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# A test of a job demands-resources intervention

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## Abstract

**Purpose** – The purpose of this paper is to examine the impact of a job demands-resources (JD-R) intervention on psychological capital (PsyCap), job crafting, work engagement, and performance.

**Design/methodology/approach** – This study used a quasi-experimental pre-test-post-test design with a control group. Healthcare professionals ( $n = 67$ ) were assigned to the JD-R intervention or a control group and filled out questionnaires before and after the intervention. To test the hypotheses, multivariate analyses of covariance were conducted.

**Findings** – Results showed that participants' PsyCap, job crafting, work engagement, and self-ratings of job performance significantly increased after the JD-R intervention.

**Research limitations/implications** – Only healthcare professionals participated in the intervention study, which restricts the generalizability of the findings.

**Practical implications** – The results illustrate that organizations can foster work engagement and improve performance by offering a JD-R intervention aimed at increasing PsyCap and job crafting at work. Organizations should acknowledge the importance of facilitating and stimulating a resourceful and challenging work environment.

**Originality/value** – This is the first study that examined a JD-R intervention. The results contribute to JD-R theory by offering a first causal test. For the first time, a significant increase of job crafting behaviors after an intervention was found.

**Keywords** Job performance, Work engagement, JD-R model, Job crafting, Organizational interventions, PsyCap

**Paper type** Research paper

Healthcare organizations in Western society are facing challenges in the realms of quality, rising costs, technological advances, demographic changes, and heightened public expectations (Randall and Williams, 2006). The public expects that healthcare organizations provide high-quality and affordable care by skilled and motivated professionals. Healthcare professionals have a direct impact on the quality of healthcare because they are in direct contact with clients. Being directly in contact with clients can be very satisfying but also emotionally demanding (Gaillard, 2006). Therefore, healthcare professionals need an adequate amount of resources to reach their work-related goals and offer high-quality care (French *et al.*, 2007).

Research with the job demands-resources (JD-R) theory (Demerouti and Bakker, 2014) has shown that having an adequate amount of resources can lead to various positive work outcomes like work engagement and performance. Work engagement in healthcare is positively related to employee well-being (Laschinger and Finegan, 2005), client satisfaction (Ram *et al.*, 2011), and quality of care (Lowe, 2012). Because of these findings, healthcare organizations are interested in what they can do to foster employee work engagement and improve performance.

Work engagement is defined as a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption (Schaufeli *et al.*, 2002). According to JD-R theory (Bakker and Demerouti, 2014), the most important



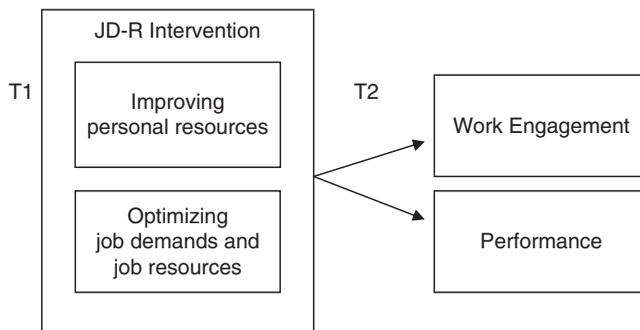
predictors of work engagement are job and personal resources. This is particularly true in situations where job demands are challenging instead of hindering. JD-R theory provides a clear description of the way demands, resources, psychological states, and outcomes are associated. JD-R theory suggests that work engagement can be fostered through interventions by targeting at the most important job demands, as well as job and personal resources (Bakker and Demerouti, 2014). Meyers *et al.* (2013) point out that positive psychological interventions in organizations can be a promising tool for enhancing employee well-being and performance. Although the research evidence for JD-R theory is accumulating, no studies have investigated an intervention aimed at adapting both types of resources (job and personal resources). Moreover, as far as we know, no studies in the healthcare domain have attempted to foster work engagement or improve job performance by using a JD-R intervention. Therefore, the central aim of the present study is to assess the impact of a JD-R intervention – aimed at improving personal resources and optimizing job resources and challenging job demands – on work engagement and performance. Figure 1 illustrates the central aim of this study.

