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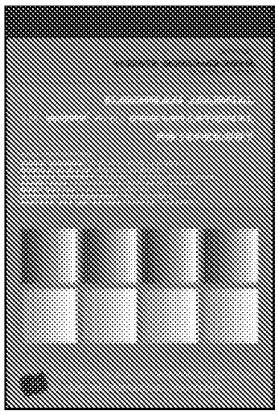

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# Performance expectations, personal resources, and job resources: How do they predict work engagement?

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# Performance expectations, personal resources, and job resources: How do they predict work engagement?

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Research on work engagement has mainly focused on the role of job and personal resources and has ignored the possible impact of personal demands workers develop with regard to their work. The aim of our study was to test the reciprocal relationships that job resources, personal resources, and personal demands, operationalized as performance expectations, share with work engagement. Three-wave longitudinal data were collected in a Belgian public institution ($N = 473$). Results confirm the causal effects of job resources, personal resources, and performance expectations on work engagement. Reciprocal relationships are not significant. Results are discussed with regard to the impact of changes in job and personal resources and performance expectations on work engagement. Practical implications including reinforcement of Human Resources practices such as appraisal interviewing and career management are also discussed.

***Keywords:*** Job resources; Longitudinal data; Performance expectations; Personal resources; Work engagement.

In the field of work and organizational psychology, the concept of work engagement has emerged as of central importance to job performance in general (e.g., Rich, Lepine, & Crawford, 2010). Work engagement refers to a persistent, positive and satisfying state of mind, an affective-motivational state of work-related well-being, related to work that is not directed towards any particular event, object, or person (Bakker, Schaufeli, Leiter, & Taris, 2008; Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002). It is a combination of vigour (a high level of energy and concentration while working, and the willingness to invest effort in one's work), dedication (a feeling of meaning, enthusiasm, pride and challenge towards work), and absorption (a complete involvement in one's work). According to Schaufeli, Bakker, and Salanova (2006), engaged employees have an energetic and effective connection with work, and feel able to cope with demands at work, in contrast to employees with burnout (e.g., Schaufeli & Enzmann, 1998).

Motivating characteristics of the job (i.e., job resources), together with aspects of the self related to resilience (i.e., personal resources), have been found to be important for the development of work engagement (Bakker & Demerouti, 2008). Interestingly reciprocal relations have also been found, such that the presence of particularly job resources but also personal resources leads to work engagement, which in turn leads to more resources (Llorens, Schaufeli, Bakker, & Salanova, 2007; Schaufeli, Bakker, & van Rhenen, 2009; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009).

In contrast to resources, job demands are conceptualized as not directly related to work

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engagement (Bakker & Demerouti, 2007; Schaufeli & Salanova, 2007). However, there are indications that demands workers impose upon themselves with regard to their work might play a role in the development of work engagement. For example, workers' concerns about their contribution to the organization and about their own performance have been linked with work engagement (Hyvönen, Feldt, Salmela-Aro, Kinnunen, & Mäkikangas, 2009). Hyvönen et al. (2009) proposed that better understanding of the goals workers want to achieve would be beneficial to research on work engagement. Therefore, alongside job and personal resources, it is of interest to investigate the role of workers personal demands and we do so here. We define workers' personal demands as the requirements that individuals set for their own performance and behaviour that force them to invest effort in their work and are therefore associated with physical and psychological costs. In this study, we focus on one particular personal demand, namely the expectations employees place on themselves regarding their own performance, which we call performance expectations.

The goal of the present study is to test longitudinal, reciprocal relationships between job resources, personal resources, and performance expectations on the one hand, and work engagement on the other hand. Towards this end, we relied upon three-wave longitudinal data. Although we cannot draw causal conclusions on the basis of a longitudinal field study, we can uncover whether (changes in the) hypothetical predictors have the expected effects on outcomes at Time 2 (after controlling for the level of the outcome variables at Time 1). From a theoretical point of view, this study will lead to a better understanding of the mechanisms by which work engagement develops, maintains, and self-perpetuates among workers, as we will not only focus on resources but also on internal forces that motivate individuals to invest effort in their work. From a practical point of view, it has implications as to better managing and promoting workers psychological health. Finally, this study is innovative both theoretically (by investigating the role of performance expectations for the development of work engagement) and methodologically (by relying upon three-wave longitudinal data).

## JOB RESOURCES, PERSONAL RESOURCES, AND WORK ENGAGEMENT

Work engagement is positively associated with job resources (job characteristics that deal with demands, help in achieving goals, or foster employee development; Schaufeli & Bakker, 2004). As an illustration, cross-sectional and longitudinal studies have found that supervisory support and development opportunities are related to more engagement (see, for example, Llorens, Bakker, Schaufeli, & Salanova, 2006; Schaufeli & Bakker, 2004; Schaufeli et al., 2009). Work engagement is also positively associated with personal resources (aspects of the self linked with resiliency and referring to a sense of control and impact upon the environment; Hobfoll, Johnson, Ennis, & Jackson, 2003), such as organization-based self-esteem, optimism, self-efficacy, or active coping (Weigl et al., 2010; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007; Xanthopoulou et al., 2009). The more resources are available, the more employees feel engaged. According to Bakker and Demerouti (2008), this is because resources play an intrinsic motivational role (leading to basic needs fulfilment) and an extrinsic motivational role (leading to a willingness to invest effort in one's work). In both cases, resulting outcomes are positive and work engagement is likely to occur.

