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*Published in:*  
Work and stress

*DOI:*  
[10.1080/02678370802390132](https://doi.org/10.1080/02678370802390132)

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*Document Version*  
Publisher's PDF, also known as Version of record

*Publication date:*  
2008

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*

de Lange, A. H., De Witte, H., & Notelaers, G. (2008). Should I stay or should I go? Examining longitudinal relations among job resources and work engagement for stayers versus movers. *Work and stress*, 22(3), 201-223. <https://doi.org/10.1080/02678370802390132>

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## Should I stay or should I go? Examining longitudinal relations among job resources and work engagement for stayers versus movers

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This two-wave (16-month lag) Belgian panel study is one of the first to test theory-driven hypotheses on the relations between job resources, work engagement, and actual turnover across time. The study focuses on three groups: stayers, workers who have obtained promotions (“promotion makers”), and external job movers. In line with the Job Demands-Resources model, we hypothesized normal cross-lagged effects of job resources on work engagement for stayers. Based on broaden-and-build theory, a reversed causal effect of work engagement on job resources was predicted for the job changers. Additionally, we examined whether the changes in the job change groups matched the refuge hypothesis (that less engaged workers change to jobs providing more resources) or the positive gain hypothesis (that engaged workers get promoted to jobs having even more resources). The results partially supported our hypotheses. We found that low work engagement, low job autonomy, and low departmental resources predicted actual transfer to another company. Furthermore, for stayers we found positive effects of job autonomy on work engagement, but also reversed causal effects. For external movers and promotion makers the expected reversed causal effects of work engagement were found. The across time mean changes support the positive gain hypothesis for promotion makers, and the refuge hypothesis for external movers.

**Keywords:** causality; job change; job resources; reversed effects; work engagement; longitudinal study

### Introduction

In view of an increasing shortfall of qualified and competent workers, practitioners as well as scholars have realized that in order to survive in the dynamic global economy it is crucial to retain and motivate one’s personnel (Martin, 2005; Ployhart, 2006). It has become increasingly important to examine the conditions and processes that contribute to the optimal functioning and happiness of people (Gable & Haidt, 2005; Warr, 2007). In line with this “positive psychology” movement of focusing on human strengths at work rather than on weaknesses and ill-health (Cooper, 2005; Gable & Haidt, 2005), we wanted to examine the causal nature of the relations among job resources and work engagement in a longitudinal perspective. As earlier organizational research in this area has minimized the role of worker behaviour in changing his or her own work environment, we will also pay attention to the role

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of employees in shaping their own work environment by examining the differences between stayers versus job changers (Wrzesniewski & Dutton, 2001).

Work engagement refers to a positive affective-motivational state of fulfillment that is characterized by vigour, dedication, and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002). In the current study we will focus on the two core dimensions of engagement (Bakker, Schaufeli, Leiter, & Taris, 2008; González-Romá, Schaufeli, Bakker, & Lloret, 2006): vigour (i.e., high level of energy and mental resilience while working) and dedication (i.e., a strong involvement in one's work and feelings of enthusiasm, significance, a sense of pride and inspiration). Work engagement is a crucial factor in sustaining well-being and productivity of workers as it has been linked to performance and creativity as well as to health (Bakker, 2008). According to the job demands-resources (JD-R) model (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), *job resources* play a vital role in the development of work engagement, and refer to physical, social, or organizational aspects of the job that are functional in obtaining work goals, reducing job demands, and providing opportunities for personal growth and learning.

Job resources can play in this context either an intrinsic motivational role through increasing employees' growth, learning and development, or an extrinsic motivational role in achieving work goals (Bakker, 2008). For example, the team-related resource "social support" may fulfil the basic human need of wanting to relate to others, whereas the task-related resource "task autonomy" may fulfil needs for autonomy and competence (Deci & Ryan, 1985; Ryan & Frederick, 1997; Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008). According to conservation of resources (COR) theory (Halbesleben, 2006; Hobfoll, 1985), job resources like social support or support provided at the departmental level play an important role in reinforcing positive images of oneself, and in fostering positive work outcomes like work engagement (Demerouti et al., 2001). Social support or job autonomy may also play an extrinsic motivational role in better achieving work goals (Bakker, 2008).

As the JD-R model and the concept of work engagement are relatively new, an overview of earlier studies focusing on the relation between job resources and work engagement is still missing. We therefore conducted a literature review of earlier published studies and found 16 empirical studies that reported strong positive relations (e.g., high standardized betas or correlations) between job resources and work engagement across homogeneous (69%) as well as heterogeneous (31%) samples. (See marked references in reference section; a table with more detailed information about the selected studies can be obtained from the first author.) The significant predictive job resources that were included varied from task-related resources (like job control or autonomy), to social or team-related resources (like social support) and to organizational-level resources (like social climate or information; cf. Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007; Salanova, Agut, & Peiró, 2005; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007). In all reviewed studies, work engagement was measured using the Utrecht Work Engagement Scale (Schaufeli & Bakker, in press; Schaufeli & Bakker, 2008), presenting relatively high psychometric quality across all studies. However, there were a number of unresolved issues, related to the design used and tested causal directions of the relations, that we would like to address in the present two-wave study.

### ***Paucity of longitudinal field studies***

Only three of the 16 selected studies (19%) used a longitudinal design (e.g., two measurements or more across time). First, Llorens, Schaufeli, Bakker, and Salanova (2007) found significant reciprocal relations between task resources (time and method control) and engagement

(mediated by efficacy beliefs) in a longitudinal study among 110 university students. Unfortunately, as only university students were examined in a laboratory setting it is difficult to generalize these results to the working population. The longitudinal study of Mauno, Kinnunen, and Ruokolainen (2007) is based on a sample of workers in a real life context. They reported positive cross-lagged relations between job resources (job control, organization-based self-esteem, and management quality) and work engagement using a sample of Finnish public health employees, and a time-lag of two years. Finally, Sonnentag (2003) examined a sample of workers of six different public service organizations in a diary study, and found significant positive effects of method control on work engagement.

Our literature review also showed that whereas a wide range of job resources has been examined in cross-sectional studies, only a few different types of job resources have been examined in the longitudinal studies. More explicit longitudinal tests with different types of job resources, and testing respondents in their actual work setting, are needed. In this study we will therefore examine a task-related resource (autonomy), team-related resources (social support from colleagues and social support from supervisors), as well as departmental resources (e.g., enough staff, good organization of department), among a heterogeneous group of workers.

### ***Normal, reversed, or reciprocal causation?***

Another limitation of the selected studies is their uni-directional view on the relations between job resources and work engagement. Structural models such as the JD-R model focus on specific aspects of the complex psychosocial work environment to explain how individuals perceive and react to their job, and postulate the relations between job resources and work engagement as uni-directional. In other words, these models hypothesize that job resources as measured at one point in time will influence work engagement at a later point in time (denoted as “normal” causal relationships in the remainder of this study), but not vice versa. In line with this idea, a large majority of the selected studies (94%) examined only the normal causal effects of job resources on work engagement. However, increasingly, longitudinal research suggests that the uni-directional view of work and mental health conveyed in job stress models like the JD-R model may be too narrow (Bakker & Demerouti, 2007; De Lange, Taris, Kompier, Houtman, & Bongers, 2004; De Lange, Taris, Kompier, Houtman, & Bongers, 2005; Frese, Garst, & Fay, 2007; Hakanen, Schaufeli, & Ahola, 2008).

The associations between job resources and work engagement may be explained by *reversed* causal relationships (in which Time 1 engagement influences [the evaluation of] Time 2 job resources) or *reciprocal* (bi-directional) relationships in which job resources and work engagement mutually influence each other (Zapf, Dormann, & Frese, 1996). Of our reviewed studies, only the study of Llorens et al. (2007) tested for normal, reversed, and reciprocal effects of engagement, and reported significant reciprocal effects. They showed that task resources, through enhancing one’s efficacy beliefs, can increase work engagement, but that work engagement, in turn, can positively influence efficacy beliefs and task resources across time. This study revealed that employees can be regarded as active shapers or job crafters of their work environment, rather than as passive receivers only (cf. Taris, Bok, & Caljé, 1998; Wrzesniewski & Dutton, 2001). Nonetheless, the question remains why reversed effects of work engagement occur and which possible mechanisms may explain normal versus reversed effects among job resources and work engagement.