This study contributes to the literature on interventions by using a quasi-experimental pre-test, post-test control-group design in the field of healthcare. The practical aspect of this intervention is especially relevant given that healthcare is characterized by a high workload and high complexity of work (Bakker and Sanz-Vergel, 2013). Additionally, the study contributes to JD-R theory by offering a first causal test.

## Theoretical background

### *JD-R theory*

According to the JD-R theory (Bakker and Demerouti, 2014), work characteristics can be classified into job demands and job resources. Job demands refer to physical, social, or organizational aspects of the job that require physical and/or cognitive effort and are therefore associated with certain physiological and psychological costs. Work pressure, dealing with demanding clients, or encountering situations that are emotionally demanding are examples of job demands. Job resources refer to those physical, psychological, social, or organizational aspects of the job that are functional in achieving work goals – resources can reduce job demands and the associated costs. Job resources also stimulate personal growth and development. Examples of job resources are feedback from clients, social support from co-workers, and supervisory coaching.



**Figure 1.**  
Research model

JD-R theory proposes that work environments elicit two independent psychological processes – a health impairment process and a motivational process. The health impairment process starts with consistently high job demands that may exhaust employees' energetic resources and lead to fatigue and health problems. Specific job demands like work pressure and emotional demands have repeatedly been found to predict exhaustion among various occupational groups (Hakanen *et al.*, 2006; Demerouti *et al.*, 2004). In contrast, the motivational process starts with job resources that encourage employees to meet their work-related goals (Boyd *et al.*, 2011). Previous studies have suggested that several job resources like colleague support, performance feedback, and supervisory coaching lead to work engagement and consequently to higher performance (Bakker, 2011). Research has shown that JD-R theory can be applied to all work environments (Bakker *et al.*, 2014).

In addition, JD-R theory postulates that job resources gain their motivational potential when employees are confronted with highly challenging job demands (Bakker, 2011). For example, Bakker and Sanz-Vergel (2013) found that home healthcare professionals perceive emotionally demanding interactions with their patients as challenges, and therefore these demands – particularly when combined with sufficient personal resources – foster work engagement. Further, Xanthopoulou *et al.* (2009) have shown that job and personal resources are mutually related and that personal resources can be independent predictors of work engagement. Employees who score high on personal resources such as self-efficacy and optimism are well equipped to mobilize their job resources and are generally more engaged in their work. Thus, JD-R theory proposes that personal and job resources strengthen each other and both contribute to work engagement and performance.

#### *Influencing personal resources*

Personal resources have been defined as aspects of the self that are commonly associated with resiliency and individuals' sense of ability to control and impact upon their environment successfully (Hobfoll *et al.*, 2003). Examples of personal resources are self-efficacy, personal effectiveness, optimism, hope, resilience, and self-esteem. Four personal resources that are proven to be malleable and can be developed through interventions are self-efficacy, optimism, hope, and resilience (Luthans *et al.*, 2006). These personal resources are also known as psychological capital (PsyCap). PsyCap has been defined as "an individual's positive psychological state of development characterized by: (1) having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) about succeeding now and in the future; (3) persevering toward goals, and when necessary, redirecting paths to goals (hope) in order to succeed; and (4) when faced with problems and adversity, sustaining and bouncing back and even beyond (resilience) to achieve success" (Luthans *et al.*, 2006).

The PsyCap construct has been recognized as crucial for an individual's work-related well-being (Luthans and Youssef, 2007), as it helps people achieve their goals and stimulates personal growth and development (Xanthopoulou *et al.*, 2009). According to Hobfoll (1989), personal resources like the elements of PsyCap do not exist in isolation because people try to accumulate their resources. The accumulation of resources will result in positive personal outcomes like engagement (Gorgievsky and Hobfoll, 2008). Recent studies have provided evidence that PsyCap is positively related to work engagement (Gruman and Saks, 2011) and performance (Peterson *et al.*, 2011).

