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Facilitating interns' performance: The role of job resources, basic need satisfaction and work engagement

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# Facilitating interns' performance

## The role of job resources, basic need satisfaction and work engagement

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382

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### Abstract

**Purpose** – The purpose of this paper is to report a study in which central propositions from the job demands-resources (JD-R) theory and self-determination theory (SDT) are used to examine the antecedents of performance during practical internships. The central hypothesis of this study was that job resources foster performance through basic need satisfaction and work engagement (sequential mediation).

**Design/methodology/approach** – An empirical multi-source study among Dutch interns and their supervisors in various occupational sectors. The interns reported their level of resources, basic needs satisfaction and work engagement, whereas supervisors rated interns' task performance ( $n = 1,188$  unique supervisor–intern dyads).

**Findings** – This study integrates insights of the JD-R theory – by examining the relations between job resources, work engagement and performance – with a central premise of the SDT – which maintains that basic need satisfaction is the fundamental process through which employees' optimal functioning can be understood. The outcomes of the path analyses revealed that satisfaction of needs indeed accounted for the relationship between job resources and work engagement as supposed in the SDT (Deci and Ryan, 2000). Further, the sequential mediated relation between job resources and performance through basic need satisfaction and work engagement corroborates the JD-R theory (Bakker and Demerouti, 2014).

**Originality/value** – As far as the authors know, this is the first study that examined the sequential mediation from job resources to performance via basic need satisfaction and work engagement, among a large sample of intern–supervisor dyads, including the objective performance rating of their (internship) supervisors.

**Keywords** JD-R theory, Job resources, Self-determination theory, Work engagement, Performance

**Paper type** Research paper

Scholars and professionals from all disciplines and sectors have positively endorsed the value of internships (D'abate *et al.*, 2009; Fall, 2006). Potentially, internships provide constructive and insightful experiences for the participating student interns and sponsoring organizations (Starr-Glass, 2006). Internships offer students the opportunity to apply their classroom knowledge and abilities to practice. This experience will prepare students for the labor market in which they eventually aim to participate. For organizations, interns may offer new insights, knowledge and perspectives, which help organizations to stay up to date to the most recent theoretical insights taught in schools. In addition, internships may offer organizations an opportunity to meet, select and hire new employees (Gault *et al.*, 2000; McManus and Feinstein, 2008). Unfortunately, research has shown that internships are not always equally fruitful because not all interns measure up with the expectations of the sponsoring organization (McCutcheon, 2008; Gizara and Forrest, 2004). From an HR and



management perspective, the selection of high-performing students may be the best way to influence successful internships. However, some research suggests that students' academic performance is not a reliable predictor of their internship performance (Felicen *et al.*, 2014). It is therefore interesting to examine conditions within organizations that facilitate interns' performance during the internship.

Since empirical evidence already indicates that interns and employees perform better when they are engaged in their job, organizations and researchers have become increasingly interested in the concept of work engagement (Bakker *et al.*, 2015; Christian *et al.*, 2011; Demerouti and Cropanzano, 2010; Salmela-Aro and Kunttu, 2010). Creating a resourceful and engaging work environment that facilitates performance during an internship may therefore be worthwhile for both students and organizations. A theory that can help us understand the antecedents and outcomes of work engagement is the job demands-resources (JD-R) theory. The JD-R theory postulates that job resources (for example feedback and opportunities for professional development) are the main drivers of work engagement (Bakker and Demerouti, 2007, 2014). Work engagement, in turn, is considered to be a key mediator variable between these job resources and organizational outcomes (Bakker *et al.*, 2011). This process, starting with job resources that lead to work engagement and subsequently performance, is referred to as a motivational process. A better understanding of the underlying mechanism of this motivational process, gives more insight in how organizations can promote their employees' engagement and its associated positive outcomes. A well-known theory that explains employee motivation and which may help to understand the underlying mechanisms of the motivational process (and the job resources–work engagement–performance relationship) is the self-determination theory (SDT; Deci and Ryan, 2000).