In the present study, we focus particularly on two job resources, namely opportunities for development and perceived supervisory and organizational support (PSOS). These two specific job resources were selected because previous studies had shown they are related to work engagement (e.g., Llorens et al., 2006; Schaufeli & Bakker, 2004; Schaufeli et al., 2009). According to Bakker and Demerouti (2008), opportunities for development stimulate work engagement due to satisfying the need for competence (intrinsic motivational role), whereas having support increases the likelihood of being successful in achieving one's work goals and therefore the willingness to invest effort in one's work (extrinsic motivational role). The personal resources that we focused on were organization-based self-esteem (OBSE) and optimism. These two specific personal resources were selected because previous studies had shown that they are beneficial for work engagement (e.g., Mauno, Kinnunen, & Ruokolainen, 2007; Xanthopoulou et al., 2007 for OBSE and Xanthopoulou et al., 2009 for optimism). Xanthopoulou et al. (2007) proposed that "individuals who are confident about their capabilities and optimistic about their future may identify or even create more aspects of their environment that facilitate goal attainment. This capability leads to goal confrontation and consequently to work engagement" (p. 91). Note, however, that earlier studies either used composite measures to capture job and personal resources, which inhibits us from examining the relationship between the specific job and personal resources with work engagement, or they were cross-sectional. According to previous research results, we formulate that:

> *Hypothesis 1a:* An increase in job resources and personal resources over time is positively related to future work engagement.

In addition to the effects of personal and job resources on work engagement, reciprocal relations are also expected. Work engagement fosters job and personal resources. This can be explained by Fredrickson's Broaden-and-Build theory (Fredrickson, 2001; Fredrickson & Joiner, 2002). This theory states that positive emotion and affect share the capacity to broaden people's momentary thought-action repertoires and build their personal resources through widening the array of thoughts and actions that come to mind. This broadening builds personal resources at social, physical, intellectual, and psychological levels. These personal resources will act as reserves to manage future negative events. According to de Lange, De Witte, and Notelaers (2008), Salanova and Schaufeli (2008), and Xanthopoulou et al. (2009), work engagement can be considered to be a positive affective state that will start the resource-building process. Salanova, Llorens, and Schaufeli (2011) indeed showed that work engagement is associated with all kinds of positive emotions, including enthusiasm, comfort, and satisfaction. Moreover, according to Xanthopoulou et al. (2009), work engagement mobilizes job and personal resources in two ways. First, engaged employees are motivated to fulfil work objectives and look to activate or create job resources that will help achieve these objectives (for example, they search for help, for information, or for feedback). Second, engaged employees are more likely to succeed in achieving goals, leading them to feel more capable, valuable, and optimistic about work. This implies that engaged employees will build more personal resources.

Studies have shown work engagement and (job as well as personal) resources are reciprocally linked: Resources lead to work engagement and work engagement leads to even more resources. This process refers to gain spirals defined as "amplifying loops in which cyclic relationships among constructs build on each other positively over time" (Salanova, Schaufeli, Xanthopoulou, & Bakker, 2010, p. 119). This was observed between work engagement and job resources and between work engagement and personal resources using mainly two-wave studies with time lags ranging between 3 weeks and 18 months. For example, in addition to work engagement predicting positively job and personal resources, Xanthopoulou et al. (2009) found that job resources (autonomy, supervisory coaching, performance feedback, and opportunities for development) and personal resources (self-efficacy, OBSE, and optimism) predicted future work engagement. Of note, Xanthopoulou et al. used a composite measure for job and personal resources failing to assess the unique relationship between work engagement and each resource. Moreover Schaufeli et al. (2009) found that work engagement (Time 1) predicted a later increase in job resources (Time 1–Time 2), which then predicted later higher work engagement (Time 2). Again the latter study used an aggregated measure of four different job resources (social support, autonomy, opportunities to learn and develop, and performance feedback). To our knowledge Weigl et al. (2010) is the only three-wave study found in the literature. The authors reported that relationships with coworkers predicted work engagement over time, which then predicted future relationships with coworkers. According to previous research results, we formulate that:

> *Hypothesis 1b:* Work engagement is positively related to an increase in future job and personal resources.

## PERSONAL DEMANDS AND WORK ENGAGEMENT

In addition to resources, employees also experience demands that arise from both external and internal forces. External job pressures can be defined as expectations and demands arising from the environment (Hall & Lawler, 1970). Schaufeli and Bakker (2004) define job demands as all aspects of the job that necessitate prolonged effort and are associated with costs. Several studies have shown that job demands are not directly related to work engagement (see Bakker & Demerouti, 2007; Schaufeli & Salanova, 2007, for a review).

Beside external pressures, workers also experience internal pressures that arise from the personal demands they put upon themselves (Hall & Lawler, 1970). Mackay and Cooper (1987, p. 172) defined "internally generated demands as those which depend upon the values and needs held or required by the individual. These values dictate aims and ambitions and may be translated into the willingness and motivation to perform ongoing tasks." Our question in this study is whether personal demands as measured by workers' performance expectations are related to their level of work engagement over time.

According to goal-setting theory, how well workers perform a specific task is determined in part by performance goals workers hold for that task (Donovan, 2001). In this way, self-set performance goals influence task performance. This is especially true when goals are specific and challenging, because they are associated with higher effort and greater task persistence. Vigour captures the ability to invest effort in work tasks (Bakker & Demerouti, 2008) and represents a main component of work engagement. In that respect, although goal-setting theory focuses on task performance, its inherent assumption that greater effort and task persistence may lead to better task

performance implies that work engagement plays a role. As an illustration, in a study on young Finnish managers, Hyvönen et al. (2009) identified seven categories of personal work goals. They showed that competence goals (related to job performance or professional accomplishment) and organizational goals (related to success or performance of the organization or the department) were related to low burnout and high work engagement. Above the study of Hyvönen et al. (2009), Hall and Lawler (1970) argue that job pressures, which may be external or internal, motivate the individual to behave in a particular way on the job. They found that quality pressure, i.e., a worker concern for doing a good technical job, is related to both job involvement and organizational effectiveness. This was because quality pressure encourages the professionals to satisfy their need for competence in their work.