The inclusion of personal resources in JD-R theory has been recognized as an important extension of the original framework (Bakker *et al.*, 2014). Besides the individual relationships between PsyCap and work engagement and PsyCap and performance, the JD-R model shows a mediated relationship between PsyCap and performance, via work engagement as illustrated in Figure 2.

Given these positive relationships, it is important for both individuals and organizations that employees have an adequate amount of personal resources. Several studies have shown that personal resources can successfully be increased through interventions (Luthans *et al.*, 2006; Demerouti *et al.*, 2011). In this way, employees may acquire new skills, knowledge, and problem-solving abilities (Bakker and Demerouti, 2014) which may facilitate personal resources like PsyCap. Interventions can also primarily aim to foster personal resources, which was a central aim of the JD-R intervention used in this study. Therefore we hypothesize:

- H1. Participants' level of PsyCap significantly increases after the JD-R intervention (T2) both compared to their level prior to the intervention (T1) and compared to a control group.

### Job crafting

Employees may adapt their job demands and job resources through job crafting behavior. According to Wrzesniewski and Dutton (2001), job crafting focusses on the process by which employees change elements of their jobs and relationships with others to redefine the meaning of their work and the social environment at work. Tims *et al.* (2012) offer a broader definition of job crafting by positioning job crafting in the JD-R model. According to Tims *et al.* (2012) job crafting entails the changes individuals make in their level of job demands or job resources, which directs attention to the proactive, bottom-up ways in which employees alter their tasks and the boundaries of their jobs. Through job crafting, employees can improve the fit between their personal needs, abilities and passions about the job.

According to Tims *et al.* (2012), every job consists of job demands and job resources that employees may craft by increasing social job resources, increasing structural job resources, increasing challenging job demands, or decreasing hindering job demands. Examples of these job crafting behaviors are: asking for feedback and coaching (social job resources), increasing autonomy and creating opportunities to develop oneself at work (structural job resources), starting new projects (challenging job demands), and reducing workload (hindering job demands). Through job crafting, employees may be able to increase their work engagement (Bakker *et al.*, 2013) and improve their performance (Dorenbosch *et al.*, 2013).

The bottom-up molding of demands and resources initiated by employees themselves, seems to play a substantial role in the most recent version of the JD-R theory (Bakker and Demerouti, 2014). Besides the direct individual relationships between job crafting and work engagement and job crafting and performance, the JD-R model also suggests indirect relationships (see Figure 3). Accordingly, adapting job



**Figure 2.** Personal resources, work engagement, and performance in the JD-R model

demands and job resources (job crafting) may lead to increased work engagement, which in turn, may lead to improved performance.

Van den Heuvel *et al.* (2012) showed that a job crafting intervention could successfully stimulate employees to adapt their job demands and job resources. The job crafting exercise in the current JD-R intervention will teach employees how to optimize their work environment and improve the fit between their personal needs, abilities, and passions about the job. Thus, we hypothesize:

- H2.* Participants' level of job crafting significantly increases after the JD-R intervention (T2) both compared to their level prior to the intervention (T1) and compared to a control group.

#### *Work engagement and performance*

According to Schaufeli and Bakker (2004), work engagement is an active, positive work-related state that is characterized by vigor, dedication, and absorption. 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, and inspiration. Finally, absorption is characterized by being fully concentrated and happily engrossed in one's work, where time passes quickly. Employees who are engaged experience more active, positive emotions than their less-engaged colleagues and are healthier (Bakker and Demerouti, 2014). While there are numerous definitions of performance, in this study, we are specifically interested in in-role performance. In-role performance is defined as those officially required outcomes and behaviors that directly serve the goals of the organization (Motowidlo and Van Scotter, 1994).

