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Cross-cultural translation and adaptation of the Readiness for Return To Work questionnaire for Dutch cancer survivors

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Abstract

Objective: Effective interventions supporting cancer survivors in work participation are lacking, possibly due to the poor fit between interventions and cancer survivors' needs. The 'Readiness for Return To Work' (RRTW) questionnaire could facilitate intervention development tailored to cancer survivors' needs. We performed a cross-cultural translation and adaptation of this questionnaire into Dutch and pre-tested its psychometric properties among cancer survivors.

Methods: Questionnaire translation and adaptation were conducted using a systematic approach of: forward translation, synthesis, backward translation, consolidation of translations with an expert committee, and pre-testing. Pre-testing consisted of interviewing 40 cancer survivors, who completed the questionnaire.

Results: The translated and adapted RRTW questionnaire showed reasonable psychometric properties, that is high item-to-stage correlations and internal consistency for all RRTW stages, except for the *prepared for action – self-evaluative* stage.

Conclusions: The translated and adapted RRTW questionnaire may be useful for tailoring interventions to support cancer survivors in returning to and maintaining at work. However, some items showed poor psychometric properties and several factors, important for work participation, are not captured, for example personal, disease-, treatment- and/or work-related characteristics. We recommend to further test the RRTW questionnaire and to use it in combination with additional measurement instruments when developing tailored work participation interventions.

KEYWORDS

cancer survivors, occupational health, return to work, surveys and questionnaires, translations

1 | INTRODUCTION

The prevalence of cancer among persons of working age is likely to increase in the near future, not only because of improved screening techniques and higher survival rates, but also due to the ageing workforce and the increased retirement age (Ferlay et al., 2013). Overall, about two thirds of cancer survivors are expected to be

able to return to work (RTW), but many experience substantial problems in remaining sustainably employed (de Boer et al., 2009, 2020). Moreover, employment in cancer survivors can vary considerably based on factors such as type of cancer diagnosis, age and jurisdiction (de Boer et al., 2009). Several intervention programmes have been developed to support work participation in cancer survivors (de Boer et al., 2015), as being able to work has been indicated

by cancer survivors to be a major contributor to their quality of life (Raque-Bogdan et al., 2015). To date, however, evidence for the effectiveness of these interventions is limited, with only weak evidence regarding multi-component interventions and no evidence for the effectiveness of single-component interventions for RTW (de Boer et al., 2015). Reasons for these findings could include the poor fit between the intervention content and cancer survivors' needs (Duijts, Bleiker, et al., 2017; Duijts, Dalton, et al., 2017). Also, interventions aimed at supporting cancer survivors to maintain work, beyond their RTW, are scarce.

Studies have indicated that RTW during or after an illness may be seen as a process of behavioural stages a (sick-listed) person progresses through (Duijts, Bleiker, et al., 2017; Duijts, Dalton, et al., 2017; Duijts et al., 2014; Franche et al., 2007). According to these *Stages of Change*, a sick-listed person could shift, for example, from the intention to engage in work, to initiating RTW, to actual RTW, and to maintaining sustainably employed. The RRTW concept describes the individual behavioural state a worker is in Franche and Krause (2002), which determines the RTW together with personal, disease-, treatment- and/or work-related characteristics that form barriers and facilitators of RTW. These and other earlier described barriers for RTW (de Rijk, 2013; de Rijk et al., 2009), that can for example be measured with the Return to Work Obstacles and Self-Efficacy Scale (ROSES) (Corbière et al., 2017) or the return to work self-efficacy scale (Brouwer et al., 2011), should therefore be considered along with RRTW when guiding RTW. While behavioural change models have been successfully applied to develop healthy lifestyle interventions in cancer survivors, for example, to increase their physical activity (Duijts et al., 2014), the application of these models in the process of RTW and work maintenance is limited (van Egmond et al., 2016; Stapelfeldt et al., 2015).