This empirical multiple-source study among 1,180 intern–supervisor dyads aims to contribute to the literature by extending our knowledge about how intern's work engagement and performance can be optimized. Whereas the interns reported their levels of job resources, basic need satisfaction and work engagement, their supervisors rated interns' performance. As far as we know, this is the first study that examined these relations among a large sample of intern–supervisor dyads, including the objective performance rating of their (internship) supervisors. Earlier studies only examined elements of the motivational process within the JD-R theory among employees and/or relied solely on self-report data (Silman, 2014; Van den Broeck *et al.*, 2008). Further, this study aims to contribute to both the JD-R and SDT literature by integrating a central premise of the SDT in the motivational process proposed by the JD-R theory. The outcomes of this study may support organizations and managers that aim to optimize interns' performance.

## Theoretical background

### *Self-determination and JD-R theory*

The SDT (Deci and Ryan, 1985) is a general motivational theory that can explain the mechanisms underlying employee motivation. According to the SDT, all human beings share basic and universal psychological needs, which are defined as “those nutrients that must be procured by a living entity to maintain its growth, integrity and health” (Deci and Ryan, 2000, p. 326). Basic need satisfaction is assumed to represent the motivational mechanism that energizes and directs employees' behavior and that promotes well-being and development. The SDT postulates that there are three basic psychological needs: the need for autonomy, the need for relatedness and the need for competence. Deci and Ryan (2000) defined the need for autonomy as individuals' desire to have ownership of their behavior and to have the opportunity to make personal choices. The need for relatedness refers to the human desire to have intimate and close relationships with others (Baumeister and Leary, 1995; Deci and Ryan, 2002).

The need for competence refers to an individuals' desire to feel capable and effective to bring about desired outcomes (Deci and Ryan, 2000).

In the context of work, need fulfillment can lead to positive outcomes for both individuals and organizations such as employee well-being (Ilardi *et al.*, 1993; Lynch *et al.*, 2005; Silman, 2014; Van Wingerden *et al.*, 2017) and performance (Baard *et al.*, 2004; Richer and Vallerand, 1995). In the context of education, there is empirical evidence showing that students' basic need satisfaction is related to both well-being and study achievements (Doménech Betoret and Gómez Artiga, 2011).

A more recently proposed theory that outlines how employees are motivated at work is the JD-R theory (Bakker and Demerouti, 2014). According to the JD-R theory, every job is characterized by a specific set of job demands and job resources. Job demands are the physical, social or organizational aspects of the job that ask for physical and/or cognitive effort, and are therefore associated with certain physiological and psychological costs. Job resources are those (physical, psychological, social or organizational) aspects of the job that support employees in achieving their work goals (Demerouti, Bakker, Nachreiner, and Schaufeli, 2001). Job resources may reduce the impact of job demands, and may also stimulate personal growth and development (Demerouti, Bakker, De Jonge, Janssen and Schaufeli, 2001). The JD-R theory proposes that work environments elicit two independent psychological processes – a health-impairment process and a motivational process. The health impairment process is characterized by high job demands that exhaust employees' resources and therefore lead to the loss of energy and subsequently to health problems. In contrast, the motivational process starts with job resources that encourage employees to meet their work-related goals (Boyd *et al.*, 2011). For interns, the motivational process may be the most relevant since their work is also a learning process which prepares them for future jobs. Since our central aim is to examine conditions that may facilitate interns' work engagement and performance, we will focus on the motivational process and, in line with this scope, on interns' job resources. Since our central aim is to examine conditions that may facilitate interns' work engagement and performance, we will focus on the motivational process and, in line with this scope, on interns' job resources. In line with the JD-R theory, previous studies have suggested that several job resources like task identity, autonomy, social support and transformational leadership lead to work engagement and consequently to higher performance (Bakker and Demerouti, 2014). In the present study, we argue that the SDT and JD-R theory can be integrated to explain how employees' motivation energizes and directs employees' behavior.