Since the JD-R model proposes that work engagement is the result of the interplay between job demands, job resources, and personal resources, we will examine the impact of a JD-R intervention aimed at improving the combination of these specific antecedents. Since the JD-R model suggests that work engagement and performance can be fostered through interventions by targeting at the most important job demands and (job and personal) resources (Bakker and Demerouti, 2014) we hypothesize:

- H3.* Participants' level of work engagement significantly increases after the JD-R intervention (T2) both compared to their level prior to the intervention (T1) and compared to a control group.
- H4.* Participants' level of (self-rated) in-role performance significantly increases after the JD-R intervention (T2) both compared to their level prior to the intervention (T1) and compared to a control group.

**Figure 3.**  
Relationship job  
crafting, work  
engagement, and  
performance



## Method

### *Participants and procedure*

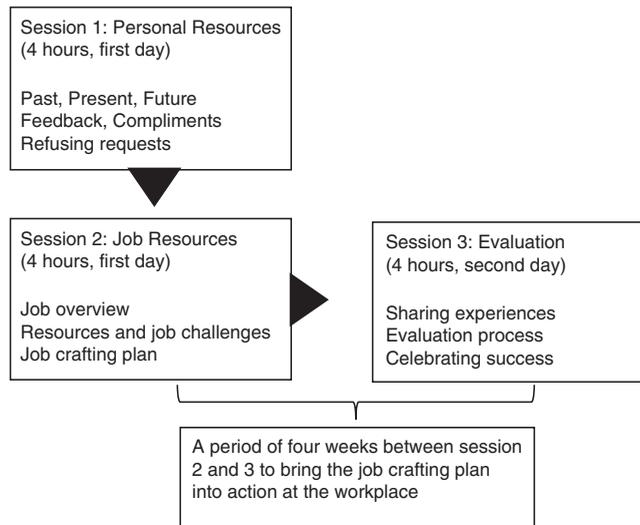
The sample consisted of 64 female (96 percent) and three male healthcare professionals (4 percent) who diagnose, identify, and treat patients with a hearing impairment. This gender skewed distribution is representative for the occupational group, in which more women than men are employed (Merens *et al.*, 2012). The mean age of the participants was 42 years (SD = 10.58), and 84 percent had successfully finished a higher vocational education or university education in healthcare. The participants worked at two different locations at the same healthcare organization. Because of practical reasons, participants of the intervention group and the control group were grouped by location, resulting in a quasi-experimental design. By following this procedure, we avoided contamination effects, where members of the experimental groups influence members of the control group or vice versa (Cook and Campbell, 1979). Of the 67 healthcare professionals, 43 took part in the JD-R intervention, while 24 were assigned to the control group. The respondents participated voluntarily and did not receive any compensation for their contribution.

There were two measurements in time. The first measurement took place two weeks before the start of the intervention; the second measurement one week after the intervention was completed. In line with other intervention studies, a research design with a post-measurement shortly after the intervention was chosen (Mersbergen *et al.*, 2012; Rasquin *et al.*, 2009). The organization allowed the participants to fill in the questionnaires during their workday. All 67 participants completed both questionnaires (100 percent response rate). The managing director introduced the first online questionnaire in an e-mail containing instructions and an explanation of the procedure, while also addressing the anonymity of the data. The online questionnaires were hosted by the Erasmus University, and the managing director did not receive any information about individual outcomes. One week before the start, the participants received additional information about the program and content of the intervention. One week after the intervention was completed, the participants were asked to fill in the second questionnaire.

### *JD-R intervention*

The JD-R intervention contains exercises aimed at increasing personal resources, job resources and challenging job demands. Because earlier studies suggest that decreasing hindering job demands is unrelated (Tims *et al.*, 2012) or negatively related to work engagement (Petrou *et al.*, 2012) and performance (Tims *et al.*, 2013), we did not include this job crafting strategy in the intervention. To increase personal resources we used exercises to increase participants' levels of hope, optimism, self-efficacy, and resilience (PsyCap). To stimulate participants' job crafting behavior, we used exercises and goal setting. The JD-R intervention consisted of three training sessions over a period of five weeks: the first and second session took place on one day, while the third half-day session took place four weeks later (see Figure 4).

