

**THE SHORT INVENTORY ON STRESS AND WELL-BEING:  
A PSYCHOMETRIC EVALUATION OF THE INDICATORS OF WELL-BEING**

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Abstract

The aim of the current study was to evaluate the psychometric characteristics (i.e. the validity and the reliability) of the Short Inventory on Stress and Well-being (S-ISW), in particular that part of the S-ISW that measures the indicators of well-being. The S-ISW is developed by ISW Limits in both Dutch and French and measures the well-being indicators stress complaints, motivation and undesirable behaviour at work, which can be considered as possible outcome variables or employees' reactions to the perceived work situation. Four samples ( $N_1 = 17781$ ;  $N_2 = 462$ ;  $N_3 = 264$ ;  $N_4 = 3596$ ) were used to perform analyses, with longitudinal data available for sample 2 and 3. The results confirmed the three-factor structure of the S-ISW (factorial validity), the invariance of this factor structure between the Dutch and the French S-ISW and the content similarity of stress complaints and motivation with, respectively, negative stress and positive stress (convergent validity), supporting the construct validity of the S-ISW. The predictive validity of the well-being indicators was established using measures of absenteeism and doctor consultations. Furthermore, the S-ISW was reliable, as the indicators of well-being showed both high test-retest reliability and adequate internal consistency. The part of the S-ISW that measures the well-being indicators is thus both valid and reliable and may be a helpful instrument in conducting research to aid organizations in the development of their well-being policy.

Keywords: Psychosocial diagnosis, validity, reliability, instruments, work

## Introduction

Because of important developments in work life, work has increasingly become mentally and emotionally challenging (see e.g., Schabracq, Winnubst, & Cooper, 2003; Schaufeli, Bakker, & de Jonge, 2003). Only some of the challenges employees are faced with are the multiple reorganizations in companies, the call for more flexibility, efficiency and innovation, the rise of the service sector and the shift from physical to mental work.

Not surprisingly, research more and more has been giving attention to these mental and emotional work demands, more specifically to their influence on employees' psychosocial functioning and (mental and physical) health. The branch of psychology that investigates well-being and health at work and promotes them by fostering an optimal harmony between person and work is called work and health psychology (see e.g., Schabracq, et al., 2003; Schaufeli, et al., 2003) or occupational health psychology (see e.g., Schabracq, Cooper, Travers, & van Maanen, 2001; Tetrick & Quick, 2003). The current study wants to contribute to this tradition of research.

The potential detrimental effects of work on employees' well-being and health have also been recognized by Belgian legislation. As stated in the Belgian Law of August 4<sup>th</sup> 1996 on the well-being of employees at work and the Belgian Royal Decree of May 17<sup>th</sup> 2007 on the prevention of psychosocial pressure at work, including violence, mobbing and undesirable sexual behaviour at work, employers are obligated to pursue a preventive policy and to promote employees' well-being. The basic components of such a preventive policy against stress at work are outlined in the collective agreement number 72 of March 30<sup>th</sup> 1999 on the policy to prevent stress at work<sup>2</sup>: The employer is obligated to investigate, evaluate and prevent the potential risk factors of stress. However, this legislation does not prescribe the specific way in which psychosocial risk analyses of the work situation should be organized.

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<sup>2</sup> The collective agreement number 72 of March 30 1999 only applies to the private sector.

For instance, the employer may choose between a qualitative and a quantitative investigation and decide whether or not to involve external partners, such as suppliers of research instruments.

This study aims to investigate the psychometric quality of the Short Inventory on Stress and Well-being (S-ISW), a questionnaire developed by ISW Limits<sup>3</sup> in order to meet the described statutory regulations. In particular, the present study examines the validity and the reliability of that part of the S-ISW that measures the indicators of well-being, namely stress complaints, motivation and undesirable behaviour at work.

The current article is structured as follows. First, we introduce the criteria for the development of the S-ISW as a new instrument. Next, we present the S-ISW and specify the psychometric properties on which the S-ISW is evaluated. Furthermore, we discuss the research methods and the results of our psychometric study. We conclude this article with a discussion of the results.

#### *Criteria for a new instrument*

In developing the S-ISW, a number of criteria were pursued. First, ISW Limits aimed to create an instrument that was very efficient. On the one hand, a broad view on work related characteristics and psychosocial outcomes was strived for. On the other hand, one aspired to use as little items as possible, in order to minimize employees' completion time, as well as the collective time investment of the organization. Second, the items had to be formulated clearly and simply, for the reason that all employees, regardless of their education level, should be able to fill out the questionnaire. Third, ISW Limits wanted to highlight both positive and negative characteristics of the work situation and employees' well-being: work related strengths and risks, well-being and stress complaints. This approach fits in with the view of

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<sup>3</sup> ISW Limits is a spin-off company of the Katholieke Universiteit Leuven (K.U.Leuven) and is specialised in the optimisation of human relations in organizations. On the one hand, ISW Limits identifies the characteristics of the work situation and their impact on employees' well-being, on the other hand it focuses on optimizing well-being in practice through policy supporting interventions.

positive psychology (see e.g., Maslach, Schaufeli, & Leiter, 2001; Schaufeli & Bakker, 2001; Seligman & Csikszentmihalyi, 2000), which aims to encourage a change from a psychology occupied by pathologies and illnesses (e.g., stress) towards a more positive view on life that investigates topics like well-being and satisfaction. Fourth, the questionnaire should allow ISW Limits to draw conclusions about the extent in which specific characteristics of the work situation effect employees' well-being. In that way, concrete suggestions could be formulated to redesign work and to develop an organization's policy plan that stimulates employees' well-being at the work place. The work related characteristics with the strongest impact on employees' well-being would serve as starting points for targeted actions.

#### *The S-ISW*

The S-ISW measures a variety of characteristics of the work situation on the one hand and several indicators of well-being on the other hand (see Figure 1 for the S-ISW model). For reasons of clarification and practical use, the characteristics of the work situation are situated on different levels, namely employees' tasks and responsibilities, teams or departments, the organization, and the general socio-economic context. Examples of these characteristics are workload, variation in the job, social support of colleagues, organizational information and changes on the labour market. Furthermore, three dimensions of indicators of well-being are modelled, namely stress complaints, motivation and undesirable behaviour at work. These indicators are considered as outcome variables or employees' reactions to the perceived work situation. Examples of items are irritation, job satisfaction and mobbing in general.

To meet the Belgian situation, with Dutch and French as (most frequently spoken) official languages, both a Dutch and a French version of the S-ISW was developed. The translation of the original Dutch questionnaire into French was performed by several bilingual experts in work and health psychology. Back translation was used as a means of quality control.

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Insert Figure 1 about here

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The current study focuses on the indicators of well-being (i.e., stress complaints, motivation and undesirable behaviour at work). When the S-ISW is mentioned further in this paper, we therefore only refer to the part of the S-ISW that measures the indicators of well-being.

The first dimension, stress complaints, consists of a variety of indicators of lack of occupational well-being and health. In particular, it concerns the cognitive, emotional and physical reactions to the demanding work situation (Le Blanc, de Jonge, & Schaufeli, 2000). Mood complaints (i.e., unhappy or depressed mood; see e.g., Karasek, 1979; Warr, 1987, 1994), tension (i.e., nervousness, anxiety or tension; see e.g., Karasek, 1979; Warr, 1987, 1994) and irritation (i.e., angry feelings or irritation) are selected as emotional stress complaints. Feelings of insufficiency (i.e., feelings of not being able to manage the job), and forgetfulness and concentration problems are considered as cognitive stress complaints. At last, physical stress complaints are measured with items concerning sleeping problems, fatigue, neck or back aches and headaches, exhaustion (i.e., the experience of being overextended and depleted of one's resources; Maslach, et al., 2001) and persistent strain (i.e., the difficulty to relax after work). It is worth mentioning that the S-ISW also enables to investigate behavioural stress reactions at interpersonal level, namely in the form of undesirable behaviour at work (see further), as it has been suggested in literature (Le Blanc, et al., 2000).