#### *Job resources and basic need satisfaction*

According to Ryan and Frederick (1997), job resources are intrinsic motivators, which can fulfill the basic human needs for autonomy, competence and relatedness. Or, as called in the SDT, job resources are the "nutriments" provided by the work environment that support activity and growth. For example, constructive feedback (job resource) fosters learning, which contributes to the fulfillment of job competence. The job resources decision latitude and social support may satisfy the need for autonomy and the need for relatedness. Because an internship offers a learning experience in the workplace, we propose that performance feedback and opportunities for professional development may be the most relevant job resources in this specific work context. During an internship, interns will try to bring their theoretical knowledge into practice. There are no specific handbooks or theories that can help them to deal with the situations they encounter in practice. Therefore, feedback may be an important and, sometimes, even the only source of information they have during their internship. In order to learn, it is essential to know where one stands and what improvements can be made. Through opportunities for professional development, interns can learn and apply new knowledge and skills that may improve their job-related

competence (Colbert *et al.*, 2008). Feedback and opportunities for professional development can contribute to employees' innate need for competence (Mouratidis *et al.*, 2008). In addition, D'abate *et al.* (2009) showed the practical relevance of the job resources feedback and opportunities for professional development for interns.

Empirical studies among employees working in several sectors have shown that task autonomy, skill utilization, social support and positive feedback are positively associated with basic need satisfaction (Van den Broeck *et al.*, 2010; Van den Broeck *et al.*, 2008). In a similar vein, we propose that feedback and opportunities for professional development will fulfill interns' basic needs (i.e. their needs for autonomy, competence and relatedness):

- H1.* Interns' job resources (feedback, opportunities for development) are positively related to their basic need satisfaction.

#### *Basic need satisfaction and work engagement*

According to the JD-R theory, job resources are the main drivers of work engagement. Work engagement is defined as an active, positive work-related state that is characterized by vigor, dedication and absorption (Schaufeli and Bakker, 2004). Vigor is characterized by high levels of energy and mental resilience while working, the willingness to invest effort in one's work and persistence even in the face of difficulties. Dedication refers to being strongly involved in one's work and experiencing a sense of significance, enthusiasm, inspiration, pride and challenge. Finally, absorption denotes being happily engrossed in one's work, so that time passes quickly (Schaufeli and Bakker, 2010).

The SDT explains employees' work engagement from a slightly different perspective. According to the SDT (Deci and Ryan, 2002), employees become engaged at work through the satisfaction of their basic psychological needs. The satisfaction of the need for autonomy, competence and relatedness positively affects employee engagement because they provide energy and direction for people to engage in their work activities (Deci and Ryan, 2011).

Several studies have shown that basic need satisfaction is positively associated with work engagement among different occupational groups; for example, among entrepreneurs, among professional workers (lawyers, accountants), white-collar workers and blue-collar workers (Vansteenkiste *et al.*, 2007), among police officers (Gillet *et al.*, 2013) and among academic staff (Silman, 2014). Furthermore, Opdenakker *et al.* also found positive relations between students' need satisfaction and their engagement (Opdenakker and Minnaert, 2011; Stroet *et al.*, 2013). Since job resources promote personal growth (Bakker and Demerouti, 2014) and need satisfaction is a necessary condition for individuals to thrive (cf. Deci and Ryan, 2002), we argue that the stimulating influence of interns' job resources on work engagement can be explained by need satisfaction (see also Van den Broeck *et al.*, 2008). In other words, we hypothesize:

- H2.* Basic needs satisfaction mediates the relationship between job resources (feedback, opportunities for development) and work engagement.