### ***Differentiating stayers from movers***

In line with Kasl and Jones (2003), we think that especially the baseline pre-change data and cross-lagged changes found for stayers versus movers can provide more information about normal versus reversed cause-and-effect relationships. We will therefore examine the nature and form of the cross-lagged relations between job resources and work engagement across stayers (workers who remain in the same work environment) versus self-determined movers (workers who have obtained promotions, labelled as promotion makers, or transferred to a different company, labelled as external movers). According to a meta-analysis of Griffeth, Hom, and Gaertner (2000), few resources (e.g., limited participation and instrumental communication) and low psychological well-being (e.g., job dissatisfaction) are significant predictors of personnel turnover. Similarly, Schaufeli, Taris, Le Blanc, Peeters, Bakker, and De Jonge (2001) found in their interview study that low work engagement can be a significant predictor of turnover, and Schaufeli and Bakker (2004) found in their multi-sample study that work engagement was related negatively to turnover intention. However, work engagement and job resources have never been examined in relation to actual turnover across time. We therefore want to examine whether the baseline level of work engagement as well as job resources can predict whether individuals will stay in the same work environment or actively shape their environment through achieving promotion or choosing to transfer to another company. We therefore tested the following hypotheses:

*Hypothesis 1a:* In line with the meta-analysis of Griffeth et al. (2000), we expect that low work engagement and limited job resources will be predictive for changing to another company. As these workers are confronted with a less resourceful job, they will be more motivated to look for better ones.

*Hypothesis 1b:* On the other hand, resourceful jobs will not inspire transference to another company. Hence, we expect that high work engagement and many job resources will be predictive for staying in the same job or obtaining a promotion.

In order to formulate more theory-driven hypotheses for normal versus reversed effects among these different exposure groups, we will refer to broaden-and-build principles of positive emotions (cf. Fredrickson, 2001) as well as the environmental change mechanisms recently suggested by De Lange, Taris, Kompier, Houtman, and Bongers (2005).

### ***Normal causation among stayers***

In line with the broaden-and-build theory of positive emotions (Fredrickson, 2001), we argue that positive emotions, like work engagement, have the capacity to broaden one's thought-action repertoires and to increase or build more job resources. Through widening one's possible thoughts and actions, engaged workers will be better at mobilizing their job resources or in utilizing promotion opportunities, which might increase their capacities for emotion regulation (Gross, 1998; Halbesleben, 2006; Hobfoll, 2001; Salanova, Bakker, & Llorens, 2006). As stayers have not selected different work situations or actively crafted their current work situation to regulate their emotions, we expect to find less reversed effects of their work engagement across time compared to the job change groups. Hence:

*Hypothesis 2:* We expect normal causal effects of job resources in predicting work engagement across time for the group of stayers.

### ***Positive reversed causation among promotion makers***

Following Fredrickson's (2001) broaden-and-build theory of positive emotions, we expect to find reversed causal effects for the job changers. However, as we differentiate two groups of job changers (promotion makers and external movers), the direction of the reversed effects can be either positive or negative. De Lange et al. (2005) distinguish two different environmental change mechanisms that can be used to theorize about the positive as well as negative reversed effects of work engagement among promotion makers and external movers. These mechanisms include: (1) internal job changes, in which, for example, the *increased* work engagement of a worker results in self-determined *positive* changes of the current job (worker seeks new challenges); or (2) external job changes due to job transfer. For example, the increased work engagement allows for career transitions towards new challenging or more resourceful work environments (Frese et al., 2007; Wrzesniewski & Dutton, 2001). In this *upward selection* process or positive gain spiral hypothesis, relatively more engaged workers get *promoted* to more-challenging jobs (with challenging tasks, but also more job control or departmental resources; Ganster & Schabroeck, 1991, p. 263). In line with this positive gain spiral hypothesis, we expect that:

*Hypothesis 3a:* Positive reversed effects will be found for the promotion makers (e.g., work engagement will predict more job resources across time); and

*Hypothesis 3b:* A higher overall level of job resources as well as work engagement will be found after their promotion.

### ***Negative reversed causation among external movers***

For the *external movers*, the situation may be more complex. The external movers may reveal similar positive effects as the promotion makers when they are highly engaged. However, as earlier research has indicated that low psychological well-being is often the reason to transfer to another company (Griffeth et al., 2000; Schaufeli & Bakker, 2004; Schaufeli et al., 2001), we expect to find external movers to be relatively less engaged (see *Hypothesis 1a*). An explanation for positive across-time changes among less engaged workers is the "refuge hypothesis." According to this hypothesis, and in line with assumptions of COR-theory (Hobfoll, 2001), *less engaged* workers will organize their jobs/positions differently or look for "refuge" in new jobs to create more resourceful work environments (De Lange et al., 2005; Garst, Frese, & Molenaar, 2000). An explanation for reversed effects of low work engagement is the so-called "drift mechanism" (Frese, 1985; Zapf et al., 1996). Accordingly, workers with low work engagement will be less successful in changing their situation and "drift" off to worse jobs (resulting in a negative loss spiral). This downward selection process (Ettner & Grzywacz, 2001) can be understood as a derivative of the familiar healthy worker effect (Marmot & Madge, 1987), namely, the assumption that only healthy and engaged workers are able to retain a certain job implies that less engaged workers are *unable* to do so. Unfortunately, no study to date has validated these different mechanisms for reversed effects of work engagement among different job change groups, and we will therefore provide a first test of these potential reversed effects of work engagement.

We will employ a positive perspective on the role of workers in changing their environment and expect, in line with the aforementioned “refuge hypothesis” (De Lange et al., 2005; Garst et al., 2000), that:

*Hypothesis 4a:* Negative reversed effects will be found for the external movers (e.g., low work engagement will predict more job resources across time); and

*Hypothesis 4b:* The external movers will show a higher overall level of job resources as well as work engagement after the external move.

## Method

### *Participants and procedure*

#### *Study design*

To test our hypotheses, a complete two-wave panel study was conducted, with a time lag of approximately 16 months. The follow-up survey (T2) was planned originally for 12 months after T1. Due to practical constraints, however, this was likely to be impossible, and the time lag had to be extended to 16 months. Note that several researchers (e.g., Dormann & Zapf, 2002; Mauno et al., 2007) showed that even a time lag of two years can be adequate to demonstrate a relationship between job characteristics and psychological outcomes. The first survey was posted at the end of 2003 on a website of a Belgian HR-magazine. In total, 4175 workers responded to the first survey. All of them received an email inviting them to participate in the second wave of this web survey (May 2005). In total, 1670 participants responded (response rate = 40%). This response rate is comparable to those registered in other studies (Mauno, Kinnunen, Mäkikangas, & Nätti, 2005). After excluding unemployed respondents and workers who reported no self-determined changes due to organizational changes and restructuring, the selected sample size equalled 871 respondents.

#### *Drop-out*

A comparison between the respondents of the second wave and those who dropped out after wave 1 did not reveal important differences between the groups, suggesting that selection on core variables was limited or non-existent (for more information, see De Cuyper, Notelaers, & De Witte, in press). Those who participated in the second wave of the survey were compared to those who dropped out on all relevant variables. The drop out group scored slightly lower on most items, which suggests a limited selection effect (the drop out group scored lower than the participants on, for example, support from colleagues scores respectively 3.01 versus 3.07 on a 5-point scale,  $p < .001$ ) and support from supervisors (scores respectively 2.82 versus 2.87 on a 5-point scale,  $p < .001$ ). The drop out group was also younger than the participants at T1 (respectively 34.3 versus 36.4 years of age,  $p < .01$ ). It seems unlikely that these differences significantly distorted our results.

#### *Sample*

The mean age of our respondents was 36.2 years ( $SD = 10.0$ ) and mean job tenure was 6.4 years ( $SD = 7.6$ ). Slightly more female (53.5%) compared to male (45.6%) workers participated. About 12% worked part-time, and 13% were employed with a temporary contract. All sectors (e.g., industry and service) were represented. Respondents were dominantly working in the private sector (68.5%), with 27.7% working in the public sector

and 3.2% working as self-employed. The distribution of the educational level showed that highly educated workers were overrepresented. The level of education was low for 7.3%, moderate for 21.6% (secondary education), whereas 70.7% completed some form of higher education (43.5% non-university and 27.2% university). Most respondents were “routine non-manual employees” (34.7%) or “professionals, administrators, and managers” (57.5%).

