs 12 months after their baseline assessment than those whose SE had stagnated or worsened. This result suggests that it is feasible to intervene clinically to attempt to improve the self-efficacy of people on sick leaves. Finally, as we were able to observe, it is also important to consider the nature of the ROSES dimension (internal compared to external) to take more appropriate action. The *job demands* dimension should be considered in light of whether the employees' workload is more or less physically or mentally demanding. With respect to predictive validity, however, the health professional must guard against thinking that ROSES is the final word in diagnostic instruments. ROSES is above all a discussion and orientation tool for the intervention, while keeping under consideration all other information (e.g., responses to questionnaires, clinical interviews) that the care team has available (for a review of RTW assessment tools see Coutu, et al., 2011, and Durand and Hong, 2013).

5.4   Advantages and Limitations

Thanks to exploratory factor analyses, a "short" version of ROSES was developed, with 46 statements divided among 10 dimensions. The original version of the questionnaire had 97 statements and took about 30 minutes (without the sociodemographic questionnaire). With about half the number of statements, the short version of ROSES is easier to use. Another non-negligible advantage is that the confirmatory factor analyses showed that the dimensions that emerged are the same for the two groups in the study (common factors regardless of the health issue), which facilitates the task of clinicians whose clientele has CMD or MSD. ROSES is now also being validated with two other groups: women with breast cancer and people with cardiovascular disorders.

Above and beyond its predictive value, another interesting discovery is that ROSES has been found to be "therapeutic" in and of itself. In fact, several participants stated during the telephone interviews at the end of the study that simply having responded to the ROSES questionnaire helped them pinpoint certain obstacles that they would not have thought of otherwise. And quite often, when clinicians suggested that their clients participate in the study, they brought up the almost certain benefit of increased awareness by responding to the ROSES questionnaire.

Notwithstanding the theoretical (research) and clinical contributions (rehabilitation professionals), which are, without a doubt, important, this study does have limits. Firstly, it would be germane to test the convergent and discriminant validity of ROSES (Corbière and Fraccaroli, 2014), in other words, to verify whether its dimensions are related to similar theoretical constructs (convergent validity) and not related to theoretical constructs with which they should not be related (discriminant validity). For example, with respect to convergent validity, one would expect that the ROSES dimension of *difficult relation with the immediate supervisor*, in terms of self efficacy, would significantly correlate with the *ability to obtain support from the immediate supervisor* dimension of the Return to Work Self-Efficacy (RTWSE) tool (Brouwer et al., 2015). However, practically speaking, validating these two properties required having access to the data from other questionnaires to perform correlational analyses, which made the exercise impossible. Finally, it should be noted that the RTWSE was validated only recently, and it would have therefore been difficult to include when the ROSES validation study began.

Secondly, while ROSES is able to predict RTW six months later, it provides no information about the sustainability of this return. We know that relapse rates are quite high, especially among people suffering from depression. In fact, according to a systematic review by Gili et al. (2015), someone who has had one episode of depression has twice the chance of relapsing. When RTW was measured six months later, this study was unable to determine whether the ROSES dimensions could significantly predict that people would keep their jobs once they had returned to work. In any case, that was not the study's objective. As well, insofar as the rehabilitation professional envisages using ROSES in a multi-method strategy, the tool could be useful in assessing whether obstacles to RTW that disappeared during the RTW could reappear several months afterward, and to intervene if needed.

Thirdly, given that 80% of people in the MSD sample are in chronic phase, i.e., they have been absent from work for more than three months, one must be cautious about generalizing the results to groups in acute or subacute phases, even though that factor (duration of absence) was integrated as a *control* variable in the logistic regressions. Several authors note that the link between the phase of chronicity and the type of factor must be taken into account when predicting RTW (Dasinger et al., 2000; Krause et al., 2001a; Oleinick et al., 1996). While duration of absence has a significant impact on the development of a prolonged work disability (Waddell et al., 2003), it appears that clinical factors, such as injury severity, are more significant during the acute phase, but that the subacute and chronic phases are more influenced by psychosocial and occupational factors (Dasinger et al., 2000; Krause et al., 2001a). However, several dimensions of ROSES concern aspects that surpass a strictly biomedical framework, by assessing, for example, the quality of relationships with co-workers, which completely aligns with the assertion of the above-mentioned authors.

Fourthly, since the obstacles listed in the questionnaire are about the workplace that the person on sick leave is familiar with, it follows that people who do not plan to return to the same environment, but who wish to eventually return to the labour market may have some difficulty in responding to ROSES (e.g., the job demands are difficult to foresee). Therefore, the predictive capacity of the tool does not include people who have successfully returned to work in another organization, a strategy that, in some circumstances and for some people, may be preferable to

returning to the original job (Ekberg et al., 2011). In fact, some people stated during the telephone interview six months later that they would probably not have returned to work if they had not decided at some point to change jobs.

6.   CONCLUSION

To address a gap in the literature and in the occupational rehabilitation environment, the objective of this prospective study was to validate the *Return-to-work Obstacles and Self Efficacy Scale* (ROSES) tool. Validated among people suffering from a common mental disorder (CMD) or a musculoskeletal disorder (MSD) who were in the process of returning to work, ROSES made it possible to explore a broad spectrum of 46 obstacles to RTW divided among 10 conceptual dimensions: (1) fears of a relapse, (2) cognitive difficulties, (3) medication-related difficulties, (4) job demands, (5) feeling of organizational injustice, (6) difficult relation with the immediate supervisor, (7) difficult relations with co-workers, (8) difficult relations with the insurance company, (9) difficult work/life balance, (10) loss of motivation to return to work. Several dimensions of ROSES (#1, #2, #4, #5, #6) also make it possible to predict the RTW of participants six months after they have completed the questionnaire. Depending on the nature of the dimension, sometimes the concept of obstacles or that of self-efficacy will be found to be more appropriate in predicting RTW. The "job demands" dimension should be assessed cautiously in accordance with the health problem (CMD or MSD). The obstacles assessed and matched with the self-efficacy to overcome them are biopsychosocial factors that belong to various systems in the work disability paradigm. From a clinical viewpoint, ROSES has been found to be relevant for at least four reasons. **First**, it systematically measures both perceived obstacles *AND* the self-efficacy to overcome them, a first in the literature. **Second**, ROSES' 10 dimensions are common to the two groups in the study (CMD and MSD), which facilitates the task of rehabilitation health professionals, who must often work with a diverse clientele with mental or physical disorders. **Third**, five dimensions out of ten are significantly related to the return to work, which means that clinicians can pay special attention to these dimensions, especially the one related to job demands. **Fourth**, ROSES makes it possible for people to reflect on dimensions that, previously, they may not have explored themselves, which may increase their ability to act and to work on their sense of self-efficacy over time. While ROSES constitutes a valuable tool for clinicians, future studies should tackle the "logical follow-up" to ROSES, i.e., the issue of keeping the job once the person has returned to work. In fact, because those who return to their jobs after a prolonged absence are at risk of relapsing, it is important to identify and deepen our understanding of the modifiable factors related to a sustainable return in terms of health and to act on them throughout the first months after the return to work.

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