In accordance with the view of positive psychology (see also above; e.g., Maslach, et al., 2001; Schaufeli & Bakker, 2001; Seligman & Csikszentmihalyi, 2000), ISW Limits not only aimed to focus on the negative side, but also wanted to consider the positive consequences of work (see above). Therefore, the dimension motivation was included in the S-ISW as a counterpart of the dimension stress complaints. The motivation dimension covers

a number of positive emotional, motivational and behavioural well-being indicators, as well as attitudes towards the job and the organization. Enthusiasm in the job (or the opposite of the 'distance' dimension of burnout; Maslach, et al., 2001), job satisfaction (i.e., being satisfied with one's job; see e.g., Hackman & Oldham, 1975; Karasek, 1979; Warr, 1987, 1994) and job centrality (i.e., internal work motivation; see e.g., Hackman & Oldham, 1975) are considered as emotional and motivational well-being indicators. The behavioural indicators of motivation are measured by performance (i.e., feelings of personal accomplishment; see e.g., Maslach, et al., 2001) and functional loyalty (i.e., lack of turnover intentions; see e.g., Karasek, 1979; Le Blanc, et al., 2000). Finally, the dimension motivation also includes job and organizational related attitudes, namely pride in one's job and pride in one's organization (or emotional loyalty).

The third dimension of the well-being indicators of the S-ISW is undesirable behaviour at work. This dimension refers to harassment or mobbing, and other kinds of undesirable behaviour at work that have been defined by the Belgian legislation (e.g., sexual harassment and violence). The dimension is measured by means of four items, namely mobbing-general (i.e., observing mobbing in the organization), mobbing-personal (i.e., being a victim of mobbing oneself), other undesirable behaviour and (lack of) mutual respect in the organization. Mobbing was included in the S-ISW because of its importance in the Belgian legislation regarding well-being at work. More specifically, the Royal Decree of May 17<sup>th</sup> 2007 prescribes employers to take preventive actions against mobbing and regulates the procedures that have to be followed in cases of mobbing.

With these operationalizations of well-being, the S-ISW fully covers the concept of work health. Health has been defined by the World Health Organization as a state of "physical, mental and social well-being" (WHO, 1946). While stress complaints and

motivation can be considered as measures of physical and mental well-being, undesirable behaviour at work might shed more light on social well-being.

Furthermore, the difference between stress complaints and motivation is similar to the distinction between burnout and engagement made in the Job Demands-Resources (JD-R) model (Bakker, Demerouti, de Boer, & Schaufeli, 2003; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). In essence, this model theorizes job demands to precede burnout, while job resources tend to determine engagement. In the long run, burnout and disengagement may have serious consequences, such as absenteeism and health problems. It is worth mentioning that the (presupposed) dimensions stress complaints and motivation of the S-ISW contain the three dimensions of burnout, namely exhaustion, cynicism (the contrast of 'enthusiasm' in the S-ISW) and reduced professional efficacy (labelled as 'insufficiency' in S-ISW; see e.g., Maslach & Leiter, 1997; Maslach, et al., 2001).

Additionally, the three dimensions not only enclose potential consequences of work for the individual employee and the team, such as physical complaints, job satisfaction and mobbing. They also contain potential consequences at organizational level, namely negative attitudes towards the organization such as turnover intentions, performance and emotional loyalty to (or pride of) the organization.

As employees can be considered as ambassadors of the organization (Hartley, 1999; Hartley, Jacobson, Klandermans, & van Vuuren, 1991), consequences on individual level may have important implications for the image of the organization in the outside world. For instance, while satisfied employees are more likely to spread positive information about the organization, dissatisfied employees are more likely to spread negative information, which may damage the organization's image.

*Validity and reliability of the S-ISW*

The main purpose of the present study is to evaluate the psychometric quality of the dimensions of the well-being indicators of the S-ISW (i.e., stress complaints, motivation and undesirable behaviour at work). In particular, we wish to investigate the extent in which the S-ISW is valid and reliable. These psychometric properties are examined for both the Dutch and the French version of the S-ISW.

In order to test whether the S-ISW is a valid instrument, we first examine the factor structure of the indicators of well-being. In particular, we investigate whether the model with the three factors, namely stress complaints, motivation and undesirable behaviour at work, can be confirmed by the data. Second, the cross-cultural invariance of the three-factor structure is tested. We hypothesize that the structure is the same for both the Dutch and the French version of the questionnaire. Third, the convergent validity of the S-ISW is checked. More specifically, we investigate whether the dimensions stress complaints and motivation are positively related with the two scales of the questionnaire SPPN (Stress Professionnel Positif et Négatif; De Keyser, 2001), respectively positive stress and negative stress (see further). Fourth, the predictive validity of the well-being indicators is examined. Therefore, we investigate whether the indicators of well-being predict three long-term outcomes, namely employees' absence frequency, absence duration and the number of doctor consultations, all measured one year later. While absence frequency is "an indicator of 'voluntary absenteeism' and a function of employees' motivation" (Bakker et al., 2003, p. 342), absence duration and doctor consultations frequency can be considered as health related outcomes that are less influenced by employees' motivation at work. Hence, the dimension motivation is hypothesized to be negatively associated with absence frequency one year later. Stress complaints, on the other hand, are hypothesized to be positively associated with absence duration and the number of doctor consultations one year later. Additionally, we may also make predictions about the long-term consequences of undesirable behaviour at work.

Mobbing has important consequences for employees' motivation and health related behaviour, such as absenteeism and being hospitalised (see e.g., Einarsen & Mikkelsen, 2003; Kivimäki, Elovainio, & Vahtera, 2000; Romanov, Appelberg, Honkasalo, & Koskenvuo, 1996). Therefore, we hypothesize undesirable behaviour at work to be positively associated with employees' absence frequency, absence duration and the number of doctor consultations in the last year. We may conclude for predictive validity when the three well-being indicators of the S-ISW explain the criteria concerning absenteeism and doctor consultations.

To evaluate the reliability of the S-ISW, we first calculate the test-retest reliability. In this respect, we investigate whether the scores on the scales stress complaints, motivation and undesirable behaviour at work are stable over a period of time. Second, we examine the internal consistency of the dimensions stress complaints, motivation and undesirable behaviour at work.

## Method

### *Data collection and respondents*

The current study is based on the data of four samples. The first sample consisted of 8263 employees of 11 organizations (46%) and 9518 readers of the magazine *Vacature*<sup>4</sup> (54%), totalling 17781 respondents. The employees of the organizations completed the S-ISW in a study on stress and well-being ordered by their employer. They filled out the questionnaire online or on paper. The readers of *Vacature* took part in a large study about stress and rumination of the Belgian population that was organized by ISW Limits, K.U.Leuven, Université Catholique de Louvain (U.C.Louvain) and *Vacature*. They gained access to the online questionnaire (including the S-ISW) by clicking a link on the website of *Vacature*.

The second sample included the respondents of the stress and rumination survey (cfr sample 1) who completed the questionnaire a second time one year later. Respondents who

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<sup>4</sup> The magazine *Vacature* is a weekly published newspaper and an online magazine that offers career information and vacancies to readers and internet users, mainly highly educated workers.

requested to be informed about the results of the first study ( $N = 7380$ ), received an electronic newspaper and were invited to complete this year's survey by clicking a link in the e-mail. This new survey again concerned stress, rumination, as well as health related outcomes and was filled out by 869 employees (response rate of 12%). After eliminating respondents with missing data and employees who changed jobs in the past year, longitudinal data of 462 employees were available.

Sample three consisted of those respondents who filled out the stress and rumination questionnaire a third time, with a period of at least 10 days between the second and the third measurement. Six hundred and nine respondents of the second measurement, who gave their explicit permission to invite them to the repeated measurement, received the S-ISW a third time. Of these employees, 332 persons filled out the questionnaire (response rate of 55%). At the end, 264 respondents completed all critical questions for the current study at time 2 and time 3.

The fourth sample counted 3596 employees of a production company, who participated in a screening project on stress and well-being in their organization. The questionnaire used in this project included both the S-ISW and the SPPN (Stress Professionnel Positif et Négatif; De Keyser, 2001) and was filled out online or on paper.

Only the subjects without missing values on the crucial measures in the current study were preserved for analyses. Table 1 shows the socio-demographic characteristics of the four samples.