### *Job status*

The analysis of changes between wave 1 and 2 shows that 69.2% ( $N = 603$ ) of the respondents remained in the same job (experienced no change in employer, supervisor, work location, or colleagues; labelled as “stayers”), 14.1% ( $N = 123$ ) obtained a promotion or better job with the same employer (“promotion makers”), and 16.6% ( $N = 145$ ) obtained a new job with a different employer (labelled as “external movers”). All changes referred to the period since the first wave was conducted (i.e., to the previous 16 months).

### *Measures*

*Job autonomy* was measured by a 3-item job autonomy scale (e.g., “I can take many decisions in my job autonomously”; 1 = “totally disagree,” 7 = “totally agree”). The items were derived from the Short-Inventory on Stress and Well-being (S-ISW; Vander Elst, Eertmans, Taeymans, & De Witte, 2008). The reliability (Cronbach’s alpha) of the job autonomy scale was on Time 1 = .94 and Time 2 = .82.

*Social support* was measured with three items from the social support from colleagues scale (e.g., “Can you count on your colleagues when work gets difficult?”; 1 = “never,” 4 = “always”), and a 3-item support from supervisors scale (e.g., “Do you feel valued by your direct supervisor at work?”; 1 = “never,” 4 = “always”). Both were derived from the Questionnaire on the Experience and Evaluation of Work (van Veldhoven & Meijman, 1994). The reliabilities (Cronbach’s alpha) of the social support from colleagues scales were Time 1 = .75 and Time 2 = .74. For social support from supervisors, these alpha’s were Time 1 = .87 and Time 2 = .86.

*Departmental resources* was measured by a 4-item scale, tapping experienced resources at the unit/departmental level (e.g., “The work is well organized in my unit/department,” “There are enough staff/personnel in my unit/department to perform well”; 1 = “totally disagree,” 7 = “totally agree”). The questions were derived from the S-ISW (Vander Elst et al., 2008). The reliability (Cronbach’s alpha) of the scale was at Time 1 = .77 and Time 2 = .78.

*Work engagement* was measured with a 6-item version of the Utrecht Work Engagement Scale (UWES; Schaufeli & Bakker, 2004), measuring the core concepts of vigour (e.g., “At my work, I feel bursting with energy”), and dedication (e.g., “My job inspires me”) (Bakker et al., 2008; González-Romá et al., 2006). Participants could respond using a 7-point scale (0 = “never,” 6 = “always”). The scores on both scales were summed to form one overall score for work engagement. The reliability (Cronbach’s alpha) of the work engagement scale was alpha T1 = .94, and T2 = .95.

*Covariates.* As many studies have already shown that it is important to control for covariates like demographics and indicators of socio economic status (cf. Bakker, Demerouti, & Schaufeli, 2005; Bakker et al., 2007), we controlled for the influence of age, gender, worker position, and years of experience.



### **Statistical analysis**

Correlational analyses were conducted to obtain more basic insight into the data, and descriptive discriminant analysis was used to examine whether the baseline levels of work engagement and job resource scores were predictive of job status (staying, promotion making, or external movers) (Stevens, 1996). We employed two common methods for interpreting discriminant functions: we examined the standardized coefficients as well as the discriminant function-variable correlations. The largest coefficients or correlations are used for interpretation (Stevens, 1996). Age, gender, worker position, and years of experience were included as control variables in these and all following analyses.

Further, structural equation modelling (SEM) analysis (Jöreskog & Sörbom, 1993) was used to test and compare simultaneously various competing models for the relationships between job resources and work engagement across time among stayers, promotion makers, and external movers. We performed a comparative analysis in which the fit of several competing models was assessed to determine which model fitted the data best (Kelloway, 1998). All results presented below are based on the standardized results. The following tests were used to evaluate our models: the chi-square difference test, the goodness-of-fit index (GFI), the root-mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). Levels of .90 or better for GFI levels, and .05 or lower for RMSEA and SRMR indicate that the models fit the data reasonably well (Byrne, 2002).

Considering the problems caused by estimating all observed items and latent variables (insufficient power and under-identification: Bentler & Chou, 1987; Schumacker & Lomax, 1996), we assumed the observed and latent variables to be identical. We calculated the sum scores based upon the indicators of the latent construct. Following the two-step approach proposed by James, Mulaik, and Brett (1982), we first tested the measurement models for each of the variables before fitting the structural models. These analyses showed that the factor structures of the research variables were consistent across time. Structural equation analyses showed that imposing the measurement structure simultaneously on the data at Time 1 and Time 2 is associated with an acceptable fitting model ( $\chi^2(601) = 2239.14$ ; RMSEA = .05, RMR = 0.04, GFI = .90).

### *Competing structural models*

To examine the causal relationships between the job resources and work engagement, we tested a baseline model versus several competing nested models. More specifically, these models were:

1. *Baseline or stability model* ( $M_1$ ): Includes temporal stabilities and synchronous (i.e., within-wave) effects of variables over time and controls for the influence of covariates (age, gender, job tenure and worker position). This model is used as the reference model.
2. *Normal causation model* ( $M_2$ ): This model resembles  $M_1$ , but includes additional cross-lagged structural paths from the Time 1 job resources to Time 2 work engagement.
3. *Reversed causation model* ( $M_3$ ): This model resembles  $M_1$ , but is extended with cross-lagged structural paths from Time 1 work engagement to Time 2 job resources.
4. *Reciprocal causation model* ( $M_4$ ): This model resembles  $M_1$ , but includes additional reciprocal cross-lagged structural paths from job resources to work engagement and vice versa (i.e., the normal paths included in model  $M_2$  as well as the reversed paths included in model  $M_3$ ).

To examine Hypotheses 2, 3a, and 4a, we performed multiple-group analyses and compared the aforementioned nested models simultaneously for all job status groups by means of the chi-square difference test (Jöreskog & Sorbom, 1993). A Manova with repeated measures was used to further examine the across-time changes and differences in the job change groups (Hypotheses 3b–4b).

## Results

### *Descriptive statistics*

Tables 1 and 2 present the correlations among the variables under study for the total group of workers, the stayers, promotion makers, and external movers separately. As regards the across-time stability of the variables, the correlations for the group of stayers were (as was to be expected) higher compared with the promotion makers, and especially the external movers. The Time 1–Time 2 test–retest correlations ranged from .13 (for social support supervisor among the external movers) to .71 (for work engagement among the stayers).

### *Inferential statistics*

According to Hypotheses 1a and b, we expected that low work engagement and limited job resources would be predictive for changing to another company, and that high work engagement and job resources would be predictive for staying in the same job or obtaining a promotion. Table 3 presents the results of our discriminant analysis examining the influence of the job resources and work engagement on respondents' job status. The results reveal that it is primarily departmental resources, job autonomy and work engagement that distinguish the external movers from the stayers and promotion makers. More specifically, low work engagement, few departmental resources as well as low job autonomy are significant predictors of changing to another company. The function at group centroids shows that these variables are positive (but less strong) predictors for the stayers and promotion makers (supporting Hypothesis 1a, and providing partial support for Hypothesis 1b).

According to Hypotheses 2, 3a, and 4a, we expected normal cross-lagged effects for stayers, positive reversed cross-lagged effects for promotion makers, and negative reversed cross-lagged effects for external movers. To test these hypotheses, we compared the fit of the baseline or stability model, the normal causation, reversed causation, and the reciprocal model using multi-group SEM-analyses. Table 4 presents the fit indices and chi-square difference tests of these analyses, revealing that the reciprocal model fits better to the data for all groups compared to the stability ( $M_4$  versus  $M_1$ :  $\Delta\chi^2(14) = 44.28$ ,  $p < .01$ ), and the normal causation model ( $M_4$  versus  $M_2$ :  $\Delta\chi^2(12) = 24.88$ ,  $p < .05$ ). However, the fit of the reciprocal model was not significantly better than the reversed causation model ( $M_4$  versus  $M_2$ :  $\Delta\chi^2(12) = 17.88$ ,  $p > .05$ ).