The intervention consisted of four different exercises. First, the participants learned to accept the past, appreciate the present, and view the future as a source of opportunities. In this exercise, participants acknowledged, shared and discussed their thoughts and feelings about their career with each other. They looked back on things they experienced at work, shared the things they like in their recent job and discussed their future ambitions. Second, the participants practiced giving and receiving feedback including gracefully receiving compliments. Third, they practiced refusing requests. Fourth, participants made an overview of their job tasks and their personal strengths, motivation, and possible risk factors at work. Based on this overview,



**Figure 4.**  
JD-R intervention  
design

participants made a job crafting plan in which they described their job crafting goals and the actions they would take to increase their social job resources, structural job resources, and challenging job demands.

Learning to accept the past, appreciate the present, and viewing the future as a source of opportunities increases hope and optimism (Schneider, 2001). Furthermore, feedback increases self-efficacy (Luthans *et al.*, 2008). Through the exercise, the participants learned how to give and receive positive feedback at work in a respectful and constructive way. Giving and receiving compliments is a way to increase self-esteem and appreciate the present. Additionally, reducing risk factors by refusing requests, fosters participants' resilience (Luthans and Youssef, 2004).

The job crafting element of the intervention was based on the Michigan Job Crafting Exercise (Berg *et al.*, 2010) and was adjusted to the work environment of the organization. In the intervention, the participants made an overview of their job tasks and sorted them into three task categories: tasks they spent a lot of time at, tasks they had to do often, and tasks they had to do sometimes. They also designated whether they did the task individually or with colleagues. The participants wrote the outcomes on small, medium, and large sticky notes and stuck them on a piece of brown paper. After this, they labeled the tasks in terms of urgency and importance. During the next part of the exercise, the participants made an overview of their personal strengths, motivation, and possible risk factors in their work and matched these to their tasks. This part of the intervention gives a clear overview of the job. Subsequently, the participants were asked to discuss which things they could change in their work to increase social job resources, structural job resources, and challenging job demands. At the end of the second training session, the participants made a personal crafting plan.

In the four weeks between the second and third training session, the participants tried to put their job crafting plan into action. In the final training session, the trainers and participants evaluated whether the participants had succeeded in accomplishing their job crafting goals. The participants also discussed what they would need in the future to maintain the fit between their personal competences, preferences and the job.

At the end of the intervention, the participants had learned what they could do to change elements of their jobs and their relationships with others in order to increase their job resources and challenges at work.

## Method

The questionnaires were identical for all participants and both measurements.

Personal resources (PsyCap) consists of self-efficacy, optimism, hope, and resilience. Self-efficacy (Schwarzer and Jerusalem, 1995) consists of four items, of which an example is: "I am confident that I could deal effectively with unexpected events." Participants had to score the items on a four-point scale, from (1) absolutely wrong to (4) absolutely right. Optimism (Luthans *et al.*, 2007) consists of four items, of which an example is: "I usually expect the best in uncertain times." Participants had to score the items on a five-point scale, from (1) totally disagree to (5) totally agree. Hope (Luthans *et al.*, 2007) consists of six items, of which an example is: "If I find myself in a jam at work, I could think of many ways to get out of it." Participants had to judge six different statements using a six-point scale, from (1) totally disagree to (6) totally agree. Resilience (Block and Kremen, 1996) consists of five items, including: "I enjoy dealing with new and unusual situations." Participants had to score the items on a four-point scale, from (1) does not apply at all to (4) applies very strongly.

Job crafting was measured using three subscales of the job crafting questionnaire developed by Tims *et al.* (2012). Each subscale consisted of five items using a five-point scale, ranging from (1) never to (5) very often. Examples are: "I ask colleagues for advice" (increasing social job resources), "When an interesting project comes along, I offer myself proactively as project co-worker" (increasing challenging job demands), and "I try to develop my capabilities" (increasing structural job resources).