The 'Readiness for Return To Work' (RRTW) questionnaire is based on the Stages of Change model, which was originally described in the context of smoking cessation (Prochaska & DiClemente, 1983). The model has been considered useful in occupational health research, as it facilitates the development of interventions tailored to the specific needs of workers in the RTW process (Franche et al., 2007), which cancer survivors have reported to be valuable (Nielsen et al., 2019). For example, a person in an early RTW stage, who is ambivalent about work participation, may benefit from exploring the pros and cons of work participation. A person in a more advanced RTW stage though may benefit from a structured plan for gradual RTW (Franche & Krause, 2002). The RRTW questionnaire has been developed and validated in Canada among lost-time claimants for musculoskeletal disorders (Franche et al., 2007), showing good internal consistency for four stages of RRTW among those claimants who had not returned to work, and for two stages among those who already had returned to work. Support for construct validity of the RRTW questionnaire was found when compared with health and disability measures (Franche et al., 2007). However, another

Canadian study conducted in an outpatient vocational rehabilitation setting identified only five RRTW stages after factor analysis (Park et al., 2018).

A cross-cultural translation and adaptation of the RRTW questionnaire has been performed among participants with musculoskeletal and mental symptoms in Norway (Braathen et al., 2013). Factor analyses identified only four RRTW stages as compared to six stages in the original questionnaire. According to the authors, internal consistency and construct validity of the factors were satisfactory. In another study on the same sample, the RRTW questionnaire showed a reasonable association with future work participation (Braathen et al., 2014). In a third study, using the Norwegian RRTW questionnaire, it was shown that stage allocation of patients into one of the RRTW stages could not always be performed due to ties between the stages (Aasdahl et al., 2018). The questionnaire has also been cross-culturally translated, adapted and tested among German patients in psychosomatic rehabilitation (Kessemeier et al., 2017), and Danish sickness beneficiaries (Stapelfeldt et al., 2018). Further development of the Danish RRTW questionnaire has been recommended, since the psychometric properties of the questionnaire were not satisfactory.

Given the unsatisfactory psychometric properties shown for some versions of the RRTW questionnaire (Braathen et al., 2013; Stapelfeldt et al., 2018) and the uncertainty to predict RTW (Aasdahl et al., 2018), more research into the concept of RRTW and the psychometric properties of the RRTW questionnaire is needed. Cross-cultural translations and adaptations of the RRTW questionnaire to more languages, settings and patient populations are therefore warranted. Also, although the RRTW questionnaire has been used for tailoring (Stapelfeldt et al., 2015) and evaluation of interventions for cancer survivors (van Egmond et al., 2016), an adapted version for this patient population has, as far as we are aware, not been published.

In the Netherlands, a systematically translated and adapted version of the RRTW questionnaire is currently unavailable. A cross-cultural translation and adaptation is therefore needed, in particular due to the unique occupational context in the Netherlands, in which all employees have access to occupational health care through their employer, who is responsible for sickness absence benefits during the first 2 years of sickness absence. This situation differs substantially from that in other countries, including Canada, where the RRTW questionnaire has been developed among lost-time claimants for musculoskeletal disorders (Franche et al., 2007). Moreover, musculoskeletal disorders are different from cancer in terms of their association with work productivity loss, as musculoskeletal disorders are more prevalent, but on average have shorter sickness absence periods (Vahtera et al., 2010).

In light of the above, the objective of this study is to (1) perform a cross-cultural translation of the RRTW questionnaire into Dutch and (2) to adapt and pre-test the psychometric properties (i.e. item-to-stage correlation, internal consistency, item distribution, floor and ceiling effects, and face validity) of this version among cancer survivors in the Netherlands. The RRTW questionnaire has the potential

TABLE 1 Item-level response on the translated and adapted Readiness for Return To Work (RRTW) questionnaire