After examining the standardized cross-lagged effects (procedure recommended by Jöreskog & Sorbom, 1993) among the stayers, we only found a significant normal effect of Time 1 job autonomy on Time 2 work engagement ( $\beta = .08$ ,  $p < .01$ ), but also significant reversed effects of Time 1 work engagement on Time 2 colleague support ( $\beta = .04$ ,  $p < .01$ ) and supervisor support ( $\beta = .05$ ,  $p < .01$ ). Note that the effects are small, but in the expected direction. Among the promotion makers we found the predicted positive reversed effects of Time 1 work engagement on Time 2 job autonomy ( $\beta = .20$ ,  $p < .01$ ), and on Time 2 departmental resources ( $\beta = .20$ ,  $p < .01$ ). For the external movers only a significant negative reversed effect was found of Time 1 work engagement on Time 2 colleague support

Table 1. Correlations between research variables for all groups ( $N = 871$  after listwise deletion) are presented in upper diagonal, results of stayers ( $N = 603$  after listwise deletion) in lower diagonal.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>Time 1</b>														
1. Age	–	–.28	.60	.15	.14	–.00	.04	.09	.14	.13	–.01	.05	.11	.13
2. Gender <sup>a</sup>	–.19	–	–.07	–.12	–.06	.05	.03	.03	.03	–.08	.04	–.01	.04	.03
3. Job tenure	.61	–.10	–	–.00	.05	–.03	–.06	.04	.02	.08	–.00	–.01	.05	.04
4. Worker position <sup>a</sup>	.10	–.08	–.04	–	.35	.06	.10	.12	.23	.24	.01	.04	.06	.11
5. Autonomy	.10	–.01	.01	.36	–	.40	.57	.60	.69	.60	.24	.33	.35	.44
6. Support colleague	–.01	.07	–.05	.05	.39	–	.55	.46	.44	.24	.52	.34	.26	.27
7. Support supervisor	.01	.03	–.10	.09	.57	.56	–	.60	.55	.31	.32	.49	.33	.36
8. Departmental resources	.06	.08	–.03	.12	.56	.46	.60	–	.50	.38	.30	.36	.55	.35
9. Work engagement	.09	.08	–.02	.22	.67	.45	.54	.49	–	.40	.26	.29	.28	.59
<b>Time 2</b>														
10. Autonomy	.16	–.04	.09	.28	.70	.26	.36	.43	.47	–	.42	.54	.57	.68
11. Support colleague	.01	–.01	.02	.03	.33	.60	.37	.34	.35	.42	–	.53	.46	.45
12. Support supervisor	.09	.03	.03	.05	.41	.39	.61	.46	.37	.50	.54	–	.56	.51
13. Departmental resources	.15	.02	.06	.10	.42	.29	.39	.67	.33	.58	.46	.55	–	.53
14. Work engagement	.15	.12	.05	.14	.55	.33	.41	.41	.71	.67	.46	.49	.51	–

Note:  $r \geq (-).08$  are significant at the .05 level; <sup>a</sup>: Gender: 1 = female, 2 = male;

Worker position: 1 = blue collar work, 2 = lower level white collar work, 3 = self-employed, 4 = job in care or education (e.g., nurse or teacher), 5 = middle level white collar, professional or “free” profession, 6 = higher level white collar worker, management.

Table 2. Correlations between research variables for external movers ( $N = 145$  after listwise deletion) are presented in the upper diagonal, and results promotion makers ( $N = 123$  after listwise deletion) in the lower diagonal.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>Time 1</b>														
1 Age	–	–.07	.50	.31	.13	–.04	.00	–.10	.23	.00	–.17	–.07	.14	.11
2 Gender <sup>a</sup>	–.15	–	.15	–.20	–.14	.04	–.01	–.02	–.12	–.09	.04	–.04	.12	.01
3 Job tenure	.53	–.04	–	.15	.08	–.04	–.06	.03	.13	.11	–.08	–.06	–.03	.16
4 Worker position <sup>a</sup>	.14	–.19	–.07	–	.32	.04	.10	.03	.25	.16	–.10	.06	–.08	.06
5 Autonomy	.14	–.09	–.05	.29	–	.34	.51	.57	.71	.25	–.03	.07	.10	.16
6 Support colleague	–.07	.02	–.08	.08	.44	–	.54	.45	.39	.10	.28	.19	.08	.09
7 Support supervisor	.05	.12	–.15	.01	.56	.50	–	.61	.52	.06	.18	.13	.08	.19
8 Departmental resources	.15	–.03	.02	.06	.62	.45	.52	–	.44	.20	.20	.19	.22	.21
9 Work engagement	.11	.05	–.08	.19	.67	.42	.50	.52	–	.09	–.06	–.02	.02	.20
<b>Time 2</b>														
10 Autonomy	.08	–.20	–.06	.08	.56	.29	.36	.43	.50	–	.40	.66	.55	.72
11 Support colleague	.00	–.01	–.11	.04	.28	.46	.29	.24	.32	.44	–	.57	.45	.41
12 Support supervisor	.01	.03	–.20	.02	.36	.29	.47	.23	.35	.55	.42	–	.62	.56
13 Departmental resources	.17	.02	.01	.04	.35	.29	.36	.55	.42	.57	.42	.51	–	.54
14 Work engagement	.11	.11	–.06	.05	.40	.22	.36	.40	.68	.61	.43	.49	.61	–

Note:  $r \geq (-).17$  are significant at the .05 level; <sup>a</sup>: Gender: 1 = female, 2 = male; Worker position: 1 = blue collar work, 2 = lower level white collar work, 3 = self-employed, 4 = job in care or education (e.g., nurse or teacher), 5 = middle level white collar, professional or “free” profession, 6 = higher level white collar worker, management.

Table 3. Results of descriptive discriminant analysis for job status.

Variables	Standardized canonical discriminant function coefficients	Pooled within-group correlations
Job autonomy	.35	.77*
Departmental resources	.81	.93*
Social support colleagues	.03	.45
Social support supervisor	-.27	.48
Work engagement	.14	.64*
<i>Groups</i>	<i>Function at group centroids</i>	
Stayers	.15	
Promotion makers	.03	
External movers	-.60	

Note:  $R^2 = 95.3$ ;  $\chi^2(10) = 52.39$  ( $p < .001$ ); \*largest correlations between variable and function.

( $\beta = -.07$ ,  $p < .01$ ). We compared the fit of an adjusted Model 5 (representing reciprocal effects for the stayers, and reversed effects for the promotion makers and external movers) with the reversed and reciprocal causation Models 3 and 4, and found that the chi-square difference test between Models 3, 4, and 5 produced a non-significant value ( $M_3$  versus  $M_5$ :  $\Delta\chi^2(4) = 9.02$ ,  $p > .05$ ;  $M_4$  versus  $M_5$ :  $\Delta\chi^2(8) = 8.86$ ,  $p > .05$ ). We can therefore conclude that the results are not identical across the groups.

The standardized effects presented in Figure 1 show that only one normal cross-lagged effect of job autonomy was found for the stayers. This finding is in line with the Job Demands-Resources model, and provides some support for Hypothesis 2. In comparison to the stayers, stronger (subsequently, negative and positive) reversed effects of work engagement on job resources across time were observed among the external movers and especially the promotion makers (supporting Hypotheses 3a and 4a). These results give us information about the causal direction of the relations under study, but do not yet tell us which type of cross-lagged changes and differences took place among the job status groups. We will therefore also examine the across-time mean changes of the different groups.

According to Hypotheses 3b and 4b, we expected that the across-time mean changes of promotion makers would be in line with the positive gain spiral, and the mean changes reported by the external movers would be in line with the refuge hypothesis (e.g., a higher overall level of job resources and work engagement for both groups at Time 2). To examine these hypotheses, a 3 (Job Status: stayers, promotion makers, and external movers)  $\times$  2 (Time: Time 1 versus Time 2) repeated measures MANOVA with Time as a within-participants factor and Group as a between-participants factor was carried out. Main effects of Group were found on job autonomy,  $F(2, 1025) = 17.73$ ; social support of supervisors,  $F(2, 1025) = 6.68$ ; departmental resources,  $F(2, 1025) = 15.71$ ; and work engagement,  $F(2, 1025) = 8.33$  (all  $ps < .05$ ). Post-hoc least square difference tests revealed that the external movers reported significantly lower scores on work engagement and all job resources (except for colleague support) compared to the stayers and promotion makers.

