The
British
Psychological
Society

www.bpsjournals.co.uk

Work engagement and financial returns: A diary study on the role of job and personal resources

Despoina Xanthopoulou[1]*, Arnold B. Bakker[1],
Evangelia Demerouti[2,3] and Wilmar B. Schaufeli[2,3]

[1]Department of Work and Organizational Psychology, Institute of Psychology,
Erasmus University Rotterdam, Rotterdam, The Netherlands
[2]Department of Social and Organizational Psychology, Utrecht University, Utrecht,
The Netherlands
[3]Research Institute Psychology and Health, Utrecht University, Utrecht, The
Netherlands

This study investigates how daily fluctuations in job resources (autonomy, coaching, and team climate) are related to employees' levels of personal resources (self-efficacy, self-esteem, and optimism), work engagement, and financial returns. Forty-two employees working in three branches of a fast-food company completed a questionnaire and a diary booklet over 5 consecutive workdays. Consistent with hypotheses, multi-level analyses revealed that day-level job resources had an effect on work engagement through day-level personal resources, after controlling for general levels of personal resources and engagement. Day-level coaching had a direct positive relationship with day-level work engagement, which, in-turn, predicted daily financial returns. Additionally, previous days' coaching had a positive, lagged effect on next days' work engagement (through next days' optimism), and on next days' financial returns.

Why do some employees perform at high levels, whereas others perform at minimum levels of acceptance? And why do those who generally perform well have off-days? The first question reflects *between-person* differences in explaining job performance, whereas the second question encapsulates the issue of *within-person* fluctuations. Theoretical models and empirical studies concerning between-person differences mainly examine how employees' traits or *general tendencies* determine their performance (Cropanzano & Wright, 2001). In contrast, scholars who study within-person variations focus on the role of momentary *states* (Beal, Weiss, Barros, & MacDermid, 2005). An integrated framework that incorporates general *and* state capacities is needed to comprehend organizational behaviour (Luthans & Youssef, 2007). The central aim of the

*Correspondence should be addressed to Dr Despoina Xanthopoulou, Department of Work and Organizational Psychology, Institute of Psychology, Erasmus University Rotterdam, Rotterdam 3000 DR, The Netherlands (e-mail: xanthopoulou@fsw.eur.nl).

present study is to gain a better understanding of the process that explains job performance. Specifically, we will examine how daily variations in job and personal resources are related to daily work engagement and financial returns.

General tendencies and state determinants of job performance

General tendencies concern individual dispositions, overall psychological well-being, or global experiences referring to longer time periods. In contrast, *states* reflect how an individual feels about him/herself and the environment at certain points in time. Hence, general tendencies are rather stable, whereas states change across time and may fluctuate even on a daily level.

Studies concerning general tendencies may only explain how employees differ from one another on how they generally perform. Such between-person approaches have shown that productivity may be determined (among others) by employees' happiness or overall well-being, particularly when well-being is operationalized as overall positive affect (for a review on the happy-productive worker thesis, Cropanzano & Wright, 2001). Consistently, *work engagement* (i.e. a positive affective/motivational reaction towards the job that is characterized by vigour, dedication, and absorption), when measured as a *general* well-being indicator, has been found to be positively related to individual job performance (for a review see, Bakker, 2009).

The added value of designs that investigate states next to general tendencies is that they enable researchers to understand psychological variables at the time and level these are manifested (Ilies, Schwind, & Heller, 2007). Furthermore, states, when measured over short time periods, can explain within-person differences (i.e. why a person's performance may differ from one moment to another). Such designs (by modelling dynamic processes) capture the influence of transitory situational and personal factors, in contrast to cross-sectional or long-term longitudinal designs, which can only capture the effects of (relatively) stable characteristics (Ilies *et al.*, 2007). For example, Beal *et al.* (2005) described a model linking immediate affective experiences to within-person performance episodes. Similarly, Sonnentag (2003) found that employees' day-levels of work engagement predicted their day-levels of proactive behaviour, after controlling for general levels of engagement and work characteristics.

George (1991) proposes that general levels may have an impact on the state levels, but state levels are the ones that initiate the psychological processes leading to performance. Thus, states and general tendencies are complementary. We will examine the role of daily (i.e. situational and personal) correlates of daily job performance episodes, after controlling for general individual tendencies.

Theoretical model

Performance episodes are explained by employees' affective states that are subject to the constantly changing work environment (Beal *et al.*, 2005). In other words, work characteristics induce certain events at work, which determine employees' psychological states, which, in-turn, shape work behaviours. Similarly, the motivational process of the job demands–resources (JD-R) model (Bakker & Demerouti, 2007) suggests that job resources are the main initiators of employees' work engagement and consequently of enhanced performance. *Job resources* refer to physical, social, or organizational aspects of the job that are functional in achieving work-related goals, reduce demands and the associated costs, and stimulate personal growth and

development (Bakker & Demerouti, 2007). As intrinsic motivators, job resources fulfil basic human needs (i.e. need for belonging) and foster individuals' development (Deci & Ryan, 1985). As extrinsic motivators, they encourage employees' to exert effort towards a task (Gagné & Deci, 2005). In both cases, employees may become more engaged in their jobs, because they derive fulfilment from it (Schaufeli & Bakker, 2004), and in-turn they perform better (Bakker, 2009).

Job resources constitute a general category of job characteristics, which may incorporate various specific resources. Importantly, evidence for the process initiated by job resources has been found irrespectively of the specific resources involved (Bakker & Demerouti, 2007). Occupation-specific work psychological models – including the JD-R model – emphasize the need to focus on job characteristics that are relevant for the employees under study, in order to capture the particularity of the respective work setting. Therefore, in the present study, we examined three specific job resources – *autonomy*, *supervisory coaching*, and *team climate* – which were identified (during interviews preceding the study) as the most crucial for fast-food restaurant employees that are of concern in the present study.