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Insert Table 1 about here

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### *Measures*

In the current study both the Dutch and the French versions of the *Short Inventory on Stress and Well-being (S-ISW)*, and more specifically its part measuring indicators of well-being, were evaluated. These versions of the S-ISW are presented in Appendix A. Appendix A also

shows the English, but not yet validated version. The S-ISW contains three scales related to well-being at work: stress complaints, motivation and undesirable behaviour at work.

Stress complaints were measured with eight items (e.g., “I generally feel depressed or unhappy” and “I feel angry or irritated because of my work”). Respondents were asked to rate these items on a five-point Likert type scale, ranging from 1 (never) to 5 (always). Higher scores on this scale indicate more frequent or severe stress complaints.

Motivation was measured by means of seven items (e.g., “I am generally satisfied with my job” and “Even if I were extremely wealthy, I would still do this job”). Items were scored on a seven-point scale (1 = strongly disagree; 7 = strongly agree). A higher score reflects more motivation in the job.

A set of four items was used to measure undesirable behaviour at work (e.g., “In the office people do harass each other at times (more than innocent teasing)” and “Sometimes I am victim of other undesirable behaviour (discrimination, violence and aggression, sexual harassment, insults etc.)”). The items were rated on a 5-point scale, ranging from 1 (never) to 5 (always). Higher scores reflect more frequent perceived undesirable behaviour at work.

In addition, the respondents of the second sample filled out three questions on absence frequency, absence duration and doctor consultation frequency (i.e., “How many times have you been absent due to sickness in the last 12 months?”; “How many working days have you been absent due to sickness in the last 12 months?”; “How many times did you visit a doctor due to sickness in the last 12 months?”). As the responses on these questions were not normally distributed, they were dichotomised (absence frequency: 0 = maximum one time, 1 = more than one time; absence duration: 0 = no longer than two working days, 1 = longer than two working days; doctor consultation frequency: 0 = maximum one time, 1 = more than one time).

Besides the S-ISW, the respondents of the fourth sample also filled out the *questionnaire SPPN*<sup>5</sup> (Stress Professionnel Positif et Négatif; De Keyser, 2001). The questionnaire SPPN measures two constructs, namely negative stress and positive stress. Stress is interpreted as “a worker’s response to the demands of a job for which he feels he may not have the necessary resources and which he considers he has to cope with” (De Keyser & Hansez, 1996, p. 133). The positive component of stress (eustress) is healthy stress and works stimulating, while negative stress (distress) is rather unhealthy and exhausting.

Negative stress was measured by means of 11 items of the questionnaire SPPN (De Keyser, 2001;  $\alpha = .87$ ). Examples of items were “I feel I can’t cope with everything I have to do at work” and “My work stresses me”. Positive stress was measured using eight items (De Keyser, 2001; e.g., “I’m very active at work” and “My work is fascinating”;  $\alpha = .84$ ). Participants were asked to indicate to which extent the concerning item was applicable to them on a 4-point Likert-type scale (1 = “Never or rarely”, 4 = “Always or almost always”). A higher score reflects more negative respectively positive stress in the job.

At last, in calculating the predictive validity (sample 2) several demographic and work related variables were controlled for, namely gender (0 = female; 1 = male); age (1 = younger than 25 years old; 2 = 25-34 years old; 3 = 35-44 years old; 4 = 45-54 years old; 5 = 55 years or older), , full-time versus part-time employment (0 = part-time; 1 = full-time) and contract type (0 = temporary; 1 = permanent). Occupational status was recoded into three dummy variables with white-collar workers as the reference group, namely blue-collar worker (0 = white-collar worker, manager, and self-employed worker; 1 = blue-collar worker), manager (0 = blue-collar worker, white-collar worker and self-employed worker; 1 = manager) and self-employed worker (0 = blue-collar worker, white-collar worker and manager; 1 = self-employed worker).

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<sup>5</sup> The SPPN is a part of the WOCCQ Package (Working Conditions and Control Questionnaire Package), which is developed by Hansez (2001) as a method of diagnosing psychosocial risks.

## *Analyses*

To investigate whether the proposed model of the indicators of well-being fitted the data well, we performed confirmatory factor-analysis (CFA) using AMOS 7.0 (Arbuckle, 2005). Three models were tested and compared: the proposed three-factor model with stress complaints, motivation and undesirable behaviour at work as the three dimensions, a wording model in which all positively phrased items load on one factor and all negatively phrased items on the other factor, and a simple one-factor model in which all indicators load on the same factor. These analyses were performed for the whole sample, as well as for the Dutch and the French speaking groups separately.

The invariance of the proposed factor structure between the Dutch and the French speaking group was investigated using multiple group CFA. In particular, we tested whether the factor loadings, the factor variances and the error variances were equivalent across the two subgroups by testing increasingly restrained models (Steenkamp & Baumgartner, 1998). If the model with equal factor loadings, the model with equal factor variances and the model with equal error variances would fit the data equally well as the model with the free parameters, support would be found for more stringent forms of measurement invariance.

Both the CFA and the multiple group CFA were performed using the maximum-likelihood method. The goodness-of-fit of the models was evaluated using five indices: (1) the Chi-square statistic ( $\chi^2$ ), (2) the Goodness of Fit Index (GFI; Jöreskog & Sörbom, 1996), (3) the Normed Fit Index (NFI; Bentler, 1990; Bentler & Bonett, 1980), (4) the Comparative Fit Index (CFI; Bentler, 1990) and (5) the Root Mean Square Error of Approximation (RMSEA; Steiger, 1990). Values on the fit indices indicate a good fit when they are greater than or equal to .90 (Bentler & Bonett, 1980). Values on the RMSEA smaller than .08 indicate a reasonable fit (Browne & Cudeck, 1993). Two remarks can be made to the use of indices in evaluating a model's fit. Firstly, since each fit index reflects only a specific aspect of the model's fit, a

single good value might not offer sufficient evidence to conclude for a good fit (Kline, 1998). Therefore fit indices should always be interpreted relatively to other fit indices. Secondly, as the Chi-square statistic is sensitive to the sample size, it should not be used as a direct indication for the goodness-of-fit of a model. Rather, the Chi-square-difference test should be used to examine which one of a couple of nested models fits the data best (Kline, 1998; Weston & Gore, 2006).

The analyses for testing the factor structure and the cross-cultural invariance were repeated three times using one of three independent subsamples. These subsamples were randomly selected out of the first sample and each subsample consisted of 1000 respondents. We selected these subsamples for two reasons. First, we wished to exclude the possibility that the test results would be the outcome of the specific composition of our sample. Second, we wanted to prevent the values of the fit indices to increase by using samples with a smaller size: As fit indices are dependent of the sample size, using a reference group of 17781 observations would inflate the fit.

Furthermore, we tested the convergent validity of the stress complaints and motivation scales using sample 4. In particular, we calculated the Pearson's correlation coefficients between stress complaints and motivation on the one hand and positive and negative stress (from the SPPN) on the other hand (thus, in a 2\*2 correlation matrix). Correlations beneath .30 were considered as low, correlations between .30 and .50 were moderate and correlations above .50 indicated high convergent validity (Field, 2005). These calculations were made for total sample 4, the Dutch speaking subgroup and the French speaking subgroup.

Logistic regression analyses were performed on the dichotomized long-term outcome variables (i.e., absence frequency, absence duration and doctor consultation frequency) to investigate whether the well-being indicators of the S-ISW at time 1 were associated with these outcomes at time 2 (using SPSS 15.0; Field, 2005). We adjusted for gender, age, full-

time versus part-time employment, permanent versus temporary contract, blue-collar worker, manager and self-employed worker (versus white-collar worker) by including them in the first step of the analysis. In the second step, stress complaints, motivation and undesirable behaviour at work were entered. Results are presented in terms of odds ratios and 95% confidence intervals. The analyses were only performed for the total sample 2, as the size of the Dutch and the French speaking subgroups was too small.

Finally, we evaluated the reliability of the scales stress complaints, motivation and undesirable behaviour at work by calculating the Cronbach's alpha coefficients and the test-retest correlations (over a period of at least 10 days, see above). Test-retest correlations were calculated based on sample 3. Values above .65 indicated a good stability of the measurements over time (Eggen & Sanders, 1993). We selected an inter-measurement period of at least 10 days, as this was long enough to measure test-retest reliability and short enough to exclude changes in employers' well-being experience. Cronbach's alphas on the other hand were calculated for sample 1 and its three subsamples. Values of .70 for existing scales demonstrated the measurement's reliability (Nunnally & Bernstein, 1994). Both the Cronbach's alpha coefficients and the test-retest correlations were calculated for the whole sample, the Dutch and French speaking groups separately.