Table 5 also shows significant Group  $\times$  Time effects for all variables, revealing that the groups differed significantly in their across-time mean changes. Figures 2–3 present the Times 1–2 means across the groups. Figures 2 and 3 show, in line with Hypotheses 3b and 4b, that the job change groups were successful in positively changing their job autonomy and departmental resources as well as work engagement across time. No significant effects were

Table 4. Fit indices, multi-group structural equation analyses.

Model	Stayers ( <i>N</i> = 603)	Promotion makers ( <i>N</i> = 123)	External movers ( <i>N</i> = 145)	$\chi^2(df)$	RMSEA	SRMR	GFI	$\chi^2\Delta(df)$	$\chi^2\Delta(df)$ M4 versus other models	$\chi^2\Delta(df)$ M2 versus other models
1	Stability	Stability	Stability	265.77 (155)	.047	.11	.92			
2	Normal	Normal	Normal	246.37 (143)	.047	.11	.92	19.40 (12)	24.88 (12)*	
3	Reversed	Reversed	Reversed	239.37 (143)	.045	.11	.93	26.40** (12)	17.88 (12)	
4	Reciprocal	Reciprocal	Reciprocal	221.49 (131)	.046	.11	.93	44.28** (24)		
5	Reciprocal	Reversed	Reversed	230.35 (139)	.045	.11	.93	35.42** (16)	8.86 (8)	9.02 (4)

Note: \* $p < .05$ ; \*\* $p < .01$ .

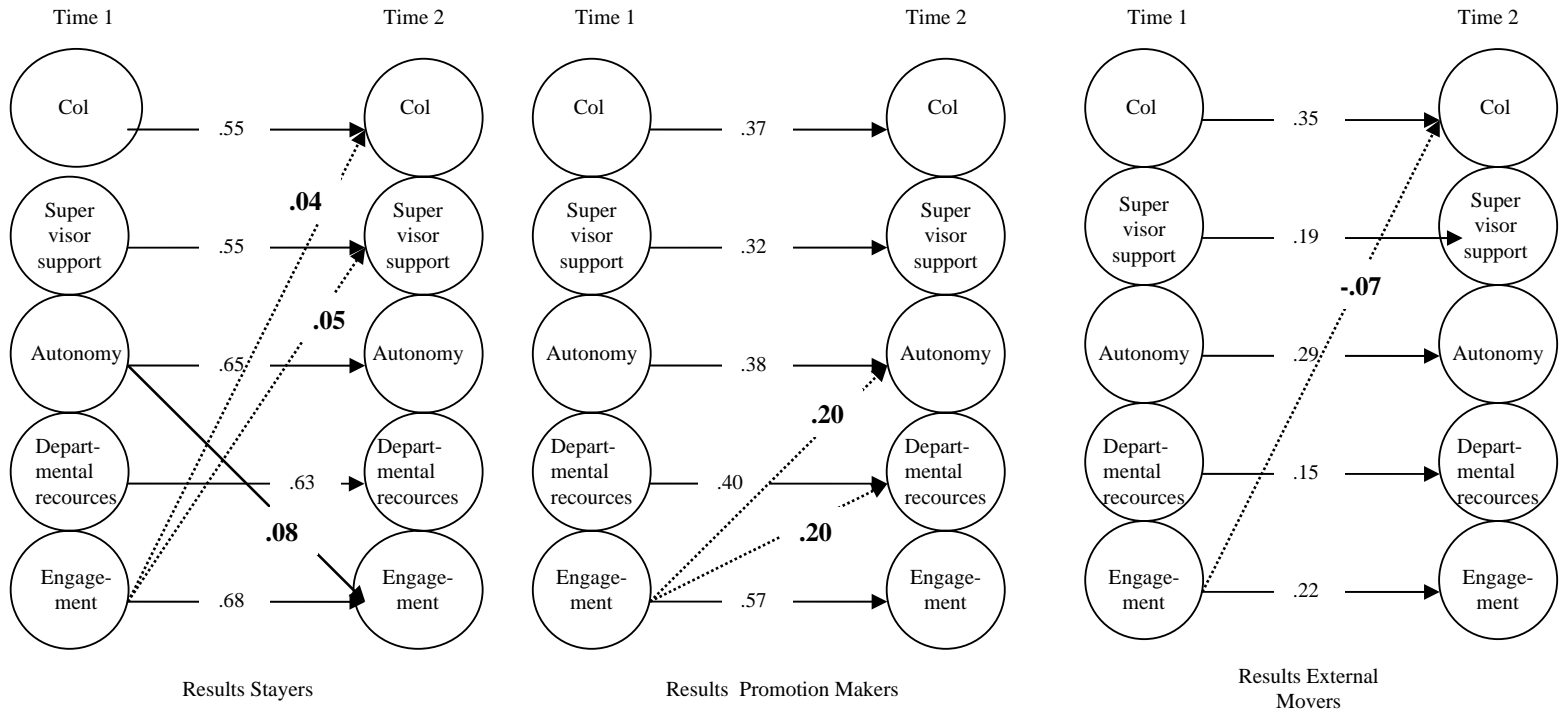


Figure 1. Standardized cross-lagged effects among stayers, promotion makers and external movers.

Note: Results were controlled for influence of covariates age, gender, worker position, and job tenure; Col = social support colleagues, solid arrows refer to normal cross-lagged effects; dotted arrows refer to reversed causal effects.

Table 5. Means and standard deviations (in brackets) of the variables as a function of Time and Group.

Variables							MANOVA <i>F</i> -values		
	Group 1: Stayers		Group 2: Promotion makers		Group 3: External movers		Time	Group	Time × Group
	T1	T2	T1	T2	T1	T2			
Job autonomy	5.26 (1.29)	5.15 <sup>a</sup> (1.32)	5.19 (1.32)	5.51 <sup>a</sup> (1.17)	4.48 (1.57)	4.84 <sup>a</sup> (1.55)	<i>F</i> (1, 1025) =14.22**	<i>F</i> (2, 1025) =17.73**	<i>F</i> (2, 1025) =14.11**
Social support of colleagues	3.14 (.57)	2.99 <sup>a</sup> (.56)	3.10 (.51)	3.03 (.50)	2.95 (.59)	2.99 (.61)	<i>F</i> (1, 1025) =6.28*	<i>F</i> (2, 1025) =2.82, n.s.	<i>F</i> (2, 1025) =8.64**
Social support of Supervisors	2.96 (.74)	2.84 <sup>a</sup> (.73)	3.00 (.75)	3.03 (.64)	2.68 (.82)	2.83 (.79)	<i>F</i> (1, 1025) =.42, n.s.	<i>F</i> (2, 1025) =6.68**	<i>F</i> (2, 1025) =10.08**
Departmental resources	4.66 (1.27)	4.51 <sup>a</sup> (1.33)	4.41 (1.33)	4.68 <sup>a</sup> (1.27)	3.73 (1.45)	4.33 <sup>a</sup> (1.39)	<i>F</i> (1, 1025) =23.64**	<i>F</i> (2, 1025) =15.71**	<i>F</i> (2, 1025) =28.76**
Work engagement	5.20 (1.21)	5.19 (1.28)	5.15 (1.31)	5.56 <sup>a</sup> (1.09)	4.58 (1.47)	5.15 <sup>a</sup> (1.32)	<i>F</i> (1, 1025) =50.72**	<i>F</i> (2, 1025) =8.33**	<i>F</i> (2, 1025) =22.40**

Note: *F*-values after controlling for age, gender, worker position, and job tenure; <sup>a</sup>=significant difference between T1 and T2 scores for particular subgroup  $p < .01$ ; n.s. =not significant; Multivariate *F*-test for Time × Group effect was significant ( $F(10, 2044) = 7.28^{**}$ )  
\* $p < .05$ ; \*\* $p < .01$ .