In order to describe the psychological mechanisms underlying the relationship between job resources and positive psychological and organizational outcomes, researchers have accentuated the role of *personal resources* (i.e. self-beliefs of resiliency). We focus on three specific personal resources, namely *self-efficacy* (i.e. people's beliefs about their capabilities to control events that affect their lives; Bandura, 1989), *organizational-based self-esteem* (OBSE, i.e. employees' beliefs that they can satisfy their needs by participating in roles within the organization; Pierce, Gardner, Cummings, & Dunham, 1989), and *optimism* (i.e. the tendency to believe that one will generally experience good outcomes in life; Scheier, Carver, & Bridges, 1994). These factors have been recognized as crucial for individuals' psychological well-being in general, and for work-related well-being in particular (Hobfoll, 2002; Luthans & Youssef, 2007). Unlike positive personality traits that are fixed, these personal resources are by definition *malleable* (Luthans & Youssef, 2007), and thus are considered appropriate for the present study.

According to Hobfoll's (2002) theory, people do not only try to protect their resources, but also to accumulate them. Since resources do not exist in isolation, developmental processes create 'resources caravans' in a way that, for example, individuals working in a resourceful work environment (i.e. have autonomy over their tasks, or receive high-quality coaching) are likely to increase their beliefs in their capabilities (self-efficacy), to feel valued (OBSE), and to be optimistic that they will meet their goals. Consequently, employees develop a positive self-regard and in-turn experience goal self-concordance (Luthans & Youssef, 2007). Employees with goal self-concordance are intrinsically motivated to pursue their goals that may lead to higher levels of work engagement and performance. Indeed, personal resources were found to explain the transition from various job resources to work engagement (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007). Consistently, Llorens, Schaufeli, Bakker, and Salanova (2007) have shown that task resources had lagged effects on engagement through efficacy beliefs. Finally, Luthans, Avey, Avolio, Norman, and Combs (2006) revealed that training techniques that aim at providing resources to employees (e.g. quality feedback) increase employees' psychological capital (i.e. self-efficacy, optimism), which, in-turn, may have a positive financial impact and high return on investment.

Personal resources seem to link job resources with engagement and in-turn performance. However, although work-related personal resources are states that may be

influenced by constantly changing work environments, there have been no studies so far on such *within-person fluctuations*. Daily fluctuations in job resources do occur in fast-food restaurants, the context of this study. Fast-food restaurant employees serve different types and amounts of customers, and work with different colleagues and supervisors everyday. Thus, an employee may have different levels of autonomy, receive different types of coaching, and experience a different working atmosphere from one day to another. Beal *et al.* (2005) suggested that fluctuant environmental factors may determine employees' transient (affective) states (i.e. work engagement) and in-turn determine performance. Employees' beliefs about their capabilities to perform the task at hand (i.e. personal resources) are also crucial in explaining performance. Personal resources may be consumed or replenished through the dynamic process that leads to performance (Hobfoll, 2002), and thus their levels may fluctuate from day-to-day (even as a function of the available job resources). Empirical support for the processes from job resources to performance through personal resources and engagement at the within-person level would propose that the same psychological mechanisms apply even under changing conditions. Thus, the present study may further validate the hypothesized relationships.

An additional novel feature of the present study is that it examines an objective performance outcome. We used data on the financial returns of each daily shift in which the study was carried out (i.e. an indication of business-unit performance). The hypothesis that employees' perceptions of their resources and engagement predict a *group* outcome has been supported previously. Studies revealed that group performance is mainly determined by the level of commitment that each group member shows to the task, particularly in small groups as in our study (Mullen & Copper, 1994). Group members exert effort towards performance for the *intrinsic* pleasure of completing a task that they tend to enjoy, and thus, they regulate their behaviour towards that end. Therefore, individual psychological processes *do* determine group performance. Indeed, Ilies, Wagner, and Morgeson (2007) have shown that team members affect each other's positive moods to the degree that their moods converge (see also Totterdell, 2000), but also that the positive mood of individual team members is positively related with team performance.