Our assertion that performance expectations will lead to positive outcomes can also be explained by the literature on hindrance and challenge stressors or demands. Hindrance stressors are potential constraints or obstacles to personal growth and work goal accomplishment, whereas challenge stressors promote personal growth and achievement (Podsakoff, LePine, & LePine, 2007). According to Van den Broeck, De Cuyper, De Witte, and Vansteenkiste (2010, p. 740), "whereas a challenging work environment is likely to provide opportunities to get one's basic needs satisfied, job hindrances are likely to thwart the basic needs". Satisfying challenge stressors, like self-set performance expectations, would also lead to a sense of achievement and satisfy the need for competence (Webster, Beehr & Christiansen, 2010).

We argue that performance expectations act as a kind of internal challenge stressor that will lead workers to increase effort at work in order to meet those expectations. The way we define personal demands and operationalize it in this study as performance expectations comprises an aspect of a motivational and self-enhancing role. However, we consider this a demand, in that such expectations are related with effort and costs in order to meet those personal demands. Moreover, personal resources refer to "developable systems of positive beliefs about one's self (e.g., self-esteem, self-efficacy, mastery) and the world (e.g., optimism, faith) which motivate and facilitate goal-attainment, even in the face of adversity or challenge" (van den Heuvel, Demerouti, Schaufeli, & Bakker, 2010, p. 129). In this article, what we call personal demands do not deal with positive beliefs but with high requirements about performance and behaviours at work. In other words, because they are associated with effort and costs, and because they deal with high expectations about one's own performance and not with beliefs about oneself, we consider performance expectations a personal demand, rather than resource. According to previous research, we expect that:

*Hypothesis 2a:* An increase in performance expectations over time is positively related to future work engagement.

With regard to reverse effects, several studies have shown work engagement to be related to higher inrole and extrarole performance (Bakker, Demerouti, & Verbeke, 2004; Demerouti & Cropanzano, 2010; Schaufeli et al., 2006), indicating that engaged employees are willing to "go the extra mile" (Schaufeli & Salanova, 2007, p. 152). Because of that, we propose engaged employees will set higher performance goals for themselves than nonengaged employees. Also, according to Bakker, Albrecht, and Leiter (2011), engaged employees may be more inclined to engage in job crafting, that is, changing the form, scope, or number of tasks, and/or changing the way they perceive their job. They also argue that engaged employees may likely increase their demands in order to create a challenging environment. Also Wrzesniewski and Dutton (2001) suggest that those employees with more intrinsic motivation (e.g., doing the work for its own sake) may engage in expanding relational and task boundaries, which may allow for the expression of self-determination and competence in their work. In the same way, Parker and Griffin (2011) propose that proactive behaviours, such as personal initiative or job crafting, are more likely when workers are "energized" to do so, a concept that is close to that of vigour, a main component of work engagement. We formulate:

*Hypothesis 2b:* Work engagement is positively related to an increase in future performance expectations.

Our research model is depicted in Figure 1.

## METHOD

### Sample and procedure

Data were collected at three time points in a Belgian public organization in March 2008 (Time 1), November 2008 (Time 2), and June 2009 (Time 3). A time lag of 7–8 months between measurement times was chosen in order to avoid vacation and holiday periods. One month prior to the beginning of the study all workers received a letter explaining the goals of the study. Moreover, the researchers had discussions with representatives of the organization to agree the relevance of the job and personal resource measures included in the questionnaire to the