## Results

### *Factorial validity*

Model testing was carried out for the whole subsample, as well as for the Dutch and the French speaking groups separately, and was repeated for all three subsamples of 1000 respondents. Three models were compared using confirmatory factor-analyses, namely the proposed three-factor model, the wording model and the one-factor model. In the proposed model, the three factors (i.e., stress complaints, motivation and undesirable behaviour at work) were allowed to correlate, as well as some paired errors (see Figure 2). It concerned

those correlated errors for which the modification index was higher than 4 and therefore led to a significant improvement of the fit in all three subsamples.

Table 2 displays the results of the CFA for the total group, which were very similar for the three subsamples. First, the results showed that the fit indices had a value larger or equal to .90 and the RMSEA value did not exceed the critical value of .08 for the proposed three-factor model, suggesting that this model fitted the data well. Second, the proposed model fitted the data significantly better than the wording model and the one-factor model. This was indicated by the values of the fit indices, which were higher for the presented model, and by the Chi-square difference test, in which the proposed model was compared with the wording model and the one-factor model, respectively  $\Delta\chi^2(9) = 1614.99, p < .001$  en  $\Delta\chi^2(10) = 2285.05, p < .001$  for subsample 1;  $\Delta\chi^2(9) = 1776.67, p < .001$  en  $\Delta\chi^2(10) = 2599.56, p < .001$  for subsample 2 and  $\Delta\chi^2(9) = 1674.93, p < .001$  en  $\Delta\chi^2(10) = 2441.51, p < .001$  for subsample 3.

Comparable results were found for the Dutch speaking group in the three subsamples (see Table 3). First, the values of the fit indices were larger or equal to .90 and the RMSEA value was smaller than .08, suggesting that the proposed model fitted the data well. Second, the Chi-square difference tests, which compared the presented model with the wording model and the one-factor model, indicated that the proposed model fitted the data better, respectively  $\Delta\chi^2(9) = 1028.17, p < .001$  en  $\Delta\chi^2(10) = 1566.68, p < .001$  for subsample 1;  $\Delta\chi^2(9) = 1251.61, p < .001$  en  $\Delta\chi^2(10) = 1874.96, p < .001$  for subsample 2 en  $\Delta\chi^2(9) = 1106.78, p < .001$  en  $\Delta\chi^2(10) = 1671.87, p < .001$  for subsample 3.

The results for the French speaking group are displayed in Table 4. While the values of the CFI and the RMSEA satisfied the criteria, the values of the GFI and the NFI did not reach the critical value of .90. Hence, based on the fit indices, mixed evidence was found for the fit of the proposed three-factor model. Additionally, a Chi-square difference test showed

that the proposed three-factor model fitted the data better than the wording model, respectively  $\Delta\chi^2(9) = 572.44, p < .001$  for subsample 1,  $\Delta\chi^2(9) = 561.91$  for subsample 2 and  $\Delta\chi^2(9) = 640.99, p < .001$  for subsample 3. The three-factor model also fitted the data better than the one-factor model, respectively  $\Delta\chi^2(10) = 684.47, p < .001$  for subsample 1;  $p < .001$  en  $\Delta\chi^2(10) = 778.79, p < .001$  for subsample 2 and  $\Delta\chi^2(10) = 798.84, p < .001$  for subsample 3.

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Insert Table 2, Table 3 and Table 4 about here

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The standardized solution of the CFA on the factors of well-being for the first subsample is shown in Figure 2. Both the factor loadings and the correlations between the factors are displayed. The factor loadings show that the items strongly coincide with the theoretically expected dimension. For instance, the item concerning the psychological stress complaints most strongly coincides with the dimension stress complaints. Additionally, as expected, motivation was negatively related to stress complaints and undesirable behaviour at work. Stress complaints and undesirable behaviour at work were positively associated. The standardized solutions of the other two subsamples were highly similar and therefore not presented<sup>6</sup>.

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Insert Figure 2 about here

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#### *Cross-cultural invariance*

In order to examine whether the factor structure was invariant across the Dutch and the French versions of the questionnaire, a multiple group CFA on the three-factor model was performed for all three subsamples. Again, the factors of this model were allowed to correlate, as well as some pairs of errors (see above).

The results of the multiple group CFA for the three subsamples showed that the proposed model fitted the data well (see Table 5). The fit indices had a value of at least .90,

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<sup>6</sup> These solutions are available from the first author.

except for the NFI, and the RMSEA value was .05 (< .08). In addition, the results of the equivalence tests of the factor loadings, the factor variances and the error variances demonstrated that the model with the free parameters fitted the data significantly better than the model with the equivalent factor loadings, the model with equivalent factor variances and the model with equivalent error variances, respectively  $\Delta\chi^2(16) = 44.07, p < .001$ ;  $\Delta\chi^2(22) = 118.57, p < .001$  en  $\Delta\chi^2(41) = 249.10, p < .001$  for subsample 1;  $\Delta\chi^2(16) = 43.64, p < .001$ ;  $\Delta\chi^2(22) = 57.34, p < .001$  en  $\Delta\chi^2(41) = 174.33, p < .001$  for subsample 2 en  $\Delta\chi^2(16) = 70.40, p < .001$ ;  $\Delta\chi^2(22) = 159.17, p < .001$  en  $\Delta\chi^2(41) = 337.38, p < .001$  for subsample 3. In other words, the factor loadings, the factor variances and the error variances were not equivalent between the Dutch and the French speaking groups.

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Insert Table 5 about here

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#### *Convergent validity*

With the fourth sample (i.e., the employees of the production company;  $N = 4331$ ), the convergent validity of the dimensions stress complaints and motivation of the S-ISW was investigated by calculating their relationships with the dimensions positive and negative stress of the questionnaire SPPN (in a 2\*2 correlational matrix).

Table 6 displays the correlations between stress complaints and motivation on the one hand and positive stress and negative stress on the other hand. As expected, high correlations ( $> 0.50$ ; Field, 2005) were found between stress complaints and negative stress ( $r = .81$ ), and between motivation and positive stress ( $r = .68$ ). Additionally, the correlations between stress complaints and positive stress and between motivation and negative stress were moderately negative (between 0.30 and 0.50; Field, 2005), respectively -0.37 and -0.46. As is shown in Table 7 and 8, similar values were found for the Dutch and the French speaking groups.

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Insert Table 6, Table 7 and Table 8 about here

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*Predictive validity*

The predictive validity of the S-ISW was examined using the longitudinal data of the second sample (i.e., the respondents of the study on stress and rumination who participated the first and the second survey;  $N = 462$ ). Table 9 displays the means, the standard deviations, and the intercorrelations for all scales that are used to examine the predictive validity of the well-being indicators. We tested whether stress complaints, motivation and undesirable behaviour at work at time 1 predicted absence frequency, absence duration and doctor consultation frequency at time 2, after controlling for several important background variables.

In line with our expectations, the results showed that employees' motivation at time 1 was negatively associated with absence frequency at time 2 ( $p = .002$ ). Motivated workers were less likely to stay at home because of illness than less motivated workers. Stress complaints and undesirable behaviour at work were not significantly related to absence frequency. Further, undesirable behaviour at work at time 1 was positively associated with absence duration at time 2 ( $p = .015$ ). Workers who experienced more undesirable behaviour at work were more likely to stay longer at home due to illness than workers who experienced less undesirable behaviour. Stress complaints and motivation were not significantly related to absence duration, which was inconsistent with our hypotheses. At last, stress complaints at time 1 were positively associated with doctor consultation frequency at time 2 ( $p = .002$ ). Workers who experienced more stress complaints were more likely to visit their doctor than workers who expressed less stress complaints. The dimensions of the well-being indicators are thus associated with the long-term outcome variables following a specific pattern, underlying the predictive validity of the S-ISW.

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Insert Table 10 about here

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*Test-retest reliability*

By means of the longitudinal data of the third sample (i.e., the respondents of the study on stress and rumination who participated in the second and the third survey;  $N = 264$ ), we examined to which extent the measures of stress complaints, motivation and undesirable behaviour at work were stable in time or, stated differently, could be repeated.