Study hypotheses

Based on our theoretical analysis, we formulate the following hypotheses. First, we hypothesize that day-level personal resources mediate the relationship between day-level job resources and day-level work engagement, after controlling for general levels of personal resources and work engagement (Hypothesis 1). Next, we predict that day-level job resources have a positive effect on day-level financial returns through the mediation of day-level personal resources and day-level work engagement (Hypothesis 2). Further, we also assess lagged effects of previous days' job resources on next days' personal resources, work engagement, and financial returns. The beneficial knowledge that results from one day's job resources may have lasting effects because it may be used the following days too. As a result, previous days' job resources may influence employees' personal resources the next days, and consequently affect their work engagement and performance. Based on this reasoning, we predict that *previous* days' job resources have positive, lagged effects on *next* days' work engagement, through the mediation of *next* days' personal resources (Hypothesis 3), and on *next* days' financial returns through the mediation of *next* days' personal resources and work engagement (Hypothesis 4). The study design and hypotheses are graphically presented in Figure 1.
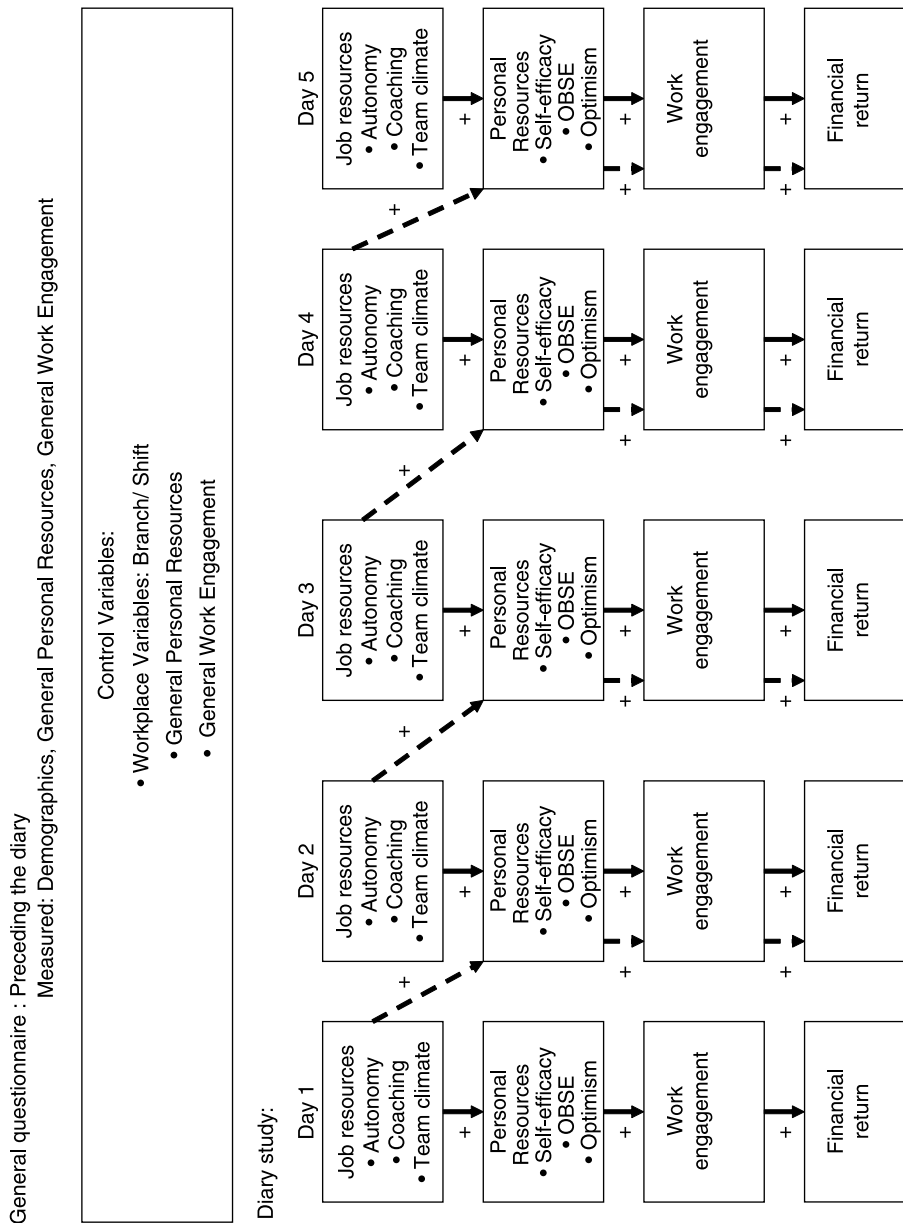
Figure 1. The study design. Straight lines represent Hypotheses 1 and 2; dotted lines represent Hypotheses 3 and 4. *Note.* OBSE, Organizational-based self-esteem.

Method

Procedure and participants

Participants were employees from three branches of a Greek fast-food company. All employees ($N = 45$) were informed about the purpose of the study and asked to participate voluntarily. Survey packages were handed in and instructions were provided to each employee individually. The survey packages included a letter by the director, who encouraged employees to participate, a letter by the researchers with instructions about the completion of the survey, a general questionnaire, and a diary booklet together with return envelopes. Employees were instructed to fill in the general questionnaire as soon as they received their survey package and to fill in the diary over 5 consecutive workdays, at the end of their shift, before leaving the workplace. Employees worked in one of two (day: nine to five, or evening: five to one) shifts. Four employees worked in each shift.

The branches were open for 7 days per week and employees worked for 5 consecutive days, and had 2 consecutive days off per week. Each employee had to start filling in the diary the first working day after a day off. Data was collected over a period of 1 month, in order to minimize the shared observations of financial return data. Finally, employees were asked to fill in a personal code on the questionnaire and the diary booklet. In this way, participants' anonymity was assured and researchers were able to match the questionnaires and the diary surveys. A total of 42 usable questionnaires and diaries were returned (response rate = 93%).The total sample included 30 (71%) men and 12 (29%) women. Their mean age was 29 years ($SD = 7.2$), and their mean organizational tenure was 3.6 years ($SD = 4.9$). All participants worked full-time, 38% had a high-school degree, and one third of the participants were living with their parents.

Measures

Questionnaire data

General personal resources. *General self-efficacy* was assessed with the 10-item generalized self-efficacy scale (Schwarzer & Jerusalem, 1995). Items (e.g. 'I can always manage to solve difficult problems if I try hard enough') are scored on a four-point scale ($1 =$ absolutely wrong, $4 =$ absolutely right; $\alpha = .83$). *General OBSE* was assessed with the scale developed by Pierce *et al.* (1989). The scale includes 10 items, like 'I am important for the organization' ($1 =$ totally disagree, $5 =$ totally agree; $\alpha = .87$). *General Optimism* was measured with the six main items of the Life Orientation Test – Revised (LOT-R; Scheier *et al.*, 1994). Three items are positively phrased (e.g. 'I am always optimistic about my future') and three are negatively phrased (e.g. 'I hardly ever expect things to go my way'), with answers ranging from (1) 'totally disagree' to (5) 'totally agree' ($\alpha = .66$). Negatively keyed items were recoded so that higher scores refer to more optimism.

General work engagement.   It was measured with the nine-item version of the Utrecht work engagement scale (UWES; Schaufeli, Bakker, & Salanova, 2006). The UWES items reflect three underlying dimensions, which are measured with three items each: *vigour* (e.g. 'At my work, I feel bursting with energy'); *dedication* (e.g. 'I am enthusiastic about my job'); and *absorption* (e.g. 'I get carried away when I am working'). All items were

scored on a scale ranging from (0) 'never' to (6) 'always'. For our analyses, we computed an overall work engagement factor score ($\alpha = .90$; Schaufeli *et al.*, 2006).