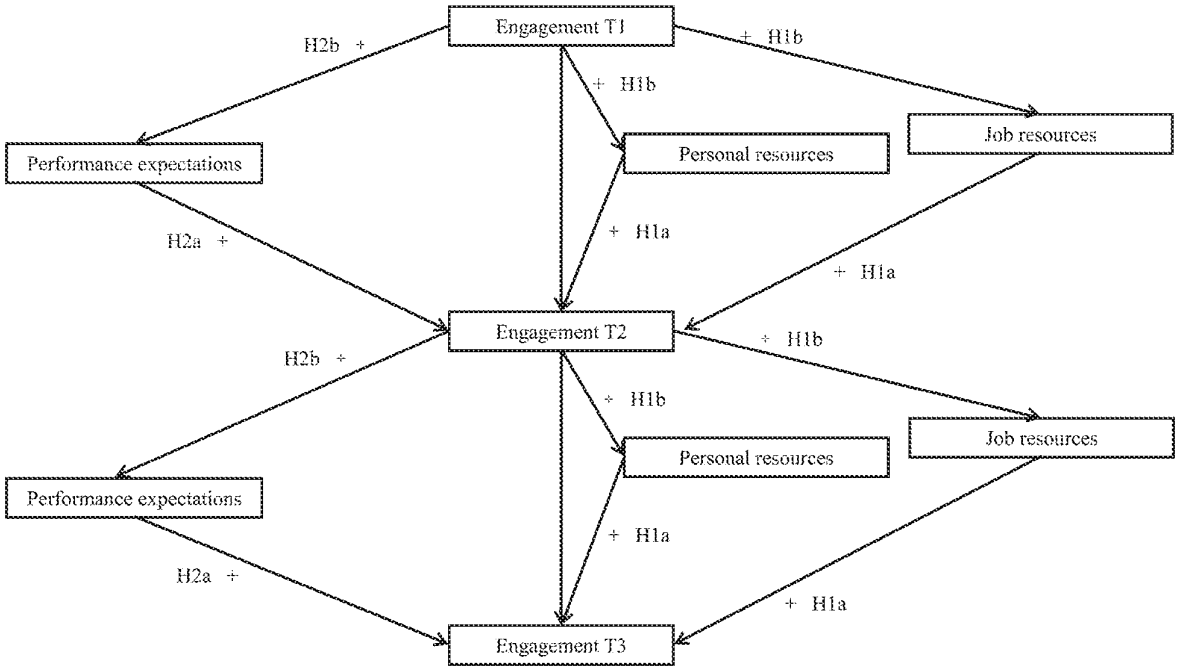


**Figure 1.** Research model. T1 = Time 1; T2 = Time 2; T3 = Time 3.



workforce. Paper-and-pencil questionnaires were then sent to their home address. Completed questionnaires could be dropped in a ballot box or could be sent using a prepaid envelope that was sent together with the questionnaire. From the 3484 questionnaires sent at Time 1, 954 were returned completed (27.38%). From the 954 employees approached at Time 2, 633 responded (66.35%). At Time 3, 473 of the 663 distributed questionnaires were returned (74.72%). This represents the sample that will be used for the analysis. The sample consisted of 183 men (38.69%) and 265 women (56.03%). Five were younger than 25 (1.06%), 62 were aged between 25 and 35 (13%), 80 were aged between 36 and 45 (16.91%), 176 were aged between 46 and 55 (37.21%), and 145 were older than 55 (30.66%).

We checked for potential differences in sociodemographic characteristics between samples at different measurement times. Gender distribution did not vary across times (men: between 38.48% and 40.38%; women: between 55.81% and 58.38%). Age distribution slightly varied across times, with the 46–50 age group decreasing (from 19.03% at Time 1 to 12.05% at Time 3) and the over-60 age group increasing over time (from .85% at Time 1 to 8.67% at Time 3).

Multivariate variance analyses revealed that job resources, personal resources, performance expectations, and work engagement scores at Time 1 did not differ between dropouts and workers who participated at Time 2, Wilks' $\lambda(6, 716) = .99$, $p = .25$ (all $Fs < 2.65$; all $ps > .10$). Moreover, job resources, personal resources, performance expectations, and work engagement scores at Time 2 did not differ between dropouts and workers who participated at Time 3, Wilks' $\lambda(6, 454) = .97$, $p = .06$ (all $Fs < 3.45$; all $ps > .06$).

## Measures

*Job resources* were operationalized as opportunities for development and perceived supervisory and organizational support (PSOS). Opportunities for development were measured with six items developed by Stinglhamber and Vandenberghe (2003). Sample items are "My job offers me the opportunity to use my competencies" and "My job offers me opportunities for career advancement". Answers were made on a Likert scale ranging from 1 ("totally disagree") to 4 ("totally agree"). A high score indicates high opportunities for development. PSOS was measured with six items developed by Stinglhamber and Vandenberghe relating to perceived support from the organization and the supervisor (see Stinglhamber & Vandenberghe, 2004, for example). We treated the items as measuring organizational support in line with Eisenberger, Huntington, Hutchinson, and Sowa (1986), who argued that workers tend to personify

their organization and consider the actions of organization's agents as actions of the organization itself. Sample items are "My organization strongly considers my goals and values" and "My supervisor really cares about my well-being". Answers were made on a Likert scale ranging from 1 ("totally disagree") to 4 ("totally agree"). A high score indicates high PSOS.

*Personal resources* were operationalized as organization-based self-esteem (OBSE) and optimism. OBSE was measured with four items developed by Pierce, Gardner, Cummings, and Dunham (1989). A sample item is "I count around here". Answers were made on a Likert scale ranging from 1 ("totally disagree") to 5 ("totally agree"). A high score indicates high OBSE. Optimism was measured with six items of the Life Orientation Test–Revised (Scheier, Carver, & Bridges, 1994). A sample item is "In uncertain times, I usually expect the best". Answers were made on a Likert scale ranging from 0 ("totally disagree") to 4 ("totally agree"). One item ("If something can go wrong for me, it will"—reversed) was deleted to ensure Cronbach's $\alpha$ satisfied the .70 criteria (Nunnally & Bernstein, 1994) at Time 2 and Time 3. As recommended by Scheier et al. (1994), a sum score was computed. A high score indicates high optimism.

*Performance expectations* were measured with nine items adapted from the Academic Expectations Stress Inventory (Ang & Huan, 2006). Sample items are "I always do my best to reach the goals I set for myself" and "I think it is necessary that I meet the goals I set for myself". Answers were made on a Likert scale ranging from 1 ("totally disagree") to 5 ("totally agree"). A high score indicates high performance expectations.

*Work engagement* was measured with the nine-item version of the Utrecht Work Engagement Scale, or UWES (Schaufeli et al., 2006). The three dimensions of vigour, dedication, and absorption are measured with three items each. Sample items are "At my work, I feel bursting with energy" (vigour), "My job inspires me" (dedication), and "I get carried away when I'm working" (absorption). Answers were made on a Likert scale ranging from 0 ("never") to 6 ("always"). A high mean score indicates high work engagement.

Original questions in English were translated into French following a translation backtranslation procedure. They were first translated from English to French by the first author of this article, and then backtranslated from French to English by a native speaker. For all scales, there was no major discrepancy between the original and translated English version, so the translation process was considered adequate. Sociodemographic variables (gender, age, tenure, and status) were included as control variables. All scales were administered at all three measurement times.