	Stage	n	Responses (n(%))					Mean (SD)	r	
			1	2	3	4	5			
For those not back at work										
A1	PC	10	8 (80%)	1 (10%)	1 (10%)	0 (0%)	0 (0%)	1.3 (0.7)	0.97	
A2	PC	10	8 (80%)	1 (10%)	0 (0%)	1 (10%)	0 (0%)	1.4 (1.0)	0.99	
A3	PA-B	10	1 (10%)	1 (10%)	1 (10%)	5 (50%)	2 (20%)	3.6 (1.3)	0.97	
A4	PA-S	10	0 (0%)	5 (50%)	3 (30%)	2 (20%)	0 (0%)	2.7 (0.8)	0.58	
A5	PA-B	10	0 (0%)	1 (10%)	3 (30%)	4 (40%)	2 (20%)	3.7 (0.9)	0.62	
A6	PA-B	10	0 (0%)	1 (10%)	0 (0%)	6 (60%)	3 (30%)	4.1 (0.9)	0.79	
A7	PA-S	10	2 (20%)	5 (50%)	1 (10%)	2 (20%)	0 (0%)	2.3 (1.1)	0.73	
A8	PA-S	10	0 (0%)	3 (30%)	2 (20%)	5 (50%)	0 (0%)	3.2 (0.9)	0.08	
A9	C	10	1 (10%)	3 (30%)	2 (20%)	3 (30%)	1 (10%)	3.0 (1.2)	0.93	
A10	PA-S	10	0 (0%)	2 (20%)	3 (30%)	4 (40%)	1 (10%)	3.3 (0.9)	0.19	
A11	C	10	1 (10%)	2 (20%)	0 (0%)	5 (50%)	2 (20%)	3.5 (1.3)	0.87	
A12	C	10	0 (0%)	2 (20%)	3 (30%)	4 (40%)	5 (50%)	3.8 (1.1)	0.73	
A13	PC	10	9 (90%)	0 (0%)	0 (0%)	1 (10%)	0 (0%)	1.3 (0.9)	0.97	
For those who are currently back at work										
B1	PM	30	0 (0%)	0 (0%)	2 (7%)	12 (40%)	16 (53%)	4.5 (0.6)	0.49	
B2	PM	30	1 (3%)	2 (7%)	7 (23%)	8 (27%)	12 (40%)	3.9 (1.1)	0.88	

(Continues)

TABLE 1 (Continued)

	Stage	n	Responses (n(%))					Mean (SD)	r
			1	2	3	4	5		
B3	PM	30	1 (3%)	1 (3%)	4 (13%)	14 (47%)	10 (33%)	4.0 (1.0)	0.81
B4	PM	30	2 (7%)	1 (3%)	7 (23%)	10 (33%)	10 (33%)	3.8 (1.1)	0.87
B5	UM	30	5 (17%)	9 (30%)	5 (17%)	9 (30%)	2 (7%)	2.8 (1.2)	0.91
B6	UM	30	4 (13%)	11 (37%)	5 (17%)	7 (23%)	3 (10%)	2.8 (1.2)	0.77
B7	UM	30	3 (10%)	10 (33%)	8 (27%)	6 (20%)	3 (10%)	2.9 (1.2)	0.87
B8	UM	30	0 (0%)	3 (10%)	5 (17%)	12 (40%)	10 (33%)	4.0 (1.0)	0.85
B9	UM	30	3 (10%)	11 (37%)	7 (23%)	8 (27%)	1 (3%)	2.8 (1.1)	0.86

Note: Item description, stage, response, mean score and item to stage score correlation are depicted. Note that the original English items developed for lost-time claimants with musculoskeletal injuries are shown and not the cross-culturally translated and adapted Dutch items for cancer survivors. The latter items can be found in Appendix S1.

Response categories: 1 = Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, 5 = Strongly agree.

Outcome categories for item A7 and B8 were reversed.

Stages: PC = Pre-contemplation, C = Contemplation, PA-S = Prepared for Action – Self-evaluative, PA-B = Prepared for Action – Behavioural, UM = Uncertain Maintenance, PM = Proactive Maintenance.
r = Item to stage score correlation.

FIGURE 1 Overview of the four stages of the Readiness for Return To Work (RRTW) questionnaire: for those who do not (yet) work (stages 1–4; items A1–A13), and for those who are already back at work (stages 5 and 6; items B1–B9)

to be used for tailoring work participation interventions aimed at cancer survivors, and such interventions are highly needed.

2 | METHODS

2.1 | RRTW questionnaire

Table 1 presents a full description of each of the original English items of the RRTW questionnaire and their corresponding stages. All items are scored on a five-point scale (1 = *strongly disagree* to 5 = *strongly agree*). The RRTW questionnaire (Franche et al., 2007), based on the *Stages of Change* model, consists of four stages for those who do not (yet) work (scale 1; item A1–A13) (Figure 1):

1. *Pre-contemplation*. One is not yet considering RTW or engaging in any action to facilitate RTW.
2. *Contemplation*. One is starting to consider RTW by contemplating its pros and cons, but is not yet making concrete plans to RTW.
3. *Preparation for action – self-evaluative*. One is making concrete plans to RTW, testing one's ability to do so, and seeking helpful information.
4. *Preparation for action – behaviour*. One is putting the plans into action and is motivated to initiate and maintain RTW.