Work engagement was measured with the nine-item Utrecht Work Engagement Scale (Schaufeli *et al.*, 2006). Participants could respond to these items using a seven-point frequency scale, ranging from (0) never to (6) always. Example items are: "At work, I am bursting with energy" (vigor), "I am enthusiastic about my job" (dedication), and "I am immersed in my work" (absorption).

In-role 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." Participants had to score the items on a five-point scale ranging from (1) totally disagree to (5) totally agree.

## Results

### *Descriptive statistics*

The means, standard deviations, correlations, and reliabilities between all study variables at both measurement points are displayed in Table I. Additionally, means and standard deviations for both intervention and control group are presented in Table II.

### *Hypotheses testing*

Our central prediction is that the JD-R intervention will positively influence PsyCap (*H1*), job crafting behavior (*H2*), work engagement (*H3*), and performance (*H4*). To test these hypotheses, we conducted a multivariate analysis of covariance (MANCOVA) with intervention as the independent variable (two levels: intervention, control) with T2 PsyCap, job crafting behavior, work engagement, and performance as the dependent variables controlling for T1 scores on each of the dependent variables.

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

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Age	42.30	10.58															
2. PsyCap T1	3.71	0.46	0.14	(0.91)													
3. Job crafting T1	3.00	0.52	0.07	0.62**	(0.86)												
4. Social job resources T1	2.21	0.65	0.02	0.30*	0.74**	(0.73)											
5. Structural job resources T1	3.76	0.57	0.10	0.63**	0.75**	0.25*	(0.85)										
6. Challenging job demands T1	3.03	0.69	0.06	0.58**	0.93**	0.55**	0.63**	(0.76)									
7. Work engagement T1	4.96	0.95	0.20	0.51**	0.50**	0.25*	0.55**	0.43**	(0.93)								
8. In-role performance T1	4.20	0.41	0.14	0.46**	0.34**	0.04	0.47**	0.33**	0.30*	(0.80)							
9. PsyCap T2	3.75	0.52	0.10	0.80**	0.49**	0.22	0.52**	0.45**	0.36**	0.43**	(0.93)						
10. Job crafting T2	2.99	0.50	-0.06	0.47**	0.85**	0.69**	0.59**	0.77**	0.33**	0.22	0.52**	(0.84)					
11. Social job resources T2	2.15	0.65	-0.04	0.19	0.60**	0.79**	0.20	0.47**	0.15	-0.03	0.18	0.72**	(0.72)				
12. Structural job resources T2	3.76	0.55	0.00	0.40**	0.57**	0.27*	0.69**	0.48**	0.33**	0.34**	0.51**	0.74**	0.24*	(0.84)			
13. Challenging job demands T2	3.04	0.67	-0.09	0.50**	0.80**	0.56**	0.53**	0.81**	0.31**	0.24	0.53**	0.90**	0.47**	0.59**	(0.74)		
14. Work engagement T2	5.13	1.00	0.10	0.43**	0.48**	0.27*	0.56**	0.38**	0.78**	0.19	0.51**	0.50**	0.29*	0.55**	0.39**	(0.95)	
15. In-role performance T2	4.22	0.44	0.15	0.41**	0.36**	0.17	0.41**	0.31*	0.29*	0.63**	0.55**	0.39**	0.13	0.42**	0.38**	0.38**	(0.81)

Notes: \* $p < 0.05$ ; \*\* $p < 0.01$

The MANCOVA produced a multivariate significant effect,  $F(4, 58) = 3.76, p < 0.01$ . Univariate analyses showed that the two groups differed significantly regarding PsyCap,  $F(1, 61) = 10.84, p < 0.01$ ; job crafting behavior,  $F(1, 61) = 5.64, p < 0.05$ ; work engagement,  $F(1, 61) = 9.41, p < 0.01$ ; and in-role performance,  $F(1, 61) = 6.77, p < 0.05$ . The intervention group scored more favorable than the control group on each of these variables: PsyCap  $M = 3.84$  vs  $M = 3.58$ ; job crafting  $M = 3.05$  vs  $M = 2.88$ ; work engagement  $M = 5.30$  vs  $M = 4.83$ ; and in-role performance  $M = 4.30$  vs  $M = 4.07$ . Taken together, these results revealed that the intervention group reported more PsyCap, job crafting behavior, work engagement, and in-role performance compared to the control group. These findings offer evidence for all four hypotheses.