Diary survey data

The diary survey measured each person's levels of job resources, personal resources, and work engagement on the specific days that the study took place. Participants responded to all day-level measures on a seven-point scale (1 = no, I totally disagree, 7 = yes, I totally agree). Due to the space constraints that are inherent to diary studies, a limited number of items from the original scales were selected to measure resources and work engagement. The selection was based on the items' face validity and on factor analytic findings from previous research.

Day-level job resource. *Day-level autonomy* was assessed with two items ('Today during the shift, I could decide myself how to execute my job/I could decide myself on the pace of executing my job'), based on a scale developed by Bakker, Demerouti, and Verbeke (2004). Inter-item correlations ranged from .63 to .84 across the five occasions. *Day-level Supervisory Coaching* was measured with state versions of three items of Graen and Uhl-Ben's (1991) scale (e.g. 'Today during the shift, my supervisor used his/her influence to help me solve my problems at work'). Cronbach's αs across occasions ranged from .60 to .79 ($M = 0.70$). *Day-level team climate* was assessed with two items ('Today during the shift, there was a very good working atmosphere/I had a very nice time with my colleagues'), based on a scale developed by Demerouti, Kattenbach, and Nachreiner (2003). Inter-item correlations ranged from .50 to .85.

Day-level work-related personal resources. *Day-level self-efficacy* was measured with two items based on Schwarzer and Jerusalem's (1995) self-efficacy scale (i.e. 'Today while at work, I felt I could deal efficiently with unexpected events/I felt I could handle every problem that came my way'). Inter-item correlations ranged from .42 to .71 across the occasions. *Day-level OBSE* was assessed with two items ('Today while at work, I felt valuable/important for the company') of the scale developed by Pierce *et al.* (1989; inter-item correlations ranged from .63 to .92). *Day-level optimism* was measured with two items based on the LOT-R (Scheier *et al.*, 1994). These items were: 'Today while at work, I felt very optimistic about my future/I felt that more good things would happen to me than bad' (inter-item correlations ranged from .31 to .56).

Day-level work engagement. It was measured with six adapted items of the UWES (Schaufeli *et al.*, 2006). We included two items per dimension: for example, 'Today, I felt strong and vigorous while working (vigor)'; 'Today, I felt proud of the work I did' (dedication); and 'Today, I was completely immersed in my work' (absorption). We computed an overall work engagement factor score (Schaufeli *et al.*, 2006), for each of the 5 days. Cronbach's αs ranged from .84 to .90 ($M = 0.87$).

Day-level financial returns. With financial returns, we mean the total amount of money earned within a particular shift. Data reported in euro was obtained from the supervisors of each branch, of each of the two shifts of each day that the study took

place. Financial returns data were matched with each day of each diary survey on the basis of information on the branch that participants were working in, and on the dates and shifts that participants filled in their diaries. Data collection resulted in 175 (out of 210, 83%) unique observations of financial returns. The other 35 observations on day-level financial returns were shared by 16 dyads and one triad of employees that happened to fill in the diary on the same day, while working in the same branch during the same shift. Thus, there was a substantial amount of unique indicators of daily performance outcomes for each participant, which allows using financial returns as a day-level outcome variable.

Strategy of analysis

Our repeated measures data can be viewed as multi-level data, with repeated measurements nested within individuals. This leads to a two-level model with the repeated measures at the first-level ($N = 210$ study occasions) and the individual persons at the second-level ($N = 42$ participants). Multi-level analysis with the MlwiN program (Rashbash, Browne, Healy, Cameron, & Charlton, 2000) was applied. Predictor variables at the day-level (Level 1, i.e. job and personal resources) were centred to the individual mean and person-level (Level 2) predictor variables (i.e. general personal resources and general work engagement) were centred to the sample mean. None of the demographic characteristics were significant predictors of either day-level work engagement, or financial returns, and were excluded from further analyses. However, the branch (i.e. two dummy variables) in which the participants were employed was significantly related to both day-level work engagement (dummy 1: $t = 2.26$, $p < .05$; dummy 2: $t = 2.04$, $p < .05$), and day-level financial returns (dummy 1: $t = 10.69$, $p < .001$; dummy 2: $t = 3.86$, $p < .001$), while the shift in which the employees were working while filling in the diaries was related to financial returns ($t = -4.30$, $p < .01$). Thus, we controlled for these variables.

Results

Descriptive statistics

Table 1 presents the means, standard deviations, and correlations among the study variables. Unreported analyses on the reliability of the *state* scales showed that items within each day-level scale were more highly correlated with each other than with items of other scales. The results of these analyses may be provided by the first author upon request.

Fluctuations over time

In order to examine the proportion of variance that is attributed to the different levels of analysis, we calculated the intra-class correlation for each day-level variable. Results showed that 63% of the variance in autonomy, 68% in coaching, and 41% in team climate was attributable to between-person variations. Furthermore, 50% of the variance in day-level self-efficacy, 65% in day-level OBSE, and 55% in day-level optimism was attributable to between-person fluctuations. Finally, 69% of the variance in day-level work engagement and 57% in day-level financial returns was attributable to between-person variations. In all cases, significant amounts of variance are left to be explained by *within-person* fluctuations justifying our multi-level approach.