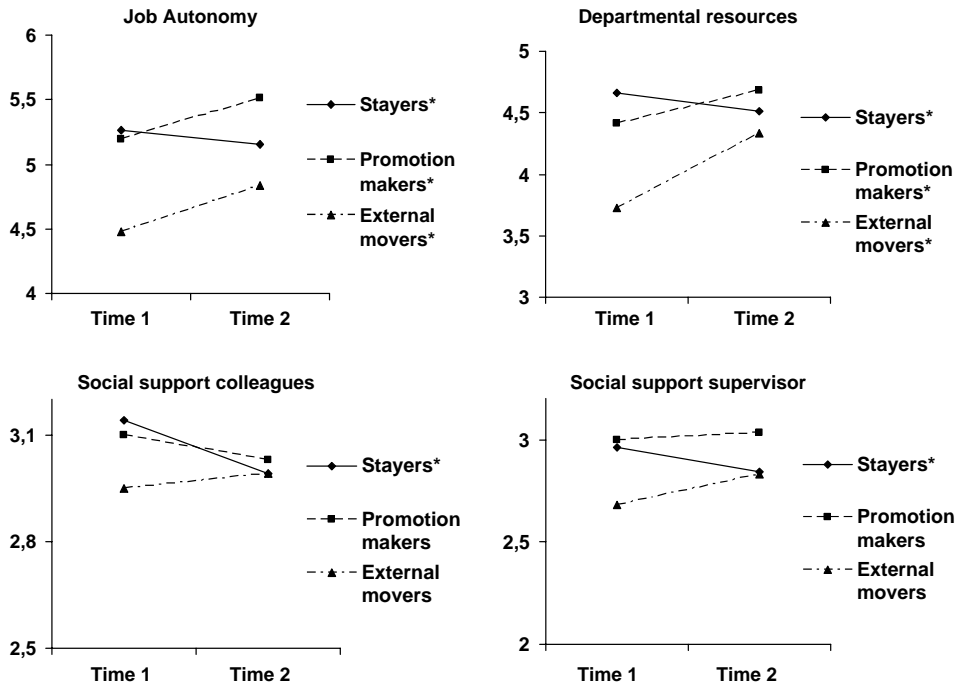


Figure 2. Times 1 and 2 job resource scores for the stayers, promotion makers, and external movers.

found for colleague and supervisor support. Furthermore, the stayers showed a significant *decrease* in all job resources and a stable work engagement score across time. In sum, these results confirm Hypothesis 3b, as the promotion makers showed significant positive changes after their promotion in terms of job resources and work engagement. We also found support for Hypothesis 4b, as the external movers showed results in line with the “Refuge hypothesis”; starting with the lowest work engagement and job resources, but showing significant positive changes in their job resources as well as work engagement after the job change.

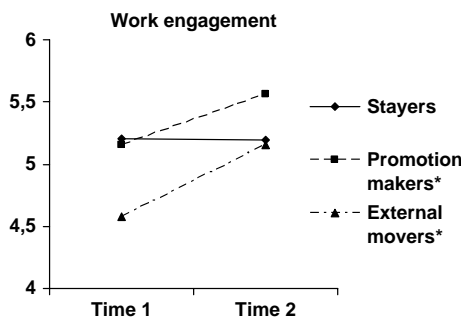


Figure 3. Times 1 and 2 work engagement scores for the stayers, promotion makers, and external movers.

## Discussion

In this paper we focused on three groups: stayers, promotion makers, and external job movers. Longitudinal studies focusing on cross-lagged relations between job resources and work engagement for these three groups are very scarce. We therefore examined these issues in a two-wave (16 month lag) complete panel study among 871 Belgian employees. We started by examining whether the baseline levels of work engagement and job resources were predictive of job status, and found that low departmental resources, low job autonomy, and low work engagement were especially predictive for changing to another company versus staying or making promotions (supporting Hypothesis 1a, and partially supporting Hypothesis 1b). As a consequence, we were able to provide the first longitudinal test and evidence for a relation between low work engagement, job resources, and actual turnover. This finding is consistent with earlier notions that job characteristics as well as psychological states are important predictors in relation to personnel turnover (Griffeth et al., 2000; Schaufeli & Bakker, 2004; Schaufeli et al., 2001).

Subsequently, we tested for differences among the job status groups in their cross-lagged relations between job resources and work engagement. In line with our hypotheses, we found different causal effects for the stayers compared to the external movers. More specifically, among the stayers a normal cross-lagged effect of job autonomy in predicting work engagement across time was found, but also small reversed effects of work engagement in predicting social support of supervisors and colleagues (partially supporting Hypothesis 2; see also Hakanen et al., 2008). The results of the stayers are in line with the assumptions of the Job Demands-Resources model, but also with the reciprocal results found in the studies of Llorens et al. (2007) and Hakanen et al. (2008). In contrast to earlier research, we did not find significant cross-lagged effects of team-related resources or departmental resources for our group of stayers. This finding aligns with models such as Hackman and Oldham's (1980) job characteristics model, in which especially task characteristics like job autonomy are hypothesized to intrinsically stimulate growth and motivation.

Regarding the job change groups or movers, our results revealed different types of significant reversed effects of work engagement on job resources across time for the promotion makers and the external movers (in line with Hypotheses 3a and 4a). More specifically, the expected positive reversed effects of work engagement on job autonomy and departmental resources were found for the promotion makers (in line with Hypothesis 3a), whereas only the expected negative reversed effect for colleague support was observed among the external movers (some support for Hypothesis 4a). These results demonstrate that it is important to disentangle stayers from workers who change jobs, as the aetiology of the observed effects clearly differs. Moreover, the uni-directional view of models like the JD-R model (Bakker & Demerouti, 2007) seems to apply relatively better to stayers compared to job changers.

Besides the direction of the causal effects, we also wanted to examine the reported across-time mean changes in detail. The findings showed that the relatively less engaged as well as the highly engaged workers were able to create a significantly more resourceful work environment after their job change (in line with Hypotheses 3b and 4b). In line with the positive gain spiral hypothesis (cf. Ganster & Schabroeck, 1991), the promotion makers showed the best situation compared to the stayers as well as the external movers, and were able to further improve their job autonomy and departmental resources as well as work engagement across time. In line with the refuge hypothesis (De Lange et al., 2005; Garst et al., 2000), the relatively less engaged external movers were able to significantly increase their job

autonomy, departmental resources as well as work engagement after their job change. The only unexpected result was that the stayers reported negative changes in their job resources across time. Van der Velde and Feij (1995) found similar effects in their study when comparing stayers versus job changers, and indicated that these results may reflect a devaluation of the same work situation across time. However, as the stayers are not working in a controlled setting, they may also have experienced real changes that we were not able to exclude or control for in our study.

Combining the effects found for Hypotheses 1–4, we may conclude that the relations among job resources and work engagement are more complex than portrayed in the majority of earlier cross-sectional research. In line with the conservation of resources model (Hobfoll, 2001), our results have shown that workers with strong resource pools (promotion makers) will seek opportunities to further increase their resources. However, in contrast to the “loss spiral” (Hobfoll, 2001) or “drift hypothesis” (Zapf et al., 1996), workers with less strong resource pools can also successfully strive to obtain more resources (as demonstrated by the external movers in this study). It is therefore important to incorporate these positive effects of individual worker behaviour in models like the JD-R model (Bakker & Demerouti, 2007).

### ***Study limitations***

At least three limitations of our study deserve some attention. A first limitation is the time lag of 16 months. One could discuss the appropriateness of this time lag. Earlier research (Boswell, Boudreau, & Tichy, 2005; Van der Velde & Feij, 1995) has shown that workers who voluntarily change jobs report an increase in job satisfaction immediately after the job change (the honeymoon effect), followed by a decline in satisfaction after a longer time lag (the hangover effect). With the time lag used, we may have only uncovered the honeymoon period, and may not have captured the full temporal effects of the job change, or potential reversed effects of work engagement, as well as the normal effects of job resources in the new work environment. Fields, Dingman, Roman, and Blum (2005) argue that some of the positive effects reported by the job changers may also reflect *post hoc* justification of the job change (or a so-called cognitive dissonance effect; Festinger, 1957). However, they also argue that variables that predict the likelihood of an employee to make a specific job change (e.g., low work engagement in this study) also reflect the gains that the employee aims to achieve by the job change. This suggests that positive effects probably also reflect substantive changes, rather than just perceptual *post hoc* justifications.