#### *Work engagement and job performance*

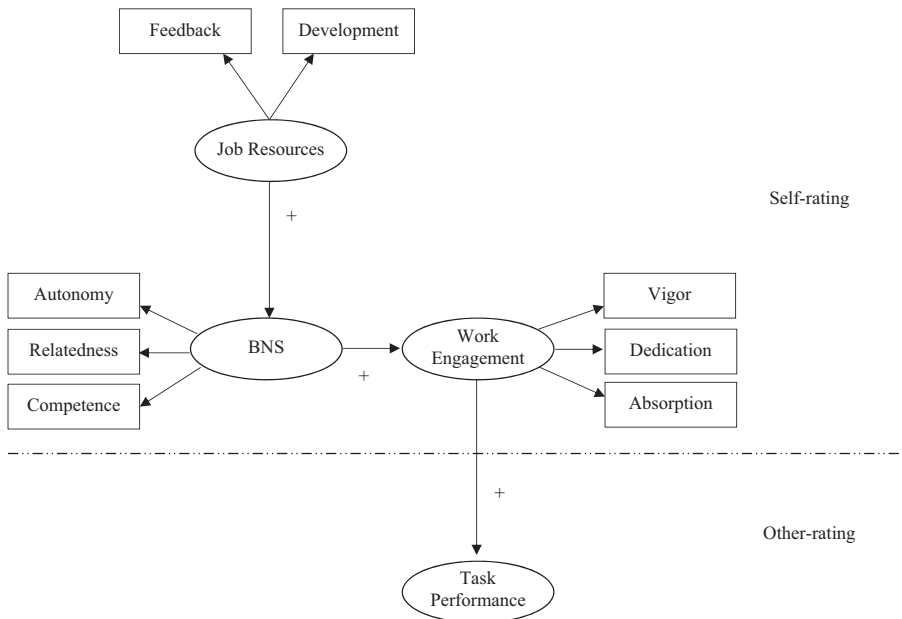
The JD-R theory not only proposes a positive relationship between job resources and work engagement but also between work engagement and performance (Bakker and Demerouti, 2014). While there are numerous definitions of job performance, in this study, we are specifically interested in task performance. Task performance can be defined as the proficiency (i.e. competency) with which employees' perform their central job tasks (Koopmans *et al.*, 2014). Other labels used for task performance are job-specific task proficiency, or in-role performance. Task performance is also known as the officially

required outcomes and behaviors of the job. Interns' task performance therefore directly serves the goals of the organization (Motowidlo and Van Scotter, 1994).

There are several reasons why engaged workers may perform better than their non-engaged colleagues (Demerouti and Cropanzano, 2010); engaged employees often experience positive emotions, are more open to new opportunities at work, are helpful to their colleagues and are more confident and optimistic (Cropanzano and Wright, 2001). Over the years, several studies have revealed a positive relation between engagement and performance among both students and employees (Bakker *et al.*, 2015; Demerouti and Cropanzano, 2010; Goodman *et al.*, 2011; Xanthopoulou *et al.*, 2009). Specifically, Bakker and Bal (2010) showed that compared to their non-engaged co-workers, engaged starting teachers received higher ratings on in-role performance from their supervisors. Like the starting teachers in the study by Bakker and Bal (2010), the participants in this study also have limited work experience.

Following the JD-R theory (2014) and SDT (Deci and Ryan, 2002), we propose that need satisfaction can explain the association between job resources and work engagement and accordingly performance (see Figure 1). This idea is consistent with Bakker *et al.* (2011), who considered engagement as a key mediating variable, which explains how organizational outcomes are influenced by contextual variables such as job resources. We propose that not only job resources, but also basic need satisfaction will influence organizational outcomes through work engagement, since they are both key elements in motivational processes. Interns who experience a sufficient amount of job resources like opportunities for professional development and feedback may be more likely to experience general feelings of psychological freedom (autonomy), interpersonal connectedness (belongingness or relatedness) and effectiveness (competence) which, in turn, may explain why they feel engaged in their job and subsequently perform well. Therefore, we hypothesize:

*H3.* Job resources have a positive relationship with in-role performance through, subsequently, basic need satisfaction and work engagement (sequential mediation).



**Figure 1.**  
The hypothesized model

## Method

### *Participants and procedure*

The study was announced on a website that is well known for matching organizations offering and students searching for internships in the Netherlands. Data for the study were collected using online questionnaires. Via a link on the website, participants were directed to the introduction of the study and invited to participate in the survey. Those individuals who agreed to participate in the study were instructed to ask their internship supervisor to participate with them. Once the dyads were known, they received a unique identification number that they needed to enter in the online questionnaire. In this way, we could match the unique supervisor and intern dyads. After signing up to participate, each dyad (a student and their internship supervisor) received the link to the questionnaire via their e-mail address. The students filled out the questionnaire concerning their job resources, basic need satisfaction and work engagement (self-report). The students' internship supervisors filled out the questionnaire concerning their students' job performance during the internship (other-rating). The survey was online available for four weeks. After four weeks, 1,188 dyads of students and their internship supervisors had responded. The sample consisted of 674 female (57 percent) and 514 male students (43 percent), and 618 female (52 percent) and 570 male (48 percent) internship supervisors. The mean age of the students was 21.8 years ( $SD = 1.29$ ), and the mean age of the internship supervisors was 42 years ( $SD = 10.41$ ). All participants had successfully finished higher vocational education. The respondents participated voluntarily and did not receive any compensation for their contribution. With respect to the sector, 6.6 percent of the participants ( $n = 78$ ) worked in the educational sector, 5 percent ( $n = 59$ ) in the socio-cultural sector, 31.6 percent ( $n = 376$ ) in the service sector, 12.4 percent ( $n = 147$ ) in healthcare, 18.5 percent of the participants ( $n = 220$ ) worked in technology and IT, 4 percent ( $n = 48$ ) in automotive and 21.9 percent of the participants ( $n = 260$ ) worked in industry.