Table 1. Means, standard deviations, and correlations among the study variables, ($N = 42$)

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Branch dummy 1	0.36	0.48	—														
2. Branch dummy 2	0.26	0.45	−.44***	—													
3. Shift	0.54	0.44	.12	.05	—												
4. General self-efficacy	3.24	0.44	.09	−.07	.02	—											
5. General OBSE	3.94	0.57	.07	.14	.13	.32*	—										
6. General optimism	3.54	0.60	.10	.19	−.02	.38*	.43**	—									
7. General work engagement	3.48	1.31	.22	.14	−.08	.24	.39**	.58**	—								
8. Day-level autonomy	4.39	1.62	−.09	.03	.10	−.06	.07	−.09	.16	—							
9. Day-level coaching	3.82	1.41	.10	.12	−.07	−.15	.12	.17	.40**	−.18	—						
10. Day-level team climate	5.07	1.20	−.36*	.15	−.04	.06	−.07	−.08	.00	−.09	.25	—					
11. Day-level self-efficacy	5.31	1.09	−.02	.16	.01	.32*	.05	.12	.28	.28	.19	.34*	—				
12. Day-level OBSE	4.65	1.39	.04	.38*	.05	−.05	.54**	.20	.33*	.34*	.23	.09	.21	—			
13. Day-level optimism	4.76	1.20	.04	.26	.05	.23	.27	.43**	.32*	.29	.36*	.21	.34*	.30	—		
14. Day-level work engagement	4.51	1.25	.21	.16	−.23	.00	.22	.32*	.76**	.25	.56**	.25	.52**	.42**	.43**	—	
15. Day-level financial returns	615.84	164.69	.78**	−.10	−.10	−.02	.06	.02	.22	−.31*	.31*	−.23	.04	.03	−.03	.34*	—

Note. OBSE, Organizational-based self-esteem; Day-level data was averaged across 5 days; *$p < .05$; **$p < .01$.

Mediation of personal resources

According to Hypothesis 1, day-level personal resources mediate the relationship between day-level job resources and work engagement. Following Baron and Kenny (1986), we examined the required conditions for mediation: (a) the predictor should be related to the mediator; (b) the mediator should be related to the outcome; and (c) the predictor–outcome relationship becomes non-significant (full mediation), or becomes significantly weaker (partial mediation) after the inclusion of the mediator. To examine the significance of the mediating effects we applied the Sobel z-test.

To test the first condition (i.e. whether day-level job resources are significantly related to day-level personal resources), we examined three models for each personal resource separately: A Null (intercept-only) model; Model 1 (where we controlled for the respective general personal resource); and Model 2 (where day-level job resources were added). Results showed that day-level autonomy ($t = 3.18$, $p < .001$), day-level coaching ($t = 2.73$, $p < .01$), and day-level team climate ($t = 2.55$, $p < .01$) were related with day-level self-efficacy. Day-level autonomy ($t = 5.15$, $p < .001$) was related with day-level OBSE, while day-level autonomy ($t = 5.35$, $p < .001$), and day-level team climate ($t = 2.53$, $p < .05$) were significantly related with day-level optimism. To test whether day-level personal resources correlate significantly with day-level work engagement (second condition), we again examined three models. For these models, the dependent variable was day-level work engagement, the control variable was general work engagement, and the predictor variables were the three day-level personal resources. This condition was also met, since day-level self-efficacy ($t = 4.82$, $p < .001$), day-level OBSE ($t = 3.12$, $p < .01$), and day-level optimism ($t = 3.71$, $p < .001$) were related to work engagement. These findings suggested that: (1) day-level self-efficacy may mediate the relationship between all three day-level job resources and work engagement; (2) day-level OBSE may mediate the relationship between day-level autonomy and work engagement; and (3) day-level optimism may mediate the relationship between day-level autonomy and team climate and engagement.

To test these effects, we examined the four nested models presented in Table 2. Table 2 shows the unstandardized estimates, standard errors, and t values. Also, intercept variances at the day-level and at the person-level are displayed, and explained variance is calculated (Hox, 2002, p. 64).

Table 2 shows that the inclusion of the three personal resources turned the previous significant relationship between autonomy and work engagement into non-significance. The Sobel z-test revealed that all day-level personal resources were responsible for this *full* mediation (self-efficacy: $z = 2.63$, $p = .01$; OBSE: $z = 2.70$, $p = .007$; optimism: $z = 3.16$, $p = .002$). Next, the inclusion of day-level self-efficacy turned the significant relationship between coaching and work engagement into non-significance ($z = 2.36$, $p = .02$). Finally, day-level self-efficacy ($z = 2.24$, $p = .03$) and day-level optimism ($z = 2.12$, $p = .03$) were both responsible for the significant decrease of the magnitude of the relationship between team climate and work engagement.

Hypothesis 1 was supported since all three day-level personal resources *fully* mediated the relationship between day-level autonomy and day-level work engagement. Moreover, day-level self-efficacy *fully* mediated the relationship of day-level coaching with day-level work engagement, and day-level self-efficacy and day-level optimism *partially* mediated the relationship between day-level coaching with work engagement. Also, general work engagement was significantly and positively related with day-level work engagement. However, *general* self-efficacy was negatively related with day-level work engagement. This finding should be interpreted as an artefact (i.e. self-efficacy

Table 2. Multi-level estimates for models predicting day-level work engagement: day-level self-efficacy, day-level organizational-based self-esteem, and day-level optimism as mediators; $N = 42$ employees, and $N = 210$ observations

Model	Null			1			2			3		
Variables	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
Intercept	.000	0.132	0.000	−.112	0.137	−0.818	−.155	0.113	−1.371	−.018	0.102	−0.176
Branch dummy 1				.171	0.199	0.859	.300	0.165	1.818	.131	0.149	0.879
Branch dummy 2				.198	0.218	0.908	.187	0.178	1.051	−.108	0.164	−1.015
General work engagement				.727	0.105	6.924***	.596	0.090	6.622***	.602	0.080	7.525***
General self-efficacy				−.290	0.208	−1.394	−.222	0.173	−1.283	−.379	0.161	−2.354*
General OBSE				−.027	0.167	−0.162	−.031	0.137	−0.226	−.128	0.130	−0.984
General optimism				−.186	0.182	−1.022	−.099	0.150	−0.660	−.173	0.137	−1.263
Day-level autonomy							.067	0.028	2.393*	−.028	0.026	−1.077
Day-level coaching							.115	0.037	3.108**	.058	0.032	1.813
Day-level team climate							.115	0.030	3.833***	.065	0.027	2.407*
Day-level self-efficacy										.154	0.033	4.667***
Day-level OBSE										.111	0.035	3.171**
Day-level optimism										.133	0.034	3.912***
$-2 \times \log$		450.107			408.824			374.379			308.327	
$\Delta - 2 \times \log$					41.28***			34.45***			66.05***	
df					6			3			3	
					R^2			R^2			R^2	
Level 1 (within-person) variance	.303	0.033		.303	0.033	0%	.274	0.030	10%	.196	0.021	35%
Level 2 (between-person) variance	.673	0.160		.214	0.060	68%	.128	0.040	81%	.106	0.032	84%

Note. OBSE, Organizational-based self-esteem; R^2 percentages are calculated in approximation; *p < .05; **p < .01; ***p < .001.

seems to work as a suppressor variable), because the effect became significant only after including the mediators.