As presented in Table 11, the observed test-retest correlations for the scales of the well-being indicators were very high ( $r \geq .65$ ; Eggen & Sanders, 1993). Similar correlations were found for the Dutch and the French speaking group. The measurements can therefore be considered as stable over time, suggesting a good test-retest reliability of the three dimensions of the indicators of well-being.

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Insert Table 11 about here

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*Internal consistency*

Using the data of the first sample ( $N = 17781$ ), the internal consistency of the three scales of the indicators of well-being was examined by calculating Cronbach's alpha coefficients. The Cronbach's alpha coefficients were satisfactory for the whole of sample 1, as well as the Dutch and the French speaking group (see Table 12), as they reached out far above the criterion of .70 for existing scales (Nunnally & Bernstein, 1994). considering the whole sample, stress complaints yielded a Cronbach's alpha coefficient of .87, motivation a Cronbach's alpha coefficient of .85 and undesirable behaviour at work a Cronbach's alpha coefficient of .81. Besides, similar Cronbach's alpha coefficients were found for the three subsamples of sample 1, as well as for the Dutch and the French speaking groups. As the Cronbach's alpha coefficients offer an indication of the lower bound of reliability (Maris, 2003), the results suggest that the scales of the S-ISW were internally consistent.

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Insert Table 12 about here

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## Discussion

The main goal of the current study was to validate the S-ISW. In this respect, only the part of the S-ISW that measures the indicators of well-being (i.e., stress complaints, motivation and undesirable behaviour at work) was evaluated. In particular, we investigated whether the well-being indicators were valid and reliable scales. Analyses were conducted for both the Dutch and the French version of the S-ISW.

In order to evaluate the validity of the S-ISW, we first examined the factor structure of the indicators of well-being using CFA, in which three models were tested and compared (i.e., the three-factor model, the wording model and the one-factor model). The results showed that the proposed three-factor model, with stress complaints, motivation and undesirable behaviour at work as the dimensions, fitted the data in a satisfactory manner for the whole sample and for the Dutch speaking group. For the French speaking group, however, the results were less univocal. Nevertheless, all fit indices taken into account, we would suggest to accept the proposed three-factor model. In addition, the results showed that the three-factor model fitted the data better than a wording model and a one-factor model. Therefore, the possibility that the results were an artefact of the item formulation (i.e., negatively versus positively phrased items) was rejected. Furthermore, the one-factor model was too simple to explain the data. Overall, as predicted, the results enable us to conclude that the three-factor structure of the well-being indicators fitted the data best.

Second, the validity of the S-ISW was also examined by testing the cross-cultural invariance of the three-factor structure of the S-ISW using CFA. Although no evidence was found for more restrained forms of invariance (equal factor loadings, equal factor variances and equal error variances), the results showed that the three-factor model with the free parameters fitted the data sufficiently. This means that the factor structures of the Dutch and

the French questionnaire were invariant: for both versions of the S-ISW the same items loaded on the same factors. Hence, we may conclude that the factor structure of the indicators of well-being is cross-culturally invariant at the level of configural invariance (Steenkamp and Baumgartner, 1998).

Third, the validity of the S-ISW was further tested by investigating the convergent validity of the dimensions stress complaints and motivation. In particular, we calculated the correlation coefficients between stress complaints and motivation on the one hand and the two constructs of the SPPN, namely negative and positive stress (De Keyser & Hansez, 1996), on the other hand. Similar results were found for the whole sample, as well as for the Dutch and the French speaking group separately: Stress complaints and negative stress showed a high degree of content similarity, as did motivation and positive stress. Additionally, stress complaints were negatively related with positive stress, while motivation was negatively related with negative stress. These results allow us to conclude for the convergent validity of the dimensions stress complaints and motivation.

Fourth, the predictive validity of the well-being indicators was investigated by looking at the extent in which stress complaints, motivation and undesirable behaviour at work were associated with absence frequency, absence duration and doctor visitation frequency one year later. The results were clear-cut: Stress complaints were positively associated with doctor visitation frequency. Motivation was negatively related to absence frequency due to illness and, at last, undesirable behaviour at work was positively associated with absence duration. These results align with the literature on stress and mobbing. Based on the JD-R model (Demerouti, et al., 2001) long-term consequences of stress complaints and motivation may be expected. While stress complaints are expected to be related to health related outcomes, such as doctor consultation frequency, motivation is predicted to be associated with rather voluntary behavioural outcomes, such as absence frequency (see Bakker et al., 2003).

Furthermore, the literature on undesirable behaviour at work describes consequences for both workers' health and motivation related variables (see e.g., Einarsen & Mikkelsen, 2003; Kivimäki, Elovainio, & Vahtera, 2000; Romanov, Appelberg, Honkasalo, & Koskenvuo, 1996). However, against our expectations, we found no significant relationships between stress complaints and absence duration and between undesirable behaviour on the one hand and absence frequency and doctor visitation frequency on the other hand.

Besides the validity of the S-ISW, we also wanted to test its reliability. Therefore, we first investigated the test-retest reliability of the three dimensions of the S-ISW. The results showed that the scores on stress complaints, motivation and undesirable behaviour at work were very stable over a period of at least 10 days. Measurements with the S-ISW can thus be repeated over a relatively short period of time. Second, we examined the internal consistency of the S-ISW scales, calculating Cronbach's alpha coefficients. The coefficients for stress complaints, motivation and undesirable behaviour at work indicated adequate reliability.

In summary, our findings demonstrated both the validity and the reliability of the indicators of well-being of the S-ISW (Maris, 2003): (1) the three-factor model, with the dimensions stress complaints, motivation and undesirable behaviour at work, was supported by our data, (2) the factor structure was invariant between the Dutch and the French version of the S-ISW, (3) stress complaints and negative stress, as well as motivation and positive stress showed a high degree of content similarity (congruent validity), (4) the three well-being indicators together explained the criteria absence frequency, absence duration and doctor consultation frequency one year later (predictive validity), (5) the dimensions stress complaints, motivation and undesirable behaviour at work were stable in time (test-retest reliability) and, (6) the three dimensions of the well-being indicators showed adequate internal consistency.

The introduction of the three well-being indicators into the S-ISW stems from the stress literature and the Belgian legislation concerning employees' psychosocial well-being at work. Based on the JD-R model (Bakker, Demerouti, de Boer, & Schaufeli, 2003; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), stress complaints and motivation may be interpreted as important outcomes of the work situation: While stress complaints may be considered as the result of job demands, motivation can be interpreted as the consequence of job resources. Furthermore, the inclusion of the dimension undesirable behaviour at work into the S-ISW results from the Belgian legislation in which the development of a well-being policy or prevention plan is prescribed in order to counteract mobbing and other kinds of undesirable behaviour at work (the Royal Decree of May 17<sup>th</sup> 2007 on the prevention of psychosocial pressure at work, including violence, mobbing and undesirable sexual behaviour at work).

#### *Limitations of the study*

Possible limitations of the current study should be mentioned. A first limitation of the current study is the absence of random samples. Nor the organizations investigated in our study, nor the respondents of the stress and rumination survey were randomly selected from, respectively, the Belgian population of organizations and the Belgian population of employees. Consequently, the generalizability of the results could be questioned. However, the employees whose responses were included in the present study originated from a wide range of organizations and sectors. Our samples were therefore quite heterogenic.

A second limitation of the current study is that we did not investigate the divergent validity of the well-being indicators. The reason is that we did not measure variables that were predicted to be unrelated with the research variables. Future research could focus on this matter.

A third limitation concerns the research design that was used to investigate the predictive validity of the well-being indicators. We investigated whether the well-being

indicators predicted behavioural outcomes one year later, but we did not control for baseline values of these outcomes (*longitudinal, prospective design*). We acknowledge that this type of research design offers a more conservative test than a cross-sectional design.

A fourth limitation concerns the period between the two measurements, which were used to investigate the test-retest reliability. This period counted at least 10 days, but was not the same for all respondents. The maximum possible time between the two measurements was 45 days. While a fixed period could offer a stronger test for test-retest reliability, this would require great effort to accomplish in practice (e.g., participants still have a time frame in which they can choose a moment to participate). Nevertheless, good support was found for the test-retest reliability.