### *Measures*

*Job resources.* Performance feedback was assessed with a three-item scale developed by Bakker *et al.* (2003). A sample item is: "I receive sufficient information about my work objectives". Participants had to score the items on a five-point scale, ranging from 1 (never) to 5 (always). Opportunities for professional development were assessed with three items from Bakker *et al.*'s (2003) scale. A sample item is "My work offers me the possibility to learn new things." All items were scored on a five-point scale where the scale ranged from 1 (totally disagree) to 5 (totally agree).

Work-related basic need satisfaction (W-BNS) was measured with the 18-item W-BNS scale (Van den Broeck *et al.*, 2010). The instrument consists of three subscales representative to the need for autonomy, relatedness and competence respectively. Here is an example for each subscale: "I feel free to do my job the way I think it could best be done" (autonomy), "At work I feel part of a group" (relatedness) and "I feel competent in my job" (competency). Participants could respond to these items using a five-point frequency scale, ranging from 1 (totally disagree) to 5 (totally agree).

Work engagement was measured with the nine-item Utrecht work engagement scale (Schaufeli *et al.*, 2006). The instrument consists of three subscales to assess vigor, dedication and absorption. Here is an example for each subscale: "At work, I am bursting with energy" (vigor), "I am enthusiastic about my job" (dedication) and "I am immersed in my work" (absorption). Participants could respond to these items using a seven-point frequency scale, ranging from 0 (never) to 6 (always).

Task performance was measured using the in-role performance scale by Williams and Anderson (1991), which consists of seven items. A sample item is: "Adequately completes assigned duties." Supervisors had to score the items on a five-point scale ranging from 1 (totally disagree) to 5 (totally agree).



*Strategy of analysis*

The hypothesized model was tested with structural equation modeling (SEM) analyses using the AMOS software package (Arbuckle, 2005). The traditional  $\chi^2$ , the goodness-of-fit index (GFI) and the root mean square error of approximation (RMSEA) were tested in order to assess the fit of the measurement model and the alternative models to the data. The incremental fit index (IFI) and the comparative fit index (CFI) were also assessed as recommended by Marsh *et al.* (1996). The values of GFI, IFI, CFI > 0.90 and RMSEA < 0.08 indicate a reasonable fit of the model to the data (Browne and Cudeck, 1993; Hoyle, 1995). The using of parcels in testing SEM result in more reliable measurement models (Little *et al.*, 2002). We therefore conducted our SEM analysis on a partial disaggregation model (Bagozzi and Edwards, 1998) by creating parcels of items (Hall *et al.*, 1999). We created parcels of items for the variable "Task performance," which was included in the model as latent factor with two indicators. "Job Resources," "Basic Need Satisfaction" and "Work engagement" were included as latent factors with their abovementioned subscales as the indicators.

**Results***Descriptive statistics*

Means, standard deviations, correlations among the variables, as well as Cronbach's  $\alpha$  values of the scales are presented in Table I. In order to test the construct validity of the model variables (job resources, basic need satisfaction, work engagement and performance), we tested a measurement model with the parcels tapping these latent variables. This measurement model showed an adequate fit to the data:  $\chi^2$  (29) = 130.01, GFI = 0.964, IFI = 0.982, CFI = 0.982, RMSEA = 0.073. All parcels had significant loadings on the intended factors (range  $\lambda$  = 0.75–0.99;  $p$  < 0.001). We could thus empirically distinguish between the various models variables.