Predicting financial returns

According to Hypothesis 2, day-level job resources predict day-level financial returns, through day-level personal resources *and* work engagement. Previous analyses revealed that day-level job resources were generally related with day-level personal resources and work engagement. Furthermore, analyses also showed that day-level work engagement was a significant predictor of day-level financial returns ($t = 2.92$, $p < .05$). However, the relationship between the three personal resources and financial returns (self-efficacy: $t = 0.007$, $p = .50$; OBSE: $t = 1.13$, $p = .16$; optimism: $t = 0.489$, $p = .33$) was *not* supported, hence rejecting the mediation of personal resources. Thus, we could only test whether day-level work engagement mediates the relationship between job resources and financial returns. We examined the four nested models presented in Table 3. Table 3 shows that only coaching was a significant predictor of daily financial returns. The addition of day-level work engagement in Model 3 significantly decreased the magnitude of the relationship between coaching and financial returns ($z = 2.03$, $p = .03$). Namely, work engagement *partially* mediated the relationship between coaching and financial returns, thus providing some support for Hypothesis 2. Importantly, results did not change when controlling for general personal resources.

Lagged effects

To test Hypotheses 3 and 4, we constructed lagged variables using the commands of the MlwiN software (Rashbash *et al.*, 2000). Particularly, job resources of the first day had lagged effects on personal resources, work engagement, and financial returns of the second day, etc. Analyses showed that only previous days' autonomy predicted next days' self-efficacy ($\gamma = .151$, $SE = 0.07$, $t = 2.16$, $p < .05$) and not previous days coaching ($\gamma = .155$, $SE = 0.08$, $t = 1.94$, *ns*) or team climate ($\gamma = -.107$, $SE = 0.08$, $t = -1.34$, *ns*). Also, previous days' autonomy ($\gamma = .151$, $SE = 0.068$, $t = 2.22$, $p < .05$) and previous days' coaching ($\gamma = .299$, $SE = 0.078$, $t = 3.83$, $p < .05$) predicted next days' optimism, but not previous days team climate ($\gamma = -.07$, $SE = 0.07$, $t = 1$, *ns*). None of the job resources predicted next days' OBSE. Analyses regarding Hypothesis 3 supported that previous days' coaching had a lagged effect on next days' engagement, through the *full* mediation of next days' optimism. The previously significant effect of coaching on work engagement ($\gamma = .157$, $SE = 0.047$, $t = 3.34$, $p < .001$) became non-significant ($\gamma = .08$, $SE = 0.043$, $t = 1.86$, *ns*; $z = 2.18$, $p < .05$) after the inclusion of the mediator. This model explained 78% of the between-person and 36% of the within-person variance in next days' work engagement.

Analyses for Hypothesis 2 revealed that day-level personal resources were *not* significant predictors of day-level financial returns. Therefore, Hypothesis 4 was restricted to whether previous days' job resources predict next days' financial returns through next days' work engagement. Results revealed that only previous days' *coaching* predicted next days' financial returns ($\gamma = 30.73$, $SE = 9.35$; $t = 3.29$, $p < .001$). However, there was no significant mediation effect since the inclusion of work engagement did not improve the fit of the model ($\Delta - 2 \times \log(1) = 1.2$, *ns*). The final model explained 84% of the between-person and 13% of the within-person variance in next day's financial returns.

Table 3. Multi-level estimates for models predicting day-level financial returns; $N = 42$ employees, and $N = 210$ observations

Model Variables	Null			1			2			3		
	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
Intercept	615.84	25.11	24.53***	515.52	23.86	21.61***	521.62	21.57	24.18***	523.07	20.83	25.11***
Branch dummy 1				335.13	32.08	10.45***	317.21	29.57	10.73***	303.36	29.11	10.42***
Branch dummy 2				135.93	34.32	3.96***	125.22	30.65	4.09***	116.26	29.77	3.91***
Shift				−101.26	23.15	−4.37**	−95.63	21.61	−4.43***	−84.90	21.45	−3.96***
General work engagement				−11.33	14.00	−0.81	−18.30	13.22	−1.38	−35.92	14.78	−2.43*
Day-level autonomy							−8.79	5.64	−1.56	−12.51	5.69	−2.20*
Day-level coaching							21.18	7.38	2.87**	16.10	7.51	2.14*
Day-level team climate							−8.10	6.61	−1.23	−12.47	6.76	−1.84
Day-level work engagement										36.26	15.25	2.38*
−2 × log	2,730.30			2,664.28			2,653.17			2,647.65		
Δ − 2 × log				66.02***			11.11*			5.52*		
df				4			3			1		
				R²			R²			R²		
Level 1 (within-person) variance	17,258.61	1,883.07		16,237.98	1,772.81	6%	16,128.61	1,760.43	6.5%	15,900.75	1,736.18	8%
Level 2 (between-person) variance	23,025.31	5,790.02		3,768.93	1,569.08	84%	2,307.38	1,256.03	90%	1,955.61	1,170.23	92%

Note. R^2 percentages are calculated in approximation; *$p < .05$; **$p < .01$; ***$p < .001$.