The RRTW questionnaire consists of two stages for those who have already returned to work (scale 2; item B1–B9):

5. *Uncertain maintenance*. One uses skills and strategies to identify and cope with circumstances that may lead to an increased risk of sickness absence relapse.
6. *Proactive maintenance*. Self-efficacy increases as one continues to maintain at work.

2.2 | Cross-cultural translation and adaptation

The RRTW questionnaire translation and adaptation has been conducted using a systematic approach, as applied before (Abma et al., 2012) and based on guidelines described by Beaton et al. (2000). The Medical Ethical Committee of Amsterdam UMC, location VUmc, has declared that the Dutch Medical Research Involving Human Subjects Act (WMO) does not apply to this study

and that official approval of this study is therefore not required (reference 2019.393). All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000 (5). Informed consent was obtained from all patients for being included in the study. Permission to translate and adapt the RRTW questionnaire was obtained from designers of the original questionnaire (Franche et al., 2007). The following five steps of cross-cultural translation and adaptation were taken (Figure 2).

2.2.1 | Forward translation

Forward translation of the original RRTW questionnaire into Dutch was conducted by four translators who worked independently of each other, that is, two members of the research team (AZ (T1) and PC (T2)) and two professional translators (T3 and T4). The two members of the research team had background knowledge on the topic of the questionnaire. The two professional translators had no background knowledge nor were they informed thereof. All translators were instructed to translate the original questionnaire verbatim, without considering the adaptation to cancer survivors.

2.2.2 | Synthesis of the translations

Differences in the four translations were resolved in a consensus meeting among T1, T2, and another member of the research team (SD), with T3 and T4 being available for consultation. After this session, a synthesised Dutch version of the questionnaire was developed. A written report was made consisting of the synthesis process, problems encountered, and how the problems were resolved.

2.2.3 | Backward translation

A backward translation of the Dutch questionnaire into English was performed by two other professional translators (T5 and T6), working independently of each other. Like T3 and T4, these translators did not have any background knowledge on the topic of the questionnaire. The backward translated questionnaire was compared to the original English questionnaire to identify semantic and/or

FIGURE 2 Systematic cross-cultural translation and adaptation process. Figure based on Beaton et al. (2000)

conceptual differences in a consensus meeting with T1, T2 and another member of the research team (SD). T5 and T6 were available for consultation. A report was written describing the semantic and/or conceptual differences and how they were resolved.

2.2.4 | Consolidation of translations and adaption

An expert committee was formed with T1, T2, and one of the professional translators (T5), supplemented by a methodologist, an occupational therapist, and a re-integration expert (the latter two were specialised in RTW of cancer survivors). The expert committee met face-to-face to reach consensus on the Dutch RRTW questionnaire, adapt it to cancer survivors, and to obtain a pre-final questionnaire. Differences between the original and translated version of the questionnaire were discussed on semantic, idiomatic, and conceptual issues. Also, cross-cultural elements and those specific to cancer survivors were discussed, and adaptations to the questionnaire were made to obtain the pre-final questionnaire. Again, a process report was written describing the synthesis process, problems encountered, and how the problems were resolved.

2.2.5 | Pre-testing

To evaluate the comprehensibility, usability, applicability, and completeness of the translated and adapted questionnaire, 40 cancer survivors were recruited for a pre-test. This number of participants was based on an earlier study (Abma et al., 2012) and standard guidelines (Beaton et al., 2000). Cancer survivors were recruited via the Dutch Federation of Cancer Patient Organizations (NFK), the patient panel of the Antoni van Leeuwenhoek hospital, and social media (e.g. the website www.kanker.nl). Cancer survivors were invited to express their interest to participate in the study via e-mail or telephone, after which they were asked to give online consent and were screened for eligibility. Cancer survivors between 18 and 65 years of age, who were able to read and comprehend the Dutch language, and were diagnosed with cancer a maximum of 5 years ago were eligible for inclusion. Moreover, only cancer survivors who had an employment contract, and who were currently or had been on sickness absence in the last 12 months were included. We did not limit our inclusion of cancer survivors to certain diagnosis or treatment types.