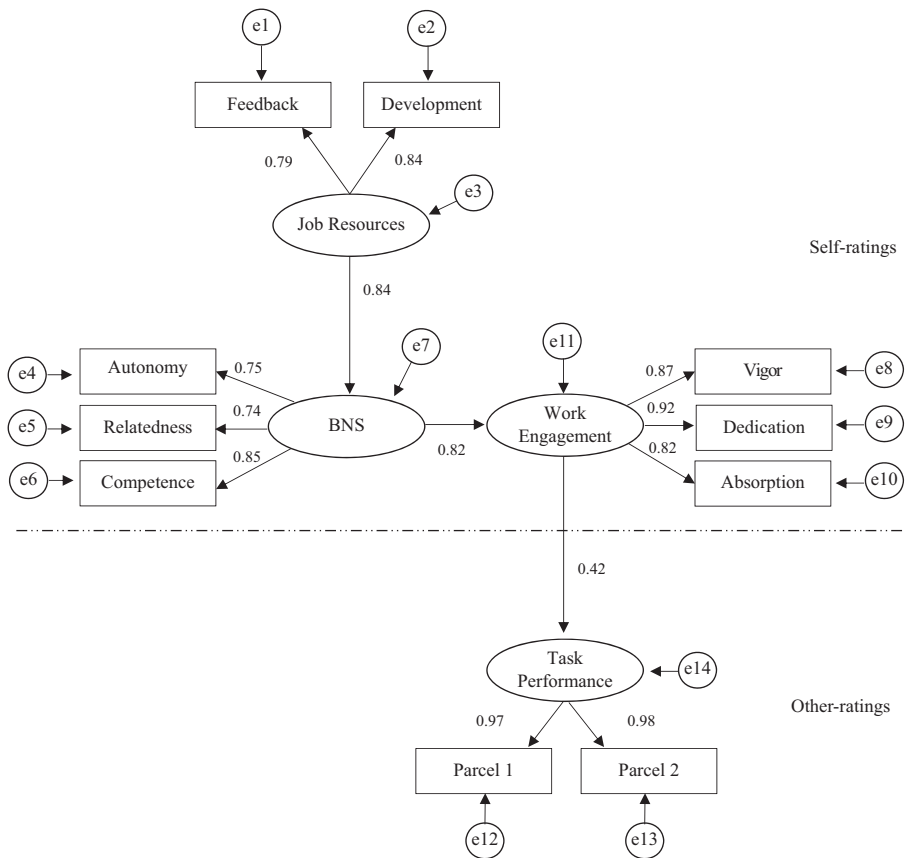
*Test of the hypothesized model.* The results of the SEM-analyses indicated that the hypothesized model (see Figure 1) fits well to the data:  $\chi^2$  (32) = 305.22, GFI = 0.944, IFI = 0.970, CFI = 0.975, RMSEA = 0.080. In line with *H1*, results showed that job resources were positively related to basic need satisfaction ( $\beta$  = 0.84,  $p$  < 0.001; see also Figure 2). Basic need satisfaction, in turn, was a significant predictor of work engagement ( $\beta$  = 0.82,  $p$  < 0.001). Finally, as expected, work engagement was significantly related to performance ( $\beta$  = 0.42,  $p$  < 0.001). Additionally, we tested one alternative model, namely, the Direct effects model. The Direct effects model includes only the direct relationships of job resources, basic need satisfaction and work engagement with performance. This alternative model showed a bad fit to the data:  $\chi^2$  (30) = 977.74, GFI = 0.770, IFI = 0.914, CFI = 0.914, RMSEA = 0.163. The proposed model fit significantly better to the data than the Direct effects model:  $\Delta\chi^2$  (2) = 672.52,  $p$  < 0.001. In addition, we tested the Partial Mediation Model. This alternative model showed a poor fit to the data by revealing an RMSEA above 0.8 (Browne and Cudeck, 1993):  $\chi^2$  (31) = 298.17, GFI = 0.935, IFI = 0.958, CFI = 0.968, RMSEA = 0.09.