## Analyses

Structural equation modelling analyses were performed using LISREL 8.80 (Jöreskog & Sörbom, 2006). We used the covariance matrix as input and Maximum Likelihood as an estimation method. Several fit indices were calculated in addition to $\chi^2$: Standardized Root Mean Square Residual (SRMR); the Normed Fit Index (NFI); the Comparative Fit Index (CFI); and the Goodness of Fit Index (GFI). For SRMR, values lower than .05 are indicative of good fit (Hair, Anderson, Tatham, & Black, 1998). For NFI, CFI, and GFI, values higher than .90 are indicative of good fit (Byrne, 2002; Kline, 2005). Finally, the Expected Cross-Validation Index (ECVI) was used for model comparison purposes. Smaller values indicate better model fit.

Following a procedure recommended by Smith and Beaton (2008), Time 1–Time 2 changes in performance expectations and resources were measured as standardized residual scores (see also Schaufeli et al., 2009, for an application). These scores were obtained by regressing performance expectations and resources scores at Time 2 on their corresponding scores at Time 1. The same was applied for computing Time 2–Time 3 change scores. Positive standardized residual scores are used as indicators of an increase, whereas negative standardized residual scores are used as indicators of a decrease over time. Ten regression analyses were performed separately. Change scores were preferred because subtraction of T1 scores removes the stable individual differences between subjects, thereby increasing the power of the statistical test (Norman, 1989). Moreover, change scores allow a test of whether an increase in, for instance, job resources has the expected effect on work engagement, rather than differences in the level of resources between both measurement points. According to Norman (1989), the use of change scores can potentially correct for these differences. Only for work engagement, which was our ultimate dependent measure, we used the mean rather than residual scores. We intended to predict work engagement scores by three groups of variables: personal resources, job resources, and performance expectations. Including all these measures three times results in a model that confronts computation problems (due to the fact that the model is rather large and includes variables with high stability coefficients). In order to lose as little information as possible, we include the more theoretical predictors as change scores.

Three alternative models were compared. In all models, synchronous (i.e., within-wave) correlations

between error terms were allowed, as is recommended by Pitts, West, and Tein (1996). In addition, the error variance of each indicator at one measurement time was allowed to correlate with its corresponding scores at following measurement times. This is usual in longitudinal structural equation modelling, and accounts for systematic (method) variance associated with each indicator (Schaufeli et al., 2009).

Model 1 was defined as the stability model. Work engagement at Time 2 was predicted by work engagement at Time 1, whereas work engagement at Time 3 was predicted by work engagement at Time 1 and work engagement at Time 2. Such autoregressions were included to control for baseline levels, as suggested by Gollob and Reichardt (1991). In Model 2 (direct effects model), in addition to previous paths, Time 1–Time 2 changes in opportunities for development, PSOS, OBSE, optimism, and performance expectations predicted work engagement at Time 2, and work engagement at Time 3. Moreover, Time 2–Time 3 changes in opportunities for development, PSOS, OBSE, optimism, and performance expectations predicted work engagement at Time 3. This allowed us to test Hypotheses 1a and 2a. Finally, in Model 3 (reciprocal effects model), we added reversed effects of work engagement. In addition to previous paths, work engagement at Time 1 predicted Time 1–Time 2 and Time 2–Time 3 changes in opportunities for development, PSOS, OBSE, optimism, and performance expectations. Work engagement at Time 2 predicted Time 2–Time 3 changes in opportunities for development, PSOS, OBSE, optimism, and performance expectations. This allowed us to test Hypotheses 1b and 2b.

# RESULTS

## Descriptive statistics

Table 1 provides descriptive statistics, Cronbach's α and correlations for each scale at all three measurement times. Except for optimism at Time 1 ($\alpha = .66$), all Cronbach's α values were satisfactory (at least .70; Nunnally & Bernstein, 1994).

Opportunities for development, PSOS, OBSE, optimism, and performance expectations at Time 1 are positively correlated with work engagement at Time 2 and Time 3; and opportunities for development, PSOS, OBSE, optimism, and performance expectations at Time 2 are positively correlated with work engagement at Time 3. Moreover, work engagement at Time 1 is positively correlated with opportunities for development, PSOS, OBSE, optimism, and performance expectations at Time 2 and Time 3; and work engagement at Time 2 is positively correlated with opportunities for development, PSOS, OBSE, optimism, and performance expectations at Time 3. This gives preliminary support to our hypotheses.

## Structural equation modelling

Among sociodemographics, age, tenure, and status (statutory vs. temporary worker) had an impact upon opportunities for development, PSOS, OBSE, optimism, and performance expectations scores at one measurement point. When including these variables as controls, the hypothesized effects did not change substantially. Therefore, to aid clarity we present the analyses without including control variables.

Results for all tested models are shown in Table 2. Model 1was a poor fit to the data. Model 2 showed satisfactory fit to the data: SRMR, NFI, CFI, and GFI are satisfactory. Work engagement at Time 2 was predicted by work engagement at Time 1 and Time 1–Time 2 changes in performance expectations, opportunities for development, OBSE, and optimism. Work engagement at Time 3 was predicted by work engagement at Time 2, by Time 1–Time 2 changes in performance expectations and in opportunities for development, and by Time 2–Time 3 changes in performance expectations opportunities for development, and PSOS. Thus, Hypotheses 1a and 2a are confirmed.

Model 3 fit the data badly. Problems were encountered during minimization and none of the fit indices reached acceptance. Hypotheses 1b and 2b are therefore not confirmed. This implies that there are no reciprocal relations between work engagement on the one hand, and future changes in opportunities for development, PSOS, OBSE, optimism, and performance expectations on the other.