Eligible cancer survivors were asked to complete an online version of the RRTW questionnaire (using the www.survalyzer.com platform) and to answer brief questions about their sociodemographic characteristics, their most recent cancer diagnosis, and work characteristics. After completion, a short telephone interview was conducted with each participant (duration was approximately 15 min per person). Questions were asked about the comprehensibility, usability, applicability, and completeness of the questionnaire, and whether participants missed any aspects regarding RTW after cancer in the current version of the RRTW questionnaire. All

interview data were discussed in the project team (with T1, T2 and another member of the research team (SD)) and decisions were collaboratively made as to whether changes in the questionnaire were necessary.

2.3 | Analysis

The process of the translation and adaption was narratively described. The pre-tested questionnaire was scored according to the instructions provided by the authors of the original RRTW questionnaire (Franche et al., 2007). Briefly, after reversing the scores of items A7 and B8, each RRTW stage was scored by averaging all items within that stage. As such, each stage attained a summary score with values ranging from 1 to 5. For each participant, the stage with the highest summary score was considered the stage the participant was in. In case of a tie between stages, the lowest RRTW stage was adopted.

Descriptive statistics were used to explore the RRTW questionnaire data (i.e. mean, standard deviation (SD), median, and range) and age, gender, educational level, work- and disease-related characteristics of the participants.

2.3.1 | Psychometric properties

Item-to-stage correlations were calculated to evaluate the fit of each item within the stage using Pearson correlation coefficients. To evaluate the internal consistency of the RRTW questionnaire, Cronbach's alphas were determined per stage (Cronbach, 1951), with alphas >0.70 considered satisfactory. Moreover, scores on the questionnaires were examined with respect to distribution of item response scores, and floor and ceiling effects. Floor and ceiling effects were considered to be present if >15% of the participants achieved extreme values, either high or low, in each of the stages (Terwee et al., 2007). SPSS (IBM Corp, Version 22.0) was used for all analyses. The face validity of the Dutch RRTW questionnaire for cancer survivors was evaluated by the members of the expert committee throughout the cross-cultural adaptation process and through qualitative analysis of the comments provided by the participants during the pre-test interviews.

3 | RESULTS

3.1 | Translation and adaptation

During the forward and backward translation process, semantic and/or conceptual discrepancies were discussed and modifications to the Dutch RRTW questionnaire were made. For example, to 'undertake' was used to replace 'actively doing things' (item A3), for which no suitable Dutch translation was present. The word 'increase' (item A5) was in the Dutch version replaced by the word 'expand', as 'expand'

can also indicate the expansion of intensity of activities and not merely the number of activities. The phrasing 'you take steps' (item B4) is uncommon in this context in the Dutch language and was replaced by a Dutch translation of the phrasing 'you take precautions'.

In the expert committee meeting, it was decided to adjust references to musculoskeletal symptoms to phrasings more applicable to cancer survivors. 'Force' (e.g. item A5) was adapted to 'energy', and 'physically' (e.g. item A4), 'injury' (e.g. items B6 and B7) and 'pain' (item B2) were adapted to 'physical/psychological complaints'. In the instructions, '...part-time or modified work...' was replaced by '...modified work, e.g., in hours or tasks...', to take into consideration that some cancer survivors may have been working part-time prior to their cancer diagnosis. As it is uncommon in Dutch language and culture to use the 'you' pronoun when actually referring to 'I', all items were rephrased using the 'I' structure to make the questions more personal and direct. In item A5 'at home' was left out, as it was thought that also non-home-based leisure-time activities, for example, going for a walk or doing grocery shopping, are relevant. 'You have a date...' (item A10) was replaced by 'You have a date in mind...', as this would reflect the *prepared for action – self-evaluative* stage better.

3.2 | Pre-test

Forty cancer survivors participated in the pre-test of the translated and adapted RRTW questionnaire. Participants were on average 47.2 (SD 9.2) years of age, and the majority was female (90%) and had a high educational level (80%) (Table 2). The most frequently reported diagnosis was breast cancer (58%) and time since diagnosis was on average 17.1 (13.2) months. While 48% and 53% of our sample had a full-time or part-time job before diagnosis, respectively, these percentages were substantially lower at the time of questionnaire completion (30% and 38%, respectively).