According to *H1*, interns' job resources (feedback, development) are positively related to their basic need satisfaction. *H2* proposes that basic need satisfaction mediates the relation between job resources and work engagement. In addition, *H3* proposes that job resources have an impact on performance through basic need satisfaction and work engagement. We examined these indirect effects using the bootstrap analysis option in AMOS (MacKinnon, 2008). Specifically, we tested three indirect effects. First, we tested the indirect effect of job resources on work engagement through basic need satisfaction. The results of the bootstrap analysis showed that this indirect effect of job resources on work engagement through basic need satisfaction was significant (estimate = 0.706,  $p$  < 0.001). The bias-corrected confidence interval (B-CCI) ranged from 0.655 to 0.753. Second, we tested the indirect effect of basic need satisfaction on performance through work engagement.

	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Age	21.88	1.29											
2. Gender	1.64	0.48	0.05										
3. Performance feedback	3.51	0.86	0.03	0.07	(0.85)								
4. Opportunities for professional development	3.73	0.83	0.04	0.07	0.66**	(0.87)							
5. Basic need satisfaction – autonomy	4.86	0.87	0.02	0.08	0.48**	0.48**	(0.74)						
6. Basic need satisfaction – competence	4.84	0.94	0.06	0.00	0.55**	0.60**	0.67**	(0.74)					
7. Basic need satisfaction – relatedness	4.76	0.89	0.04	0.05	0.48**	0.49**	0.62**	0.62**	(0.81)				
8. Work engagement – vigor	4.29	1.15	0.03	0.02	0.54**	0.54**	0.46**	0.61**	0.52**	(0.90)			
9. Work engagement – dedication	4.91	1.30	0.02	0.05	0.61**	0.66**	0.54**	0.66**	0.55**	0.78**	(0.92)		
10. Work engagement – absorption	4.54	1.20	0.02	0.04	0.51**	0.56**	0.42**	0.54**	0.48**	0.76**	0.76**	(0.87)	
11. Task performance	3.52	0.89	0.07	0.04	0.32**	0.33**	0.23**	0.33**	0.22**	0.40**	0.37**	0.39**	(0.99)

Notes: \*\* $p < 0.01$

**Table I.**  
Means, standard  
deviations,  
correlations and  
Cronbach's  $\alpha$  of the  
study variables



**Figure 2.**  
Standardized path  
coefficients of the  
final model

**Note:** All factor loadings and path coefficients are significant at the  $p < 0.001$  level

This indirect effect was also significant (estimate = 0.344,  $p < 0.001$ ,  $0.296 \leq B\text{-}CCI \leq 0.391$ ). The results of the third and final bootstrap analysis showed that the sequential mediation effect of job resources on performance through basic need satisfaction and work engagement was significant as well (estimate = 0.297,  $p < 0.001$ ,  $0.250 \leq B\text{-}CCI \leq 0.342$ ). Taken together, these findings offer support for our *H1*, *H2* and *H3*.

### Discussion

This study aimed to contribute to the literature on interns' performance by conducting an empirical multi-source study among 1,180 dyads (interns and their supervisors) in various occupational sectors. Whereas the interns reported their levels of job resources, basic need satisfaction and work engagement, their supervisors rated interns' performance. This study integrates insights of the JD-R theory – by examining the relations between job resources, work engagement and performance – with a central premise of the SDT – which maintains that basic need satisfaction is the fundamental process through which employees' optimal functioning can be understood. The results of this study confirmed the hypothesized (mediated) relations. The outcomes revealed that satisfaction of needs indeed accounted for the relationship between job resources and work engagement as supposed in the SDT

(Deci and Ryan, 2000). Further, the sequential mediated relation between job resources and performance through basic need satisfaction and work engagement corroborates the JD-R theory (Bakker and Demerouti, 2014). These findings help to shed light on the motivational process and underlying relations within the JD-R theory and explain how the SDT and the JD-R theory connect. The outcomes of this study offer insights in internships conditions that make interns thrive and therefore may support organizations that aim to optimize interns' performance. In the next section, we discuss the most important contributions of our study.