Model 2 was compared to Model 1 and Model 3 by the means of the $\chi^2$-difference test. Results indicate that Model 2 shows better fit than Model 1, $\Delta\chi^2 = 421.91$, $\Delta df = 49$, $p < .001$, and better fit than Model 3, $\Delta\chi^2 = 715.48$, $\Delta df = 45$, $p < .001$. This is further confirmed by ECVI values being smaller for Model 2 than for Model 1 and Model 3. The final model is depicted in Figure 2. Time 1–Time 2 changes in performance expectations, in opportunities for development, in OBSE, and in optimism predicted a higher work engagement at Time 2 ($\lambda = .08, .23, .12$, and .06, respectively). Time 1–Time 2 changes in performance expectations and in opportunities for development also predicted a higher work engagement at Time 3 ($\lambda = .09$ and .08, respectively). Finally, Time 2–Time 3 changes in performance expectations, in opportunities for development and in social support, predicted a higher work engagement at Time 3 ($\lambda = .07, .19$, and .10, respectively). Our results indicate that Hypotheses 1a and 2a are confirmed: Changes in job resources, personal resources, and performance expectations predict higher future work engagement.

TABLE 1
Means, standard deviations, internal consistencies (Cronbach's $\alpha$ on the diagonal) and correlations

| | *M* | *SD* | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* | *11* | *12* | *13* | *14* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. T1 PSOS | 2.29 | 0.73 | (.91) | | | | | | | | | | | | | | | | | |
| 2. T1 oppdevt. | 2.10 | 0.55 | .53** | (.78) | | | | | | | | | | | | | | | | |
| 3. T1 OBSE | 2.78 | 1.08 | .60** | .49** | (.87) | | | | | | | | | | | | | | | |
| 4. T1 optimism | 12.58 | 4.16 | .28** | .29** | .30** | (.66) | | | | | | | | | | | | | | |
| 5. T1 perfexp. | 3.97 | 0.71 | .04 | .13** | .19** | .08 | (.72) | | | | | | | | | | | | | |
| 6. T1 engag. | 4.18 | 1.22 | .30** | .51** | .35** | .31** | .29** | (.92) | | | | | | | | | | | | |
| 7. T2 PSOS | 2.31 | 0.70 | .67** | .42** | .52** | .33** | .10* | .29** | (.90) | | | | | | | | | | | |
| 8. T2 oppdevt. | 2.11 | 0.53 | .37** | .51** | .40** | .33** | .15** | .51** | .41** | (.78) | | | | | | | | | | |
| 9. T2 OBSE | 2.77 | 1.05 | .52** | .45** | .64** | .26** | .13** | .29** | .60** | .46** | (.89) | | | | | | | | | |
| 10. T2 optim. | 12.55 | 4.07 | .31** | .34** | .30** | .57** | .00 | .23** | .31** | .41** | .32** | (.71) | | | | | | | | |
| 11. T2 perfexp. | 3.93 | 0.70 | −.07 | .05 | −.02 | −.07 | .47** | .20** | .02 | .12** | .02 | −.04 | (.80) | | | | | | | |
| 12. T2 engag. | 4.15 | 1.21 | .30** | .43** | .31** | .32** | .24** | .74** | .31** | .61** | .37** | .32** | .24** | (.92) | | | | | | |
| 13. T3 PSOS | 2.26 | 0.66 | .59** | .38** | .43** | .34** | .01 | .25** | .66** | .39** | .50** | .31** | −.01 | .27** | (.90) | | | | | |
| 14. T3 oppdevt. | 2.10 | 0.47 | .38** | .46** | .35** | .35** | .10* | .40** | .37** | .62** | .42** | .37** | .09 | .47** | .53** | (.73) | | | | |
| 15. T3 OBSE | 2.67 | 1.02 | .51** | .36** | .61** | .32** | .06 | .30** | .56** | .37** | .70** | .29** | −.05 | .27** | .61** | .46** | (.88) | | | |
| 16. T3 optim. | 12.82 | 4.20 | .240** | .27** | .23** | .56** | −.04 | .20** | .31** | .33** | .27** | .63** | −.05 | .24** | .37** | .38** | .34** | (.74) | | |
| 17. T3 perfexp. | 3.92 | 0.69 | .01 | .09 | .07 | .02 | .52** | .17** | −.02 | .09* | .03 | −.02 | .53** | .17** | −.02 | .07 | .06 | −.06 | (.78) | |
| 18. T3 engag. | 4.18 | 1.17 | .24** | .41** | .29** | .30** | .24** | .68** | .27** | .53** | .31** | .29** | .26** | .72** | .35** | .563* | .32** | .25** | .23** | (.92) |

$N = 473$. T1 = Time 1; T2 = Time 2; T3 = Time 3; oppdevt. = opportunities for development; PSOS = perceived supervisory and organizational support; OBSE = organization-based self-esteem; optim. = optimism; perfexp. = performance expectations; engag. = engagement. $^{*}p < .05$, $^{**}p < .01$.

TABLE 2
Fit indices

| | $\chi^2$ | *df* | $\Delta\chi^2$ | *SRMR* | *NFI* | *CFI* | *GFI* | *ECVI* |
|---|---|---|---|---|---|---|---|---|
| Model 1 | 208.98** | 20 | | .06 | .87 | .87 | .94 | .71 |
| Model 2 | 70.84** | 6 | 421.91** (Model 2–Model 1) | .02 | .96 | .96 | .98 | .51 |
| Model 3 | 786.32** | 51 | 715.48** (Model 3–Model 2) | .12 | .50 | .51 | .86 | 1.17 |

*N* = 473. *df* = degree of freedom; SRMR = Standardized Root Mean Square Residual; NFI = Normed Fit Index; CFI = Comparative Fit Index; GFI = Goodness of Fit Index; ECVI = Expected Cross-Validation Index. $^{**}p < .01$.