3.2.1 | Psychometric properties

Ten participants were not at work while completing the questionnaire and therefore answered items A1–A13 (Table 1). Among these participants, one participant (10%) was considered to be in the *pre-contemplation* stage, three participants (30%) were in the *contemplation* stage, one participant (10%) was in the *prepared for action – self-evaluative* stage, and five participants (50%) were in the *prepared for action – behavioural* stage. No ties between stages were found. Most items showed a high correlation ($r > 0.6$) with the corresponding stage score, except for those in the *prepared for action – self-evaluative* stage, with particularly items A8 and A10 showing poor correlation coefficients ($r = 0.08$ and $r = 0.19$, respectively). Also, due to the limited sample size and variability, the internal consistency (Cronbach's alpha) could not be estimated for this stage (Table 3). In a sensitivity analysis, the correlation coefficients of the other items in this stage (A4 and A7) substantially improved and Cronbach's alpha could be estimated when items A8 and A10 were

excluded. For 80% of the participants, floor effects were observed in the *pre-contemplation* stage (Table 3).

Thirty participants were back at work while completing the questionnaire and answered items B1–B9. Of these participants, four participants (13%) were considered to be in the *uncertain maintenance* stage and 26 participants (87%) in the *proactive maintenance* stage. No ties between stages were found. Except for item B1 ($r = 0.49$), all items showed good item to stage score correlation (Table 1). Ceiling effects (17% of the participants) were observed in the *proactive maintenance* stage, and internal consistency (Cronbach's alpha) was good for both stages (0.90 and 0.78, respectively) (Table 3).

The interviews with cancer survivors showed that the questionnaire in general was easy to comprehend, that they felt that items were relevant and that completing the questionnaire took them an acceptable amount of time (ranging from only a couple of minutes for most, up to 20 min for some). Cancer survivors reported that important aspects linked to their RRTW were lacking in the questionnaire. These aspects included characteristics of their cancer diagnosis and treatment, work characteristics (e.g. physical or mental work demands, and the extent to which changes to work can be made) and support (by the workplace or health care providers). Also, they found that personal characteristics (e.g. being the breadwinner and/or having family carer duties) were insufficiently covered by the questionnaire and that their responses to questions could vary substantially over time (even as frequently as within a day). Specifically, cancer survivors had difficulties understanding the terms 'strategies' (items A8 and B4) and 'ways' (item B2), which were adjusted in the final version of the questionnaire. Finally, cancer survivors had difficulties comprehending item A10. Based on this input, a final version of the RRTW questionnaire was constructed (Appendix S1).

4 | DISCUSSION

4.1 | Main findings

The aim of this study was to perform a cross-cultural translation of the RRTW questionnaire into Dutch and to make an adaptation and to pre-test the psychometric properties of this version among cancer survivors using a systematic approach. Using a procedure of forward and backward translation and consolidation and adaptation with content experts, we produced a Dutch version of the RRTW questionnaire, with adequate psychometric properties, that can be used among cancer survivors.

4.2 | Interpretation of findings

In the pre-test among 40 cancer survivors, the RRTW questionnaire showed reasonable psychometric properties for most of its stages. The very high internal consistency in the *pre-contemplation* stage (Cronbach's alpha 0.97) even suggests that there may be redundancy in the items of this stage. In the *prepared for*

TABLE 2 Characteristics of cancer survivors participating in the pre-test of the translated and adapted Readiness for Return To Work (RRTW) questionnaire (N = 40)

	n (%)	Mean (SD)
Age (years)		47.2 (9.2)
Gender		
Male	4 (10%)	
Female	36 (90%)	
Marital status		
Single	6 (15%)	
Married/living together	31 (78%)	
Divorced	2 (5%)	
Widow/widower	1 (2%)	
Main breadwinner		
No	17 (42%)	
Yes	23 (58%)	
Education level		
Low	1 (2%)	
Moderate	7 (18%)	
High	32 (80%)	
Type of (most recent) cancer diagnosis ^a		
Breast	23 (58%)	
Ovary	3 (8%)	
Cervix	1 (3%)	
Lung	1 (3%)	
Colon	1 (3%)	
Rectum	1 (3%)	
Oesophagus	1 (3%)	
Head/neck	2 (5%)	
Skin	3 (8%)	
Prostate	1 (3%)	
Non-Hodgkin	2 (5%)	
Thyroid	1 (3%)	
Lymphoma	1 (3%)	
Other	3 (8%)	
Time since diagnosis (months)		17.1 (13.2)
Metastasis		
No	23 (58%)	
Yes	17 (42%)	
Cancer treatment ^a		
Surgery	35 (88%)	
Radiation therapy	23 (58%)	
Chemotherapy	28 (70%)	
Anti-hormonal therapy	13 (33%)	
Immunotherapy	7 (18%)	
Other	4 (10%)	
Current disease status		
Considered cancer free	31 (78%)	
Not considered cancer free	9 (22%)	