#### *Practical implications*

Based on the current study, we may conclude that the S-ISW, and more specifically the part that measures stress, well-being and undesirable behaviour at work, is a valid and reliable instrument. Additionally, this questionnaire counts only 19 items to measure occupational well-being and is therefore a short and practical tool. At the same time, it can offer an extended view on stress, motivation and undesirable behaviour at work in the working situation. The S-ISW can therefore be considered as a solid tool for conducting research to aid organizations in the development of a well-being policy or prevention plan, in order to meet statutory regulations.

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Table 1

*Composition of the samples according to socio-demographic characteristics: number and percentage*

Socio-demographic characteristics	Sample 1		Sample 2		Sample 3		Sample 4	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Total	17781	100	462	100	264	100	3596	100
Language								
Dutch	12362	70	330	71	180	68	2418	67
French	5419	30	132	29	84	32	1178	33
Gender								
Male	9184	52	200	43	125	47	2839	79
Female	8597	48	262	57	139	53	757	21
Age								
Younger than 25 years old	2180	12	48	10	12	4	318	9
25-34 years old	6659	37	210	46	113	43	832	23
35-44 years old	4553	26	107	23	70	27	1088	30
45-54 years old	3568	20	80	17	54	20	1028	29
Older than 55 years old	821	5	17	4	15	6	330	9
Full-time versus part-time employment								
Full-time	15227	86	407	88	236	89	3370	94
Part-time	2554	14	55	12	28	11	226	6
Contract								
Permanent	14169	80	364	79	217	82	3261	91
Temporary	3612	20	98	21	47	18	335	9
Staff category								
Blue-collar worker	3521	20	13	3	9	3		
White-collar worker	10030	56	321	69	190	72	}2821	}78
Manager	3774	2	115	25	54	21	775	22
Self-employed worker	456	3	13	3	11	4	0	0

Table 2

Results of the CFA for the three total subsamples: Fit-indices for alternative factor structures of the indicators of well-being of the S-ISW

Model	$\chi^2$	df	p	GFI	NFI	CFI	RMSEA	Model comparison	$\Delta\chi^2$
Total subsample 1 (N = 1000)									
1. Proposed model	738.62	142	<.001	.93	.92	.93	.065	-	-
2. Wording model	2353.61	151	<.001	.78	.74	.75	.121	1 versus 2	1614.99
3. One-factor model	3023.67	152	<.001	.69	.66	.68	.138	1 versus 3	2285.05
Total subsample 2 (N = 1000)									
1. Proposed model	773.96	142	<.001	.93	.91	.93	.067	-	-
2. Wording model	2550.63	151	<.001	.77	.71	.73	.126	1 versus 2	1176.67
3. One-factor model	3373.52	152	<.001	.67	.62	.63	.146	1 versus 3	2599.56
Total subsample 3 (N = 1000)									
1. Proposed model	739.06	142	<.001	.93	.92	.93	.065	-	-
2. Wording model	2413.99	151	<.001	.78	.73	.75	.122	1 versus 2	1674.93
3. One-factor model	3180.57	152	<.001	.68	.65	.66	.141	1 versus 3	2441.51

Note. S-ISW = Short Inventory on Stress and Well-being; CFA = confirmatory factor analysis; GFI = goodness-of-fit index; NFI = normed fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

Table 3

*Results of the CFA for the Dutch speaking groups of the three subsamples: Fit-indices for alternative factor structures of the indicators of well-being of the S-ISW*

Model	$\chi^2$	df	p	GFI	NFI	CFI	RMSEA	Model comparison	$\square \square^2$
Dutch speaking group of subsample 1 (N = 698)									
Proposed model	635.81	142	<.001	.91	.90	.92	.071	-	-
Wording model	1663.98	151	<.001	.77	.74	.76	.120	1 versus 2	1028.17
One-factor model	2202.49	152	<.001	.67	.66	.68	.139	1 versus 3	1566.68
Dutch speaking group of subsample 2 (N = 714)									
Proposed model	671.45	142	<.001	.91	.90	.92	.072	-	-
Wording model	1923.06	151	<.001	.76	.71	.72	.128	1 versus 2	1251.61
One-factor model	2546.41	152	<.001	.66	.61	.63	.149	1 versus 3	1874.96
Dutch speaking group of subsample 3 (N = 723)									
Proposed model	638.78	142	<.001	.92	.90	.92	.070	-	-
Wording model	1745.56	151	<.001	.77	.73	.75	.121	1 versus 2	1106.78
One-factor model	2310.65	152	<.001	.67	.64	.66	.140	1 versus 3	1671.87

*Note.* S-ISW = Short Inventory on Stress and Well-being; CFA = confirmatory factor analysis; GFI = goodness-of-fit index; NFI = normed fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

Table 4

*Results of the CFA for the French speaking groups of the three subsamples: Fit-indices for alternative factor structures of the indicators of well-being of the S-ISW*

Model	$\chi^2$	df	p	GFI	NFI	CFI	RMSEA	Model comparison	$\Delta\chi^2$
French speaking group of subsample 1 (N = 302)									
Proposed model	353.44	142	<.001	.89	.88	.92	.070	-	-
Wording model	926.08	151	<.001	.74	.67	.71	.131	1 versus 2	572.44
One-factor model	1037.91	152	<.001	.70	.63	.67	.139	1 versus 3	684.47
French speaking group of subsample 2 (N = 286)									
Proposed model	378.16	142	<.001	.87	.86	.91	.076	-	-
Wording model	940.07	151	<.001	.71	.65	.69	.135	1 versus 2	561.91
One-factor model	1156.95	152	<.001	.63	.57	.60	.152	1 versus 3	778.79
French speaking group of subsample 3 (N = 277)									
Proposed model	340.30	142	<.001	.89	.88	.93	.07	-	-
Wording model	951.29	151	<.001	.72	.66	.70	.139	1 versus 2	640.99
One-factor model	1139.14	152	<.001	.63	.59	.63	.153	1 versus 3	798.84

*Note.* S-ISW = Short Inventory on Stress and Well-being; CFA = confirmatory factor analysis; GFI = goodness-of-fit index; NFI = normed fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

Table 5

*Multiple group confirmatory factor analysis in the three subsamples: Test of the equality of an increasingly restrained model between the Dutch and the French speaking groups*

Model	$\chi^2$	df	p	GFI	NFI	CFI	RMSEA	Model comparison	$\Delta\chi^2$
Total subsample 1 (N = 1000)									
Free parameters	989.35	284	<.001	.91	.89	.92	.050	-	-
Equal factor loadings	1033.42	300	<.001	.90	.89	.92	.049	1 versus 2	44.07
Equal factor variances	1107.92	306	<.001	.90	.88	.91	.051	1 versus 3	118.57
Equal error variances	1238.45	332	<.001	.88	.87	.90	.052	1 versus 4	249.10
Total subsample 2 (N = 1000)									
Free parameters	1049.78	284	<.001	.90	.89	.91	.052	-	-
Equal factor loadings	1093.42	300	<.001	.90	.88	.91	.051	1 versus 2	43.64
Equal factor variances	1107.12	306	<.001	.90	.88	.91	.051	1 versus 3	57.34
Equal error variances	1224.11	332	<.001	.88	.87	.90	.052	1 versus 4	174.33
Total subsample 3 (N = 1000)									
Free parameters	979.24	284	<.001	.91	.89	.92	.050	-	-
Equal factor loadings	1049.64	300	<.001	.90	.88	.92	.050	1 versus 2	70.40
Equal factor variances	1138.41	306	<.001	.89	.88	.91	.052	1 versus 3	159.17
Equal error variances	1316.62	332	<.001	.87	.86	.89	.055	1 versus 4	337.38

*Note.* CFA = confirmatory factor analysis; GFI = goodness-of-fit index; NFI = normed fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

Table 6

*Intercorrelations for total sample 4 between Stress complaints and Motivation (S-ISW) on one hand and Positive Stress and Negative Stress*

*(SPPN) on the other hand (N = 4331)*

Scale	1	2	3	4
1. Stress complaints	---			
2. Motivation		-0.56	0.81	-0.37
3. Negative stress		---	-0.46	0.68
4. Positive stress			---	-0.23
				---