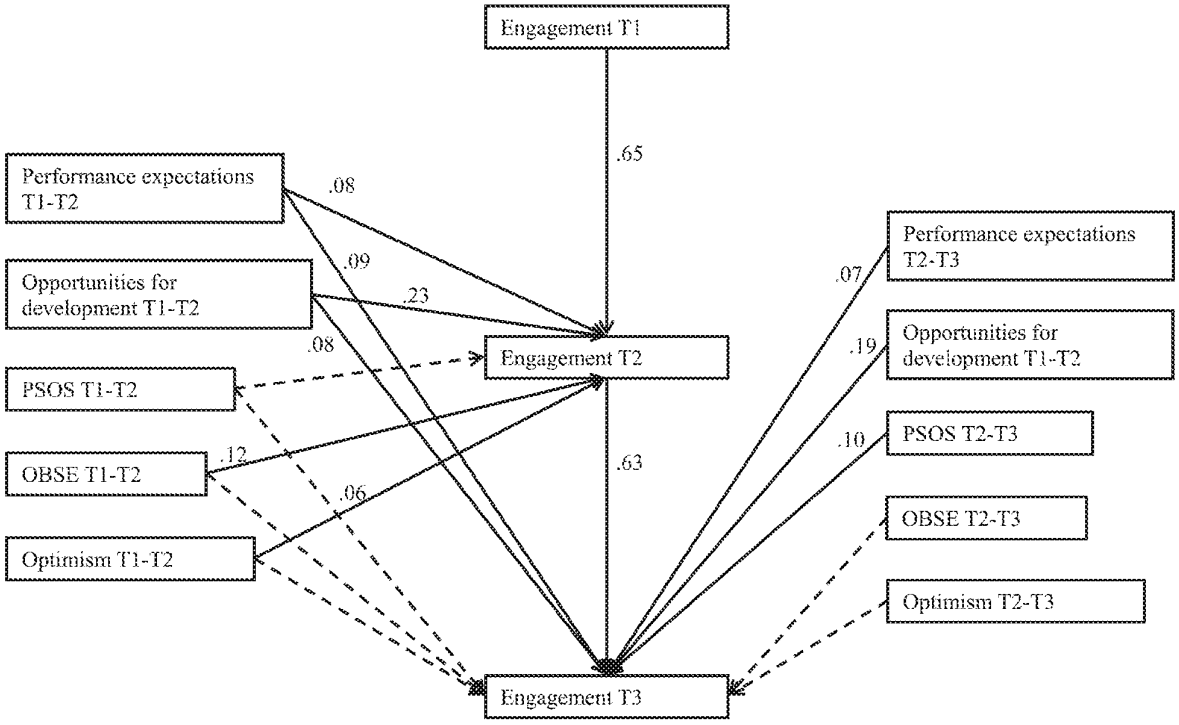


**Figure 2.** Final model. Solid arrows indicate significant paths. Dashed arrows indicate nonsignificant paths. T1 = Time 1; T2 = Time 2; T3 = Time 3.



However, Hypotheses 1b and 2b are not confirmed: There is no effect of work engagement on future changes in job resources, personal resources, and performance expectations.

## DISCUSSION

Work engagement is known to be reciprocal with a variety of job and personal resources. Such reciprocal relations form cycles in which resources lead to work engagement and work engagement leads to more resources. Beside resources, some studies suggest that demands workers impose upon themselves with regard to their work might play a role in the development of work engagement (Hyvönen et al., 2009). Because of that, it is of interest to investigate the role of workers personal demands that we operationalize as performance expectations. The goal of our study was to investigate the relationships that job resources, personal resources, and performance expectations share with work engagement. To this end, we used a three-wave longitudinal design to adequately cover causal processes.

Consistent with previous research findings (Llorens et al., 2006; Schaufeli & Bakker, 2004; Schaufeli et al., 2009; Weigl et al, 2010; Xanthopoulou et al., 2007, 2009), our three-wave study shows that an increase in job and personal resources predicts higher future work engagement. More specifically, we found opportunities for development, perceived supervisory and organizational support, organization-based self-esteem, and optimism predict a higher work

engagement in the future. Regarding job resources, four relations were significant to predict future work engagement, out of the six we tested. Regarding personal resources, two relations were significant, out of the six we tested. Thus, although both types of resource were predictive of work engagement, job resources had a more consistent impact on work engagement over time. This underscores the hypothesized motivating potential of job resources (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Hackman & Oldham, 1980).

Contrary to what we expected, no reciprocal link from work engagement to future increases in job or personal resources was significant. The previously found gain spiral between job resources, personal resources, and work engagement (Llorens et al., 2007; Schaufeli et al., 2009; Xanthopoulou et al., 2009) is not replicated in our study. Such gain spirals had been previously shown in two-wave studies. However, two-wave studies can only examine spirals by investigating the relationship between resources at Time 1 and work engagement at Time 2, and the relationship between work engagement at Time 1 and resources at Time 2. This does not adequately uncover spiral processes. Another reason could be that these studies generally used composite scores to capture resources instead of examining the unique relationship between each specific resource and work engagement. As composite scores contain the shared variance between the different resources, they ignore the unique variance of each resource (cf. Walters, Pittman, & Norrell, 1984). This agrees with Luthans, Avey, Avolio, Norman, and Combs' (2006) suggestion that the composite of different personal resources (which they call psychological capital) is different than its parts.