(Continues)

TABLE 2 (Continued)

	n (%)	Mean (SD)
Work status prior to cancer diagnosis ^a		
Full-time job	19 (48%)	
Part-time job	21 (53%)	
Self-employed	1 (3%)	
Study	3 (8%)	
Sick listed	3 (8%)	
Current work status ^a		
Full-time job	12 (30%)	
Part-time job	15 (38%)	
Unemployed	1 (3%)	
Work disability	2 (5%)	
Sick listed	19 (48%)	
Household activities	1 (3%)	
Other	3 (8%)	
Participation in return to work programme		
No	37 (93%)	
Yes	3 (7%)	
Advise on RTW by treating physician		
No	19 (48%)	
Yes	21 (52%)	
Advise on RTW by other professional		
No	8 (20%)	
Yes	32 (80%)	

Note: that there were on average (SD) 25(42) days between completion of the screening and RRTW questionnaire. The proportions of participants back at work, that were obtained from the screening questionnaire, may therefore deviate from those presented in Table 2.

^aMore than one answer option is possible; hence, percentages can add up to more than 100%.

action – self-evaluative stage, we were unable to estimate internal consistency and we found rather low item to stage score correlations. This may be due to the wording of A8 ('strategies') that was changed in the final version. Also, item A10 was difficult to comprehend by the participants. A reason for this is that the question 'you have a date for your first day...' is a question that can only be answered by 'yes' or 'no', rather than on a five-category scale. This issue has been identified in earlier research on the RRTW questionnaire, where the authors of the study have decided to remove this item from the questionnaire (Park et al., 2018). Although this item remains relevant and can still be used by (occupational) health care professionals, we recommend it not to be used as part of the RRTW questionnaire in the future. See Appendix S1 for a final version of the translated and adapted RRTW questionnaire, where item A10 was left out. While we produced a cross-cultural translation and adaptation of the RRTW questionnaire to cancer survivors, only few changes to the original questionnaire were made due to cross-cultural differences. The most prominent change in this regard was the use of the more direct first person statements

TABLE 3 Psychometric properties of the cross-culturally translated and adapted Readiness for Return To Work (RRTW) questionnaire

Stage	n	N	Mean (SD)	Median	Range	n (%) at floor	n (%) at ceiling	Alpha
Pre-contemplation	10	1	1.3 (0.8)	1.0	[1.0 3.7]	8 (80%)	0 (0%)	0.97
Contemplation	10	3	3.4 (1.0)	3.7	[2.0 5.0]	0 (0%)	1 (10%)	0.80
Prepared for Action – Self-evaluative	10	1	2.9 (0.4)	2.8	[2.3 3.5]	0 (0%)	0 (0%)	— ^a
Prepared for Action – Behavioural	10	5	3.8 (0.8)	4.0	[2.3 5.0]	0 (0%)	1 (10%)	0.72
Uncertain Maintenance	30	4	2.6 (1.0)	2.6	[1.0 4.8]	1 (3%)	0 (0%)	0.90
Proactive Maintenance	30	26	4.1 (0.8)	4.1	[1.8 5.0]	0 (0%)	5 (17%)	0.78

Note: For each of the RRTW stages, mean score, range, median, floor and ceiling effects and internal consistency (Cronbach's alpha) are shown.

n = number of participants that have complete the RRTW questionnaire.

N = Number of participant that were allocated to the RRTW stage.

Note that psychometric properties were based on the total number of participants completing the RRTW questionnaire (n).

^aCronbach's alpha could not be estimated in this stage.

instead of second person statements. Regarding the adaptation to cancer survivors, more significant changes were made to the original scale that was designed for lost-time claimants with musculoskeletal disorders. For example, the word 'energy' (instead of 'force') was used and 'physically', 'injury' and 'pain' were replaced by 'physical/psychological complaints'.