### *Theoretical contributions*

The present study makes three main theoretical contributions. First, this study contributes to the JD-R theory (Bakker and Demerouti, 2014) as it tests the proposed motivational process and helps to explain the relationship between job resources and work engagement. This study also goes beyond the JD-R theory by integrating central propositions of the SDT by suggesting that one mechanism, namely, basic need satisfaction (SDT), helps to explain the motivational process and the relationship between job resources, work engagement and performance (JD-R). The findings are in line with the SDT, which assumes that the satisfaction of one's basic needs stimulates optimal motivation and is positively associated with individuals' optimal functioning (Deci and Ryan, 2000). The outcomes suggest that employees who experience a sufficient amount of job resources are more likely to experience general feelings of psychological freedom (autonomy), interpersonal connectedness (belongingness or relatedness) and effectiveness (competence) which, in turn, explains why they feel engaged in their job. Thus, this study has shown how the motivational aspects of the SDT and JD-R theory are intertwined. In line with the proposed relations by Bakker, Albrecht and Leiter (2011), the outcomes of the study revealed empirical evidence that organizational outcomes like in-role performance are influenced by contextual variables such as job resources.

Second, as far as we know, this is the first study that tested a model based on the motivational process in the JD-R theory and SDT using supervisor ratings of performance. Earlier studies only examined elements of the motivational process within the JD-R theory relied on self-report data (Silman, 2014; Van den Broeck *et al.*, 2008, 2017). Third, both the sample size and the heterogeneity of the dyads of interns and their internship supervisors is unique in the field. The combination of self-ratings and other-ratings in this study helped to get a more objective view on interns' performance, which offers them insight if they are able to bring their knowledge and skills into practice. This large heterogeneous sample with interns who work in various sectors contributes to the generalizability of the findings.

### *Limitations and avenues for future research*

Besides providing evidence for the proposed model and hypotheses, some limitations of our study need to be mentioned. One limitation is the partly self-report nature of our data. Although employees' evaluation of the job and their well-being may be subjective, and self-reports may be the best method to capture these perceptions and feelings (Sousa-Poza and Sousa-Poza, 2000), future research may include other variables that can be measured by other-ratings from customers, colleagues or supervisors. Further, we cannot warrant causality in our study design since predictor, mediator and outcome variables are not temporally separated. Future research should try to replicate our study using a longitudinal design to examine the causal relationships between the variables.

Another limitation of this study is that all interns who participated were highly educated. This may limit the generalizability of our findings. Future studies should try to replicate our study among employees with different levels of education. However, as need satisfaction is seen as an inborn mechanism, we would expect need satisfaction to account for the effects of job resources regardless of employees' educational level, age and experience (cf. Deci and

Ryan, 2002). Future research should try to replicate our studies in different sectors and among employees of different occupational groups. Furthermore, we included only the most salient job resources for this sample, we note that the generalizability to other job resources needs to be demonstrated. In line with Mouratidis *et al.* (2008), we found that feedback and opportunities for professional development are significantly positively related to the need for competence. We note that other job resources could have revealed non-significant relations. We encourage future studies to replicate our finding and to include more and different job resources. Despite these limitations, the results of this study indicate that the concept of basic need satisfaction is useful for studying the motivational process as proposed in the JD-R theory.

### *Practical implications*

The observation that basic need satisfaction and work engagement play an explanatory role in the relationship between job resources and performance has practical implications. First, senior management should acknowledge the importance of facilitating job resources like opportunities for professional development and performance feedback. Second, this study showed that organizations that aim to optimize their performance should design jobs that yield supportive features for interns and employees to experience volitional functioning, competence and relatedness, which, in turn, facilitate work engagement. Third, if organizations wish to enhance interns' work engagement and subsequently their performance, they should focus on individual aspects and employees' needs. Where job design focuses on the organizational level, managers may focus on the individual needs of their employees, for example, by making this topic part of their annual performance management conversations. To gain insights in employees' individual needs, employee surveys in which employees report how they experience their job resources and basic need satisfaction may also be useful. The outcomes of these surveys could guide managers in choosing or developing interventions.

### **Conclusion**

The value of internships is widely recognized, as facilitating internships can be beneficial for both the short and the long term. For the short term, interns can directly contribute to daily business and the organizational goals. For the long term, internships can offer organizations an opportunity to meet, select and hire employees who outperform, which gives them the potential to strengthen their workforce. Organizations who see internships as a window of opportunities can exploit internships by facilitating interns with job resources that directly contribute to their basic need satisfaction, work engagement and, subsequently, their performance. By doing so, organizations take charge of optimal internship conditions that contribute to fruitful and beneficial internships.

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