Another limitation of our study is that we can not fully exclude the explanation that our reported across-time changes of the different groups reflect perceptual changes. For example, due to an increased dedication (and related feelings of enthusiasm), the same job control may be perceived as more useful across time (cf. De Lange et al., 2005). Furthermore, we examined the survivors across time and not the drop-outs. It is important to further examine the drop-outs as these may include the less successful individuals for whom the negative loss spiral or drift-hypothesis might be more valid. In other words, to present a more representative picture, we should also examine the less successful individuals (like the unemployed or those who move to jobs with fewer resources). Nonetheless, we think that the impact of this issue is rather limited, as we did not observe noteworthy differences between the respondents who participated in wave 2 and those who dropped out after wave 1. However, this lack of difference could be due to the specific nature of our respondents: mainly young highly skilled professionals at the beginning of their career. This suggests that it is

relevant to replicate our findings among a more representative sample of workers in the future.

### ***Research agenda***

From this study, we may derive two main recommendations for future (longitudinal) research examining work engagement:

1. *Investigate different causal relationships among stayers versus movers.* Our study provides evidence for different causal effects among stayers versus movers. We recommend that future research not only examines normal, but also reversed and reciprocal causal relationships between (the same and other) job characteristics (such as job demands, personal job resources) and work engagement. Such research may reveal to which extent the present results generalize to other settings (Rothman & Greenland, 1998).
2. *Test in more detail reversed effects of work engagement.* As this study was one of the first to examine different kinds of reversed effects of work engagement, it is important to validate our results in new more elaborate research. For example, more detailed knowledge about the type of job change should be collected (was it self-determined or imposed, for positive or negative reasons), and other types of job crafters may be selected (such as internal job changers who report self-directed changes). An additional issue relates to workers who are less engaged. Our results suggest that these workers were able to find more resourceful jobs in the future (refuge hypothesis), whereas they could also get involved in a negative gain spiral later on in their career. Future research could try to identify the determinants of both (opposing) processes.

### ***Practical relevance***

As this is the first longitudinal study to link (low) work engagement and (limited) job resources to actual personnel turnover, our results confirm the relevance of these variables for organizations in retaining their personnel (Bakker, 2008; Halbesleben & Wheeler, 2008). Employers should be aware that to retain and further motivate one's personnel, it is not only important to provide a positive and resourceful work environment (especially in terms of job autonomy and departmental resources), but also to recognize and understand differences in individual worker behaviour or job crafting processes (Wrzesniewski & Dutton, 2001).

Moreover, it is important to understand how workers perceive the current work environment (in terms of resources, etc.), and whether they need to select new situations to increase their capacities for emotion regulation (Gross, 1998). For highly engaged promotion makers these job crafting processes will very likely result in positive outcomes. However, when workers have become less engaged, the question will arise of whether they should stay or go. Our results suggest that their most likely choice will be to go.

### **Acknowledgements**

We would like to thank Ferdi J. de Goede for his help in conducting the review presented in this study.

## References

*Note: The references marked with an asterisk were included in the literature review.*

- Bakker, A.B. (2008). Building engagement in the workplace. In C. Cooper & R. Burke (Eds.), *The peak performing organization*. London: Routledge.
- Bakker, A.B. & Demerouti, E. (2007). The Job Demands-Resources model: State of the art. *Journal of Managerial Psychology*, 22, 309–328.
- \*Bakker, A.B., Demerouti, E. & Schaufeli, W.B. (2005). The crossover of burnout and work engagement among working couples. *Human Relations*, 58, 661–689.
- \*Bakker, A.B., Hakanen, J.J., Demerouti, E. & Xanthopoulou, D. (2007). Job resources boost work engagement, particularly when job demands are high. *Journal of Educational Psychology*, 99, 274–284.
- Bakker, A.B., Schaufeli, W.B., Leiter, M.P., & Taris, T.W. (2008). Work engagement: An emerging concept in occupational health psychology. *Work & Stress*, 22, 187–200.
- \*Bakker, A.B., Van Emmerik, H., & Eeuwema, M.C. (2006). Crossover of burnout and engagement in work teams. *Work and Occupations*, 33, 464–489.
- Bentler, P.M. & Chou, C.P. (1987). Practical issues in structural modeling. *Sociological Methods and Research*, 16, 78–117.
- Boswell, W.R., Boudreau, J.W. & Tichy, J. (2005). The relationship between employee job change and job satisfaction: The honeymoon-hangover effect. *Journal of Applied Psychology*, 90, 882–892.
- Byrne, B.M. (2002). *Structural equation modeling with AMOS*. Mahwah, NJ: Lawrence Erlbaum.
- Cooper, C.L. (2005). Guest editorial: Stress and health: A positive direction. *Stress and Health*, 21, 73–75.
- De Cuyper, N., Notelaers, G., & De Witte, H. (in press). Transitioning between temporary and permanent employment: A two-wave study on the entrapment, the stepping stone and the selection hypothesis. *Journal of Occupational and Organizational Psychology*.
- De Lange, A.H., Taris, T.W., Kompier, M.A.J., Houtman, I.L.D. & Bongers, P.M. (2004). Work characteristics and psychological well-being. Testing normal, reversed and reciprocal relationships within the 4-wave SMASH study. *Work & Stress*, 18, 149–166.
- De Lange, A.H., Taris, T.W., Kompier, M.A.J., Houtman, I.L.D. & Bongers, P.M. (2005). Different mechanisms to explain the reversed effects of mental health on work characteristics. *Scandinavian Journal of Work, Environment and Health*, 31, 3–14.
- Deci, W.L. & Ryan, R.M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Demerouti, E., Bakker, A.B., Nachreiner, F. & Schaufeli, W.B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86, 499–512.
- Dormann, C. & Zapf, D. (2002). Social stressors at work, irritation, and depressive symptoms: Accounting for unmeasured third variables in a multi-wave study. *Journal of Occupational and Organizational Psychology*, 75, 33–58.
- Ettner, S.L. & Gryzwacz, J.G. (2001). Workers' perceptions of how jobs affect health: A social ecological perspective. *Journal of Occupational Health Psychology*, 6, 101–113.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.
- Fields, D., Dingman, M.E., Roman, P.M. & Blum, T.C. (2005). Exploring predictors of alternative job changes. *Journal of Occupational and Organizational Psychology*, 78, 63–82.
- Fredrickson, B.L. (2001). The role of positive emotions in positive psychology: The Broaden-and-Built theory of positive emotions. *American Psychologist*, 56, 218–226.
- Frese, M. (1985). Stress at work and psychosomatic complaints: A causal interpretation. *Journal of Applied Psychology*, 70, 314–328.
- Frese, M., Garst, H. & Fay, D. (2007). Making things happen: reciprocal relationships between work characteristics and personal initiative in a four-wave longitudinal structural equation model. *Journal of Applied Psychology*, 92, 1084–1102.