Cancer survivors indicated that additional factors that may contribute to their RTW are not captured in the RRTW questionnaire, including personal, disease-, treatment- and/or work-related characteristics. Earlier research in cancer survivors has shown that factors like tumour type, type of treatment, family carer duties or not having ability to make changes at work can result in adverse work outcomes (Feuerstein et al., 2010; Tamminga et al., 2019) and restriction of RTW (van Muijen et al., 2013). It has already been acknowledged during the development of the RRTW concept (Franché & Krause, 2002), that RRTW describes the individual behavioural state a worker is in, and that health care provider-, workplace-, and insurer factors may play an important role in understanding a person's RRTW stage, that is, through their effect on three underlying concepts that affect one's RRTW stage: self-efficacy, decisional balance, and change processes. The lack of consideration of these factors in the RRTW questionnaire may contribute to its inability to predict RTW (Aasdahl et al., 2018). This is, however, understandable as these factors form barriers and facilitators, that determine the cancer survivor's RTW, along with the individual's behavioural state of RRTW (Franché & Krause, 2002). The RRTW therefore does not only provide a prediction of RTW, but more importantly indicates the need for personal support of cancer survivors. Nonetheless, using the RRTW questionnaire together with additional measures, for example, the ROSES (Corbière et al., 2017) or the return to work self-efficacy scale (Brouwer et al., 2011), could better guide RTW interventions for cancer survivors. Although this was not the case for the 40 cancer survivors that participated in our pre-test, results of the RRTW questionnaire could show a tie between RRTW stages. Additional information, such as from aforementioned sources, may help to resolve such ties and to allocate a person to the correct RRTW stage.

4.3 | Methodological strengths and limitations

A strength of the current study is the systematic and rigorous five-step approach that we used to translate and adapt the RRTW questionnaire. A limitation of this study is that generalisation of the current findings should be done with caution. Participants in our study had a high educational attainment and the majority was female diagnosed with breast cancer. Although 42% of our sample indicated to have (had) metastasized cancer (in lymph nodes and/or distant organs), 78% were considered cancer free at the time of study, while the cancer diagnosis was on average 17.1 (13.2) months ago. While we attempted to draw a representative sample of cancer survivors with employment as the RRTW is supposed to serve all cancer diagnoses and treatment types. However, aforementioned characteristics may not represent the general Dutch population of cancer survivors and further testing on underrepresented groups should be done in future research. Moreover, we showed floor effects in the *pre-contemplation* stage, suggesting that the participants in our sample were beyond this stage. This is understandable as those cancer survivors, not yet considering RTW or engaging in any action to facilitate RTW, could have been less likely to voluntarily participate in the current study.

Although our methods were based on an earlier study (Abma et al., 2012) and standard guidelines (Beaton et al., 2000), our pre-testing was performed in a relatively small sample of cancer survivors. Forty participants completed the questionnaires, of which ten had not (yet) returned to work and 30 had returned to work, completing items A1–A13 and B1–B9, respectively. In particular for the A1–A13 items, our sample size may have been too small to conduct the statistical analyses, including the Cronbach's alpha calculation (Bonett, 2002). This became apparent as we were not able to estimate the Cronbach's alpha in the *action – self-evaluative* stage. Further testing on the current version of the RRTW questionnaire is therefore warranted. Such future research should also include confirmatory factor analysis, which we were not able to perform given our sample size. Also, our data set did not allow for performing construct validity testing which could be

done in future research. Additional qualitative research methods could be used, for example, using think aloud or cognitive interviewing methods, to obtain more detailed information on factors relevant for cancer survivors' RTW.

4.4 | Conclusions

We cross-culturally translated and adapted the RRTW questionnaire for Dutch cancer survivors, through a systematic procedure. The questionnaire can be used for tailored interventions aimed to support cancer survivors in returning to and maintaining work. Some items, however, including those from the *prepared for action – self-evaluative stage*, showed poor psychometric properties. Also, several factors important for RTW were not captured by the current RRTW questionnaire, such as personal, disease-, treatment- and/or work-related characteristics. Given the limited external validity and relatively small sample size in our study, we recommend to further test the RRTW questionnaire. We also recommend the RRTW questionnaire to be used in combination with additional measurement instruments when developing tailored work participation interventions.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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