At this point, it is important to note that 17% of the financial returns observations was shared among two or three employees. In order to examine whether this affected our results, we randomly deleted the shared cases and reran the intercept-only models. These models resulted in similar estimates, standard errors and intra-class correlations (for Hypothesis 2: $\beta = 616.81$, $SE = 23.67$; $\rho = .54$; for Hypothesis 4: $\beta = 619.44$, $SE = 25.90$; $\rho = .59$), with the respective models presented in our study (for Hypothesis 2 see Table 3; for Hypothesis 4: $\beta = 617.29$, $SE = 25.11$; $\rho = .59$). Thus, the small overlap in financial data did not seem to affect our findings substantially.

Discussion

The present study examined how within-person variations in job and personal resources fuel daily work engagement and consequently have an impact on an organization's financial performance. The results generally supported the role of self-efficacy, OBSE, and optimism as process variables in the relationship between autonomy, coaching and team climate on one hand, and work engagement on the other hand. In addition, there was some support for the link between job resources, work engagement, and financial returns. Evidence for these relationships at the within-person level emphasize the strong motivating potential of job and personal resources: on days with available job resources, employees are self-confident, more engaged and perform better than on days without these resources.

The motivational process

Hypothesis 1 was not confirmed for *all* possible relationships between job resources, personal resources, and work engagement. However, the resulting pattern offers substantial support suggesting that job resources coincide with self-esteem, optimism, and self-efficacy, and may contribute to day-levels of work engagement. Additionally, there was evidence for a lagged effect of previous days' coaching on next days' work engagement through next days' optimism. These findings are in line with job characteristics models (Bakker & Demerouti, 2007; Hackman & Oldham, 1980) that assign an important role to job resources as factors that spark a motivational process that leads to work engagement. The present study expands this process theoretically by incorporating personal resources. In line with Hobfoll (2002), who suggests that resources act in caravans, our study indicates that existing resources bring more resources. For example, when supervisors communicate to their subordinates how well they perform on their assigned tasks, and suggest better ways for doing so, employees' optimism is boosted, and consequently they are more engaged. Although there is cross-sectional and sparse longitudinal support for this process (Bakker & Demerouti, 2007; Xanthopoulou *et al.*, 2007), the current study is the first to support its *dynamic* character, where job resources are time-varying correlates of daily personal resources and work engagement.

Are engaged employees more productive?

The present study supports existing theories (Cropanzano & Wright, 2001) assuming that happiness – or any form of psychological well-being like work engagement – engenders success. Our results are particularly important because they indicate that engagement levels of individual employees may affect *team* performance outcomes (Mullen & Copper, 1994). This is in line with Van Knippenberg (2000) who indicated

that if employees strongly identify with the group goal, they are willing to exert effort that enhances group performance, even while other group members take it easy.

Our findings particularly emphasize the role of daily coaching in determining performance outcomes through work engagement (Gagné & Deci, 2005), as well as next days' financial returns. However, day-level autonomy was a negative predictor of financial returns. This finding is meaningful considering that financial returns refer to the *shift* that the employees were working in. Shifts with low financial returns may imply that employees experienced more autonomy because they had to serve fewer customers. Time-varying predictors (i.e. coaching and engagement) explained 8% of variance in financial returns (Table 3). Based on the average financial returns over the days that the study took place, this percentage is translated in 50 € per employee per shift. This is substantial considering that the gross income of these employees per eight hours of work is 26 €.

Personal resources did not play a role in explaining financial returns. Gist and Mitchell (1992) noted that personal resources may be weakly related with performance, when performance outcomes are strongly determined by uncontrollable factors. Our study showed that financial performance is mainly influenced by situational factors (i.e. branch and shift) that the variance left is explained by factors that bear action (e.g. work engagement), rather than by beliefs (e.g. personal resources). When employees are immersed in their work and focused on their customers (i.e. engagement), they have a higher probability to bring in profit, than when they just believe that they are capable to serve their customers adequately (i.e. self-efficacy). Analyses resulted in significant relationships even after controlling for third variables, indicating the robustness of our findings. The pattern of the effect of branch on financial returns suggested that branches that were located in busier areas generally showed more profit. Similarly, day (nine to five) shifts showed higher profits than evening (five to one) shifts. This is in line with the eating habits of Greeks, who usually have a main meal between three and five in the afternoon.

General or daily levels?

Our findings signify the importance of taking time-varying correlates into account, when examining momentary performance (Beal *et al.*, 2005). In line with previous diary studies (Sonnentag, 2003), our analyses also showed that employees, who are generally engaged in their work, are more likely to be engaged also in their daily work tasks. Although analyses regarding Hypothesis 2 revealed a significant negative relationship between general levels of work engagement and day-level financial returns, this finding should be considered as an artefact, since general work engagement acted as a suppressor variable. Taken together, state correlates play a crucial role when examining momentary outcomes like work engagement or financial returns, and therefore should be tested hand in hand with general level variables. As George (1991) pointed out, general characteristics are important for understanding the aetiology of state levels, but less important in initiating dynamic processes that determine psychological and performance outcomes.

Limitations

A limitation of this study is that it focused on a homogeneous sample of employees. Therefore, we should be cautious with generalizing the results to the entire working population. Also, although our findings are consistent with the assumed model (Figure 1), results mainly concerning resources and work engagement are correlational

in nature (Stone-Romero & Rosopa, 2008). Thus, inferences regarding causality and the sequence of effects are quite limited. Future studies should examine reversed and reciprocal effects of, for instance, performance on resources and engagement. Next, some of the scales that measured states showed relatively low inter-item correlations during some of the days, which may be attributed to the small number of items that could be included in the diary. Nevertheless, the items of each day-level scale were more highly correlated with each other than with items of other scales, while, the day-level personal resources scales correlated positively with the respective full (general-level) scales. Finally, a limitation of the study is that we did not control for the 'good-day effect' (Sheldon, Ryan, & Reis, 1996). Although controlling for participants' general work engagement and general personal resources partly counteracts the concern that our findings may be attributed to the daily positive affective states of employees, this possibility is not completely ruled out.