- Gable, S.L. & Haidt, J. (2005). What (and why) is positive psychology. *Review of General Psychology*, 9, 103–110.
- Ganster, D.C. & Schabroeck, J. (1991). Work stress and employee health. *Journal of Management*, 17, 235–271.
- Garst, H., Frese, M. & Molenaar, P.C.M. (2000). The temporal factor of change in stressor-strain relationships: A growth curve model on a longitudinal study in East Germany. *Journal of Applied Psychology*, 85, 417–438.
- González-Romá, V., Schaufeli, W.B., Bakker, A. & Lloret, S. (2006). Burnout and engagement: Independent factors or opposite poles? *Journal of Vocational Behavior*, 68, 165–174.
- Griffeth, R.W., Hom, P.W. & Gaertner, B. (2000). A meta-analysis of antecedents and correlates of employee turnover: update, moderator tests and research implications for the next millennium. *Journal of Management*, 26, 463–488.
- Gross, J.J. (1998). The emerging field of emotion regulation: an integrative review. *Review of General Psychology*, 2, 271–299.
- Hackman, J.R. & Oldham, G.R. (1980). *Work redesign*. Reading, MA: Addison-Wesley.
- \*Hakanen, J.J., Bakker, A.B., & Schaufeli, W.B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology*, 43, 495–513.
- Hakanen, J.J., Schaufeli, W.B., & Ahola, K. (2008). The Job Demands-Resources model: A three-year cross-lagged study of burnout, depression, commitment, and work engagement. *Work & Stress*, 22, 224–241.
- Halbesleben, J.R.B. (2006). Sources of social support and burnout: A meta-analytic test of the conservation of resources model. *Journal of Applied Psychology*, 91, 1134–1145.
- Halbesleben, J.R.B., & Wheeler, A.R. (2008). The relative roles of engagement and embeddedness in predicting job performance and intention to leave. *Work & Stress*, 22, 242–256.
- \*Hallberg, U.E., & Schaufeli, W.B. (2006). “Same same” but different? Can work engagement be discriminated from job involvement and organizational commitment? *European Psychologist*, 11, 119–127.
- \*Hallberg, U.E., Johansson, G., & Schaufeli, W.B. (2007). Type A behaviour and work situation: Associations with burnout and work engagement. *Scandinavian Journal of Psychology*, 48, 135–142.
- Hobfoll, S.E. (1985). The limitations of social support in the stress process. In I.G. Sarason & B.R. Sarason (Eds.), *Social support: Theory, research and applications* (pp. 391–414). Boston: Martinus Nijhoff.
- Hobfoll, S.E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation resources theory. *Applied Psychology: An International Review*, 50, 337–370.
- \*Jackson, L.T.B., Rothmann S., & Van de Vijver, F.J.R. (2006). A model of work-related well-being for educators in South Africa. *Stress & Health*, 22, 263–274.
- James, L.R., Mulaik, S.A. & Brett, J.M. (1982). *Causal analysis: Assumptions, models and data*. Beverly Hills, CA: Sage.
- Jöreskog, K.G. & Sörbom, D. (1993). *Lisrel-8 (user's manual)*. Chicago: Scientific Software.
- Kasl, S.V. & Jones, B.A. (2003). An epidemiological perspective on research design, measurement and surveillance strategies. In J.C. Quick & L.E. Tetrick (Eds.), *Handbook of occupational health psychology* (pp. 379–398). Washington: American Psychological Association.
- Kelloway, K.E. (1998). *Using Lisrel for structural equation modeling: A researcher's guide*. London: Sage Publications.
- \*Llorens, S., Bakker, A.B., Schaufeli, W.B., & Salanova, M. (2006). Testing the robustness of the Job Demands-Resources Model. *International Journal of Stress Management*, 13, 378–391.
- \*Llorens, S., Schaufeli, W., Bakker, A. & Salanova, M. (2007). Does a positive gain spiral of resources, efficacy beliefs and engagement exist? *Computers in Human Behavior*, 23, 825–841.
- Marmot, M.G. & Madge, N. (1987). An epidemiological perspective on stress and health. In S.V. Kasl & C.L. Cooper (Eds.), *Research methods in stress and health psychology* (pp. 3–26). New York: John Wiley & Sons Ltd.

- Martin, A.J. (2005). The role of positive psychology in enhancing satisfaction, motivation and productivity in the workplace. *Journal of Organizational Behavior Management*, 24, 113–132.
- Mauno, S., Kinnunen, U., Mäkikangas, A. & Nätti, J. (2005). Psychological consequences of fixed-term employment and perceived job insecurity among health care staff. *European Journal of Work and Organizational Psychology*, 14, 209–238.
- \*Mauno, S., Kinnunen, U. & Ruokolainen, M. (2007). Job demands and resources as antecedents of work engagement: A longitudinal study. *Journal of Vocational Behaviour*, 70, 149–171.
- \*Montgomery, A.J., Peeters, M.C.W., Schaufeli, W.B., & Den Ouden, M. (2003). Work-home interference among newspaper managers: its relationship with burnout and engagement. *Anxiety, Stress, and Coping*, 16, 195–211.
- Ployhart, R.E. (2006). Staffing in the 21<sup>st</sup> century: New challenges and strategic opportunities. *Journal of Management*, 32, 868–879.
- \*Richardson, A.M., Burke, R.J., & Martinussen, M. (2006). Work and health outcomes among police officers: The mediating role of police cynicism and engagement. *International Journal of Stress Management*, 13, 555–574.
- Rothman, K.J. & Greenland, S. (1998). *Modern epidemiology*. Philadelphia: Lippincott-Raven Publishers.
- Ryan, R.M. & Frederick, C.M. (1997). On energy, personality, and health: Subjective vitality as dynamic reflection of well-being. *Journal of Personality*, 65, 529–565.
- \*Salanova, M., Agut, S. & Peiró, J.M. (2005). Linking organizational resources and work engagement to employee performance and customer loyalty: The mediation of service climate. *Journal of Applied Psychology*, 90, 1217–1227.
- Salanova, M., Bakker, A.B. & Llorens, S. (2006). Flow at work: evidence for an upward spiral of personal and organizational resources. *Journal of Happiness Studies*, 7, 1–22.
- \*Schaufeli, W.B. & Bakker, A.B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, 25, 293–315.
- Schaufeli, W.B., & Bakker, A.B. (2008). The conceptualization and measurement of work engagement: A review. In A.B. Bakker & M.P. Leiter (Eds.), *Work engagement: Recent developments in theory and research*. New York: Psychology Press.
- Schaufeli, W.B., & Bakker, A.B. (in press). *The Utrecht work engagement scale. Preliminary manual*. Utrecht University.
- Schaufeli, W.B., Salanova, M., González-Romá, V. & Bakker, A.B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3, 71–92.
- Schaufeli, W.B., Taris, T.W., Le Blanc, P., Peeters, M., Bakker, A.B. & De Jonge, J. (2001). Maakt arbeid gezond? Op zoek naar de bevlogen werknemer [Does work make happy? In search of the engaged worker]. *De Psycholoog*, 36, 422–428.
- Schumacker, R.E. & Lomax, R.G. (1996). *A beginner's guide to structural equation modeling*. Mahwah, NJ: Lawrence Erlbaum.
- \*Sonnentag, S. (2003). Recovery, work engagement, and proactive behaviour: A new look at the interface between nonwork and work. *Journal of Applied Psychology*, 88, 518–528.
- Stevens, J. (1996). *Applied multivariate statistics for the social sciences*. Mahwah, NJ: Lawrence Erlbaum.
- Taris, T.W., Bok, I.A. & Caljé, D.G. (1998). On the relation between job characteristics and depression: A longitudinal study. *International Journal of Stress Management*, 5, 157–167.
- Van den Broeck, A., Vansteenkiste, M., De Witte, H., & Lens, W., (2008). Explaining the relationships between job characteristics, burnout, and engagement: The role of basic psychological need satisfaction. *Work & Stress*, 22, 277–294.
- Vander Elst, T., Eertmans, A., Taeymans, S., & De Witte, H. (2008). *The short-inventory on stress and well-being: a psychometric evaluation*. Manuscript submitted for publication.
- Velde, van der, M.E.G., & Feij, J.A. (1995). Change of work perceptions and work outcomes as a result of voluntary and involuntary job change. *Journal of Organizational and Occupational Psychology*, 68, 273–290.

- Veldhoven, van, M., & Meijman, T. (1994). *Het meten van psychosociale arbeidsbelasting met een vragenlijst: de vragenlijst beleving en beoordeling van de arbeid (VBBA)* [The measurement of psychosocial job demands with a questionnaire: The questionnaire on the experience and evaluation of work]. Amsterdam: Nederlands Instituut voor Arbeidsomstandigheden.
- Warr, P. (2007). *Work, happiness, and unhappiness*. London: Lawrence Erlbaum Associates.
- Wrzesniewski, A. & Dutton, J.E. (2001). Crafting a job: revisioning employees as active crafters of their work. *Academy of Management Review*, 26, 179–201.
- \*Xanthopoulou, D., Bakker, A.B., Demerouti, E. & Schaufeli, W.B. (2007). The role of personal resources in the job demands-resources model. *International Journal of Stress Management*, 14, 121–141.
- Zapf, D., Dormann, C. & Frese, M. (1996). Longitudinal studies in organizational stress research: A review of the literature with reference to methodological issues. *Journal of Occupational Health Psychology*, 1, 145–169.