Table 7

*Intercorrelations for the Dutch speaking group between Stress complaints and Motivation (S-ISW) on one hand and Positive Stress and Negative*

*Stress (SPPN) on the other hand (sample 2, N = 2418)*

Scale	1	2	3	4
1. Stress complaints	---			
2. Motivation		-0.57	0.79	-0.40
3. Negative stress		---	-0.44	0.66
4. Positive stress			---	-0.21
				---

Table 8

*Intercorrelations for the French speaking group between Stress complaints and Motivation (S-ISW) on one hand and Positive Stress and*

*Negative Stress (SPPN) on the other hand (sample 2, N = 1178)*

Scale	1	2	3	4
1. Stress complaints	---			
2. Motivation		-0.52	0.86	-0.30
3. Negative stress		---	-0.50	0.72
4. Positive stress			---	-0.25
				---

Table 9

*Stress complaints, motivation, undesirable behaviour at work, absence frequency, absence duration and doctor consultation frequency:*

*Descriptive statistics and correlations (N = 462)*

	Scale	M	SD	1	2	3	4	5	6
1. Stress complaints	1-5	3.31	1.05	-					
2. Motivation	1-7	4.65	1.23	-.47	-				
3. Undesirable behaviour at work	1-5	1.55	0.68	.43	-.43	-			
4. Absence frequency	0-1	.36	.48	.17	-.20	.07	-		
5. Absence duration	0-1	.47	.50	.15	-.16	.17	.60	-	
6. Doctor consultation frequency	0-1	.53	.50	.25	-.16	.18	.43	.44	-

*Note.* All correlations were significant at  $p < 0.01$ , two-tailed, except for the correlation between undesirable behaviour at work and absence frequency.

Table 10

*Summary of hierarchical logistic regression analyses for total sample 2 with stress complaints, motivation and undesirable behaviour at work at time 1 predicting absence frequency, absence duration and doctor consultation frequency at time 2*

	Absence frequency		Absence duration		Doctor consultation frequency	
	OR (95% CI)	<i>p</i>	OR (95% CI)	<i>p</i>	OR (95% CI)	<i>p</i>
Stress complaints	1.21 (0.96-1.52)	.105	1.07 (0.86-1.33)	.535	1.42 (1.13-1.76)	.002
Motivation	0.74 (0.61-0.90)	.002	0.88 (0.73-1.05)	.160	0.92 (0.76-1.11)	.373
Undesirable behaviour at work	0.93 (0.66-1.32)	.697	1.54 (1.09-2.18)	.015	1.32 (0.92-1.90)	.264

*Note.* All effects are adjusted for gender, age, full-time versus part-time employment, temporary versus permanent contract, blue-collar versus

white-collar worker, manager versus white-collar worker and self-employed versus white-collar worker. OR = odds ratio; CI = confidence

interval.

Table 11

*Correlations between Stress complaints, Motivation and Undesirable behaviour at work at moment 1 and their counterparts at moment 1 for the whole sample 3, the Dutch and the French speaking group.*

Scales	Total sample ( <i>N</i> = 264)	Dutch speaking group ( <i>n</i> = 180)	French speaking group ( <i>n</i> = 84)
Stress complaints	0.87	0.86	0.89
Motivation	0.91	0.92	0.86
Undesirable behaviour at work	0.84	0.81	0.88

Table 11

*Cronbach's  $\alpha$  coefficients for the scales of the indicators of well-being*

Scales	Total sample ( <i>N</i> = 17781)	Dutch speaking group ( <i>n</i> = 12310)	French speaking group ( <i>n</i> = 5423)
Stress complaints	0.87	0.87	0.88
Motivation	0.85	0.86	0.82
Undesirable behaviour at work	0.81	0.79	0.84
	Total subsample 1 ( <i>N</i> = 1000)	Dutch speaking group of subsample 1 ( <i>n</i> = 698)	French speaking group of subsample 1 ( <i>n</i> = 302)
Stress complaints	.88	.88	.87
Motivation	.85	.86	.81
Undesirable behaviour at work	.82	.78	.86
	Total subsample 2 ( <i>N</i> = 1000)	Dutch speaking Group of subsample 2 ( <i>n</i> = 714)	French speaking Group of subsample 2 ( <i>n</i> = 286)
Stress complaints	.88	.88	.88
Motivation	.84	.84	.83
Undesirable behaviour at work	.83	.82	.84
	Total subsample 3 ( <i>N</i> = 1000)	Dutch speaking group of subsample 3 ( <i>n</i> = 723)	French speaking group of subsample 3 ( <i>n</i> = 277)
Stress complaints	.88	.87	.88
Motivation	.85	.85	.85
Undesirable behaviour at work	.83	.81	.86