Implications and future research

This study suggests that interventions focused on the empowerment of job resources and particularly coaching may create engaged and productive workforces. For example, supervisors should set clear performance goals that employees need to achieve; they should inform about and provide to employees all means that are necessary for achieving their tasks, and they should promote a performance orientation within the team (Stajkovic & Luthans, 1998). Importantly, redesign strategies that aim at the enrichment of the work environment may also activate employees' personal resources. Therefore, it is not only important to learn new skills to employees, but also to enhance their beliefs as to what they are able to do with the skills they already possess (Stajkovic & Luthans, 1998). Most importantly, our study implies that job and personal resources may fluctuate from day-to-day, and such fluctuations determine how engaged employees are in their daily tasks. Therefore, organizations should promote strategies that aim at daily re-enforcements of resources, and not rely only on general redesigns. In other words, enhancing techniques should be applied in time proximity to the task that needs to be performed in order to be successful.

To conclude, the present study examined how time-varying job and personal resources activate employees' state of work engagement and consequently have an impact on an organization's financial performance. It is suggested that by integrating different theoretical and methodological approaches researchers will be better able to unfold and understand dynamic and multifaceted phenomena, such as work engagement and performance. Such insight may be then transformed into job redesign strategies that aim at creating engaged and productive workforces.

Acknowledgements

References

Bakker, A. B. (2009). Building engagement in the workplace. In C. L. Cooper & R. J. Burke (Eds.), *The peak performing organization* (pp. 50–72). 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., & Verbeke, W. (2004). Using the job demands–resources model to predict burnout and performance. *Human Resource Management*, *43*, 83–104.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, *44*, 1175–1184.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182.

Beal, D. J., Weiss, H. M., Barros, E., & MacDermid, S. M. (2005). An episodic process model of affective influences on performance. *Journal of Applied Psychology*, *90*, 1054–1068.

Cropanzano, R., & Wright, T. A. (2001). When a 'happy' worker is really a 'productive' worker: A review and further refinement of the happy-productive worker thesis. *Consulting Psychology Journal: Practice and Research*, *53*, 182–199.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.

Demerouti, E., Kattenbach, R., & Nachreiner, F. (2003). Flexible working times: Consequences on employees' burnout, work-nonwork conflict, and performance. *Shiftwork International Newsletter*, *20*, 61.

Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, *26*, 331–362.

George, J. M. (1991). State or trait: Effects of positive mood on prosocial behaviors at work. *Journal of Applied Psychology*, *76*, 299–307.

Gist, M. E., & Mitchell, T. R. (1992). Self-efficacy: A theoretical analysis of its determinants and malleability. *Academy of Management Review*, *17*, 183–211.

Graen, G. B., & Uhl-Bien, M. (1991). The transformation of professionals into self-managing and partially self-designing contributors: Toward a theory of leadership making. *Journal of Management Systems*, *3*, 25–39.

Hackman, J. R., & Oldham, G. R. (1980). *Work redesign*. Reading, MA: Addison-Wesley.

Hobfoll, S. E. (2002). Social and psychological resources and adaptation. *Review of General Psychology*, *6*, 307–324.

Hox, J. (2002). *Multilevel analysis: Techniques and applications*. London: Erlbaum.

Ilies, R., Schwind, K. M., & Heller, D. (2007). Employee well-being: A multilevel model linking work and nonwork domains. *European Journal of Work and Organizational Psychology*, *16*, 326–341.

Ilies, R., Wagner, D. T., & Morgeson, F. P. (2007). Explaining affective linkages in teams: Individual differences in susceptibility to contagion and individualism-collectivism. *Journal of Applied Psychology*, *92*, 1140–1148.

Llorens, S., Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2007). Does a positive gain spiral of resources, efficacy beliefs and engagement exists? *Computers in Human Behavior*, *23*, 825–841.

Luthans, F., Avey, J. B., Avolio, B. J., Norman, S. M., & Combs, G. M. (2006). Psychological capital development: Toward a micro-intervention. *Journal of Organizational Behavior*, *27*, 387–393.

Luthans, F., & Youssef, C. M. (2007). Emerging positive organizational behavior. *Journal of Management*, *33*, 321–349.

Mullen, B., & Copper, C. (1994). The relation between group cohesiveness and performance: An integration. *Psychological Bulletin*, *115*, 210–227.

Pierce, J. L., Gardner, D. G., Cummings, L. L., & Dunham, R. B. (1989). Organizational-based self-esteem: Construct definition, measurement, and validation. *Academy of Management Journal*, *32*, 622–648.

Rashbash, J., Browne, W., Healy, M., Cameron, B., & Charlton, C. (2000). *MLwiN (Version 1.10.006): Interactive software for multilevel analysis*. London: Multilevel Models Project, Institute of Education, University of London.

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., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement*, *66*, 701–716.

Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A re-evaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, *67*, 1063–1078.

Schwarzer, R., & Jerusalem, M. (1995). Generalized self-efficacy scale. In J. Weinman, S. Wright, & M. Johnston (Eds.), *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35–37). Windsor, UK: NFER-NELSON.

Sheldon, K. M., Ryan, R., & Reis, H. T. (1996). What makes for a good day? Competence and autonomy in the day and in the person. *Personality and Social Psychology Bulletin*, *22*, 1270–1279.

Sonnentag, S. (2003). Recovery, work engagement, and proactive behavior: A new look at the interface between non-work and work. *Journal of Applied Psychology*, *88*, 518–528.

Stajkovic, A. D., & Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis. *Psychological Bulletin*, *124*, 240–261.

Stone-Romero, E. F., & Rosopa, P. J. (2008). The relative validity of inferences about mediation as a function of research design characteristics. *Organizational Research Methods*, *11*, 326–352.

Totterdell, P. (2000). Catching moods and hitting runs: Mood linkage and subjective performance in professional sport teams. *Journal of Applied Psychology*, *85*, 848–859.

Van Knippenberg, D. (2000). Work motivation and performance: A social identity perspective. *Applied psychology: An International Review*, *49*, 357–371.

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.