Next to replicating the effect of job and personal resources on work engagement using three-wave data, our study is the first to show that changes in performance expectations predict future work engagement. More specifically, an increase in performance expectations over time predicts higher future work engagement. This relationship is found above the effects of job and personal resources. Our longitudinal design tends to support the robustness of such a result. Performance expectations could act as a kind of internal challenge stressor that will lead workers to increase effort at work in order to meet those expectations. Spending effort at work refers to vigour which is the main component of work engagement (Bakker & Demerouti, 2008). Moreover, our findings agree with earlier studies having found work-related concerns (personal quality requirements, personal work goals) to be related to job involvement, organizational effectiveness, and high work engagement (Hall & Lawler, 1970; Hyvönen et al., 2009). In our sense, this is because performance expectations act as internal challenge stressors that lead workers to increase efforts at work to meet those expectations. This is also consistent with goal-setting theory (Donovan, 2001): Having high performance expectations will lead to greater effort and task persistence, which would then lead to greater task performance. Therefore, it seems promising to focus on personal demands in order to predict motivation at work or specifically work engagement and consequently motivational outcomes like performance.

To our knowledge, only one study (that of Weigl et al., 2010) investigated spirals by relying upon three-wave longitudinal data. In that study, the authors confirmed the existence of a gain spiral between resources and work engagement. Their study included task resources (job control), social resources (interpersonal relationships at work), and personal resources (active coping). What the authors refer to as task and social resources appear similar to what we call job resources, whereas we focused on other types of personal resources. In addition, we also included performance expectations. Moreover, the study of Weigl and his colleagues (2010) focused on a different working population (namely junior hospital physicians) than ours. The time lag between the three measurement times was also different, being longer (12–16 months between Time 1 and Time 2; 17–22 months between Time 2 and Time 3) than in our study (7–8 months between each measurement time). Finally in their study mean levels scores were used rather than change scores. These differences can explain the slightly different findings between Weigl et al.'s and our study. The scarcity of three-wave studies of gain spirals between resources and work engagement, as well as some methodological disparities, highlight the necessity to investigate such gain spirals in more detail. Further studies should be similar enough so that results can be compared, but different enough so that generalizability is possible.

In our study, effect sizes are quite small, even if significant. Moreover, all variables (job resources, personal resources, performance expectations, and work engagement) are very stable over time. This could also explain why we did not find the expected spiral between resources, performance expectations, and work engagement. We think stability might be due to the fact that workers were employed in public organization. We can suppose that they have to perform quite routine and procedural tasks. Also, public administration provides workers with work stability. Because of that there is little likelihood of major changes in working conditions.

## Limitations and future research

To our knowledge, this study is the first to introduce performance expectations as predictors of work

engagement. Moreover, the application of a three-wave design to investigate causal relations between job resources, personal resources, performance expectations, and work engagement makes this study unique. However, the study suffers from some limitations. First, it is limited to a specific set of demands and resources in a specific work context, which questions generalizability of our findings to the working population. Second, we relied only on self-report measures and the same rater was used to measure both predictors of work engagement and work engagement itself. This might have induced common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Such influences should be less likely in longitudinal data, because only a few participants might be able to recall their scores at Time 1 during the second or the third wave of the study. However, within each collection time, the possibility of common method variance is not completely attenuated. The issue of social desirability might also have led workers to give favourable and positive answers, especially on such variables as work engagement, optimism, or performance expectations. Finally, latent variables were not modelled in this study. One advantage of structural equation modelling is that it takes into account errors that are associated with the measures. More specifically, the true variance is taken into account by the latent variable, whereas the error variance represents the variability in the observed variable variance that is not due to the latent variable (Weston & Gore, 2006). We did not rely upon latent variables because the number of parameters to be estimated would have been too high with regards to our sample size. Such a limitation highlights the gap that exists between statistical requirements and research feasibility, in terms of sample size among others.

Future research is needed to clarify the concept of personal demands. In this article we define personal demands as the requirements that individuals set for their own performance and behaviour that force them to invest effort and are therefore associated with physical and psychological costs. We have used performance expectations as a specific measure of personal demands. It would be interesting to investigate what other variables could be operationalized as personal demands. For instance, a recent study by Van den Broeck, Vansteenkiste, De Witte, and Lens (2008) has shown that basic needs satisfaction mediates the relation between job resources on the one hand and exhaustion and vigour on the other. It could be interesting to further examine whether basic needs can be considered a personal demand. Doing so would lead, first, to a better knowledge of the predictors of work engagement, and second, to a better understanding of the impact of demands, positive or negative, over time.

A second perspective for future research is to test for gain spiral hypothesis. According to Salanova et al. (2010), two conditions are essential for gain spirals to exist, namely the coexistence of normal and reverse causation, and an increase in construct levels over time. Gain spirals have been found mainly in two-wave longitudinal studies but two-wave data does not allow a complete testing of spiral processes. Three-wave data allows the examination of direct effects between Time 1 and Time 2, and reverse effects between Time 2 and Time 3. In doing so, reciprocal relations are investigated on a longitudinal sequence. Our three-wave longitudinal study enables the testing of normal and reverse causation on a longitudinal sequence, but reverse relations were not significant and so we could not confirm the existence of gain spirals.

## Practical implications

Beside theoretical and research perspectives, we think our study also has practical implications, more specifically regarding workers' well-being and health promotion. Hyvönen et al. (2009) and Schaufeli and Salanova (2007) suggest that workers' goals and values are important in health and psychological well-being. Our study gives empirical support to this suggestion. Human Resources managers should try to identify workers' performance expectations and adapt working environments, by providing necessary job resources, so that those performance expectations can be achieved. In this perspective, Human Resources practices like appraisal interview and career management should be reinforced in companies. In doing so, Human Resources practices and well-being policies could be reconciled. As performance expectations have a longitudinal impact on work engagement, implementation should be sustained over time in order to be efficient, as already suggested by Bakker et al. (2011).

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