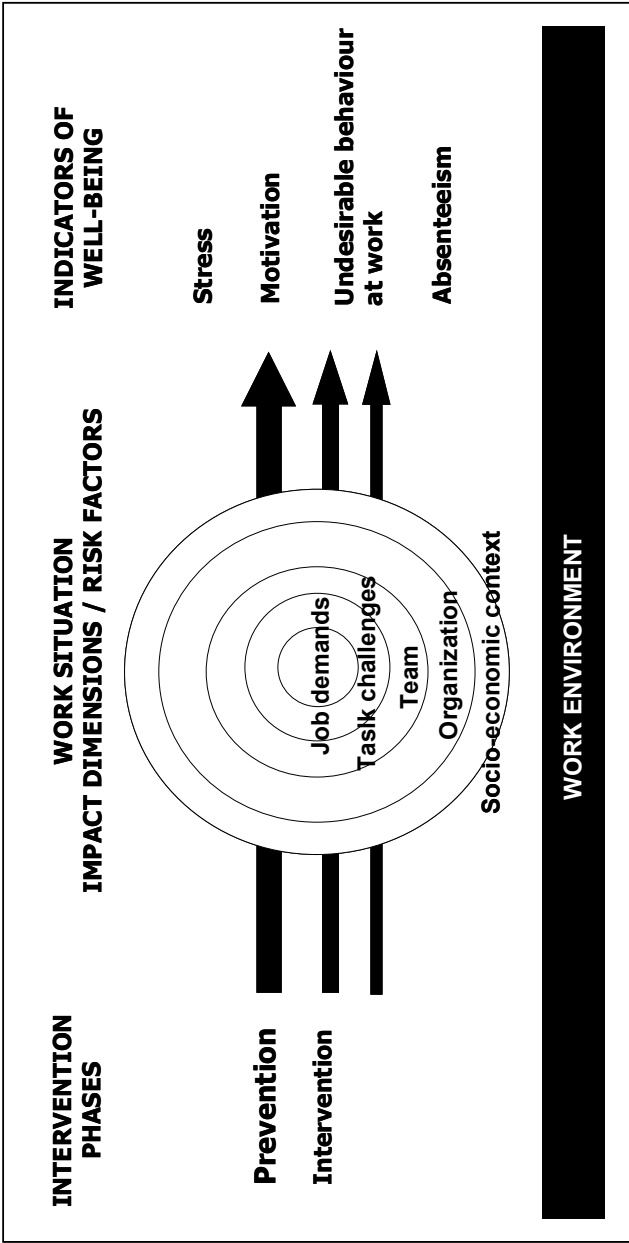


Figure 2. The S-ISW Model

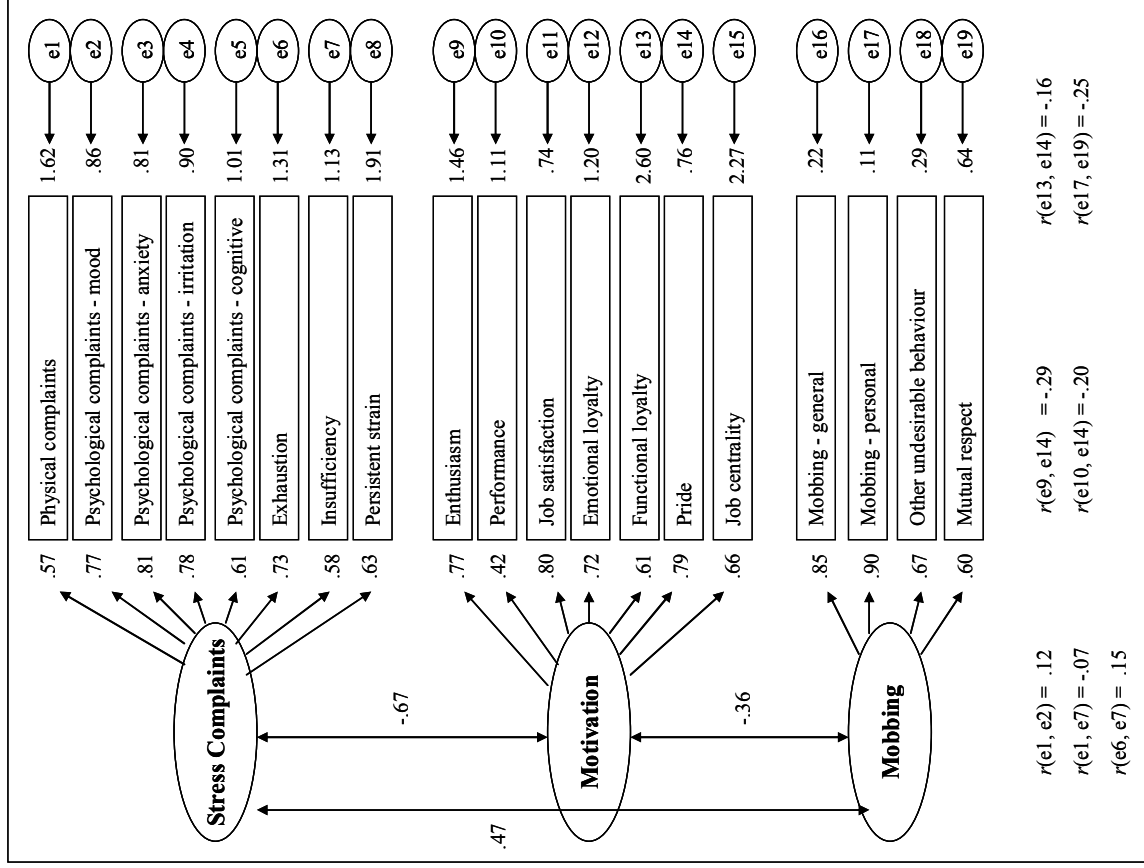


Figure 2. Standardized solution of the confirmatory factor analysis for the indicators of well-being of the S-ISW (subsample 1).

## Appendix A

Table 1

*Items on the well-being indicators of the Dutch version of the S-ISW*

<b>Stressklachten</b>		
1.	Lichamelijke klachten	Ik heb last van lichamelijke klachten (slaapproblemen, vermoeidheid, nek-of rugpijn, hoofdpijn ...)
2.	Stemmingsklachten	Ik voel me in het algemeen ongelukkig of neerslachtig
3.	Spanningsklachten	Ik ben zenuwachtig, angstig of gespannen door mijn werk
4.	Irritatie	Ik voel me kwaad of geïrriteerd door mijn werk
5.	Cognitieve klachten	Ik ben verstrooid of kan me moeilijk concentreren tijdens het werk
6.	Uitputting	Ik voel me 'opgebrand' door mijn werk
7.	Insufficiëntie	Ik heb het gevoel dat ik mijn job niet meer aankan
8.	Aanhoudende spanning	Ik kan me moeilijk ontspannen vlak na het werk
<b>Motivatie</b>		
9.	Enthousiasme	Ik doe mijn werk minder enthousiast dan vroeger
10.	Performantie	Met mijn werk lever ik een positieve bijdrage aan het functioneren van de organisatie
11.	Jobtevredenheid	In het algemeen ben ik tevreden met mijn job
12.	Emotionele loyaliteit (bedrijfsbinding)	Ik ben trots op de organisatie waar ik voor werk
13.	Functionele loyaliteit (verlooptententie)	Ik denk eraan in de nabije toekomst van werk te veranderen
14.	Trots job	Ik ben trots op mijn job
15.	Jobcentraliteit	Zelfs als ik zou zwemmen in het geld, bleef ik deze job toch doen
<b>Ongewenst Gedrag op het Werk</b>		
16.	Pesten algemeen	Op mijn werk wordt wel eens gepest (meer dan onschuldig plagen)
17.	Pesten persoonlijk	Ik word zelf wel eens gepest op mijn werk (meer dan onschuldig plagen)
18.	Ander ongewenst gedrag	Ik ben zelf wel eens slachtoffer van ander ongewenst gedrag op mijn werk
19.	Wederzijds respect	In mijn onderneming gaat men respectvol met elkaar om

Table 2

*Items on the well-being indicators of the French version of the S-ISW*

<b>Stress</b>	
1.	Plaintes physiques J'éprouve des douleurs physiques (insomnies, fatigue, douleurs à la nuque ou au dos, maux de tête ...).
2.	Plaintes psychiques - moral Je ne me sens globalement pas bien, déprimé(e).
3.	Plaintes psychiques - tension Je me sens nerveux(se), angoissé(e) ou tendu(e) par mon travail.
4.	Plaintes psychiques - irritation Je suis en colère ou irrité(e) à cause de mon travail.
5.	Plaintes psychiques - cognitives Je me sens distrait(e) ou j'arrive à peine à me concentrer sur mon travail.
6.	Epuisement Je me sens « vidé(e) » par mon travail.
7.	Incapacité Au travail, j'ai l'impression de ne plus être à la hauteur
8.	Tension nerveuse persistante J'arrive difficilement à me détendre juste après ma journée de travail.
<b>Motivation</b>	
9.	Enthousiasme J'effectue mon travail avec moins d'enthousiasme qu'auparavant.
10.	Performance Mon travail apporte une contribution positive au fonctionnement de l'entreprise
11.	Satisfaction du travail Je suis, dans l'ensemble, content(e) de mon travail.
12.	Loyauté émotionnelle Je suis fier(ère) de l'organisation pour laquelle je travaille.
13.	Loyauté fonctionnelle Je pense changer de travail dans un proche avenir.
14.	Fierté du travail Je suis fier(ère) de mon travail.
15.	Centralité du travail Même si je roulais sur l'or, je continuerais d'exercer ce travail.
<b>CIT</b>	
16.	Harcèlement - présence Le harcèlement moral est pratiqué à mon travail (plus que d'innocentes taquineries).
17.	Harcèlement - victime Je suis moi-même victime de harcèlement moral à mon travail (plus que d'innocentes taquineries).
18.	Autres comportements indésirables Je suis moi-même victime d'autres comportements non désirés (violence, agression, harcèlement sexuel, ...).
19.	Respect réciproque On entretient des rapports respectueux au sein de mon organisation.

Table 3

*Items on the well-being indicators of the English version of the S-ISW*

<b>Stress complaints</b>	
1. Physical complaints	I have physical complaints (sleeping problems, fatigue, neck or back ache, headache etc.).
2. Psychological complaints - mood	I generally feel depressed or unhappy.
3. Psychological complaints - anxiety	I am nervous, afraid, or tense because of my work.
4. Psychological complaints - irritation	I feel angry or irritated because of my work.
5. Psychological complaints - cognitive	I am distracted or find it hard to concentrate on my work.
6. Exhaustion	I feel burnt out because of my job.
7. Insufficiency	I feel I can no longer cope with my job.
8. Persistent strain	I find it hard to relax immediately after work.
<b>Motivation</b>	
9. Enthusiasm	I work less enthusiastically than in the past.
10. Performance	At work, I make a positive contribution to the functioning of the organization.
11. Job satisfaction	I am generally satisfied with my job.
12. Emotional loyalty	I am proud of the organization which I work for.
13. Functional loyalty	I am thinking of changing jobs in the near future.
14. Pride	I am proud of my job.
15. Job centrality	Even if I were extremely wealthy, I would still do this job.
<b>Undesirable behaviour at work</b>	
16. Mobbing - general	In the office people do harass each other at times (more than innocent teasing).
17. Mobbing - personal	I am harassed during work time occasionally (more than innocent teasing).
18. Other undesirable behaviour	Sometimes I am victim of other undesirable behaviour (discrimination, violence and aggression, sexual harassment, insults etc.).
19. Mutual respect	In my company, people treat each other with respect.