*Additional analyses.* In addition to testing intervention effects, we examined the underlying theoretical mechanisms of JD-R theory. The theory assumes that work engagement is the mediator between personal resources and performance, and between job demands/resources and performance. Following Baron and Kenny (1986), we examined the required conditions for mediation: the predictor should be related to the mediator; the mediator should be related to the outcome; and the predictor-outcome relationship becomes non-significant (full mediation), or becomes significantly weaker (partial mediation) after the inclusion of the mediator. To test the significance of mediating effects we applied the Sobel  $z$ -test.

We examined whether PsyCap was significantly related to work engagement and whether work engagement was related to in-role performance. The regression analysis showed that PsyCap ( $\beta = 0.97, SE = 0.21, t = 4.74, p < 0.001$ ) was significantly related to work engagement and work engagement affects in-role performance ( $\beta = 0.17, SE = 0.05, t = 3.32, p < 0.01$ ). Finally, the results showed that the predictor-outcome relationship became weaker after the inclusion of the mediator ( $\beta = 0.41, SE = 0.10, t = 4.04, p < 0.001$ ). The Sobel test showed that the relationship was partially mediated ( $z = 3.08, p = 0.00$ ).

We conducted a similar analysis to examine whether work engagement mediates the relationship between job crafting behavior and performance. The regression analysis showed that job crafting behavior ( $\beta = 0.99, SE = 0.21, t = 4.67, p < 0.001$ ) was significantly related to work engagement and work engagement indeed affects in-role performance ( $\beta = 0.17, SE = 0.05, t = 3.32, p < 0.01$ ). Finally, the results showed that the predictor-outcome relationship became weaker after the inclusion of the mediator ( $\beta = 0.23, SE = 0.11, t = 2.05, p < 0.05$ ). The Sobel test revealed that the relationship was partially mediated ( $z = 1.88, p = 0.03$ ).

	Intervention ( $n = 43$ )				Control ( $n = 24$ )			
	M T1	SD T1	M T2	SD T2	M T1	SD T1	M T2	SD T2
PsyCap	3.66	0.49	3.79	0.53	3.80	0.40	3.66	0.49
Job crafting	2.93	0.54	2.99	0.52	3.12	0.48	2.98	0.48
Social job resources	2.19	0.70	2.13	0.69	2.24	0.56	2.17	0.58
Structural job resources	3.67	0.56	3.78	0.59	3.91	0.57	3.72	0.47
Challenging job demands	2.94	0.70	3.05	0.65	3.19	0.65	3.03	0.72
Work engagement	4.80	0.98	5.15	1.08	5.25	0.86	5.10	0.85
Performance	4.21	0.42	4.28	0.43	4.20	0.38	4.10	0.43

**Table II.**  
Overview of means  
and standard  
deviations  
T1 and T2

## Discussion

To our best knowledge, this is the first JD-R intervention study. The design of this study is based on the theoretical assumptions of JD-R theory (Bakker and Demerouti, 2014), which state that optimizing job demands and (personal and job) resources may increase employee engagement and subsequently performance. The present study among healthcare professionals reveals that a JD-R intervention can foster their work engagement and improve their in-role performance. Thus, investing in JD-R interventions may help healthcare professionals to stay engaged at work (Laschinger and Finegan, 2005). This is practically relevant since the healthcare sector is characterized by high demands such as workload, demanding situations, and high complexity of work (Bakker and Sanz-Vergel, 2013; Gaillard, 2006). In addition, the investment in interventions offer healthcare organizations the opportunity to meet the public expectations to provide high-quality care and reach the organizational goals. The present study among healthcare professionals reveals that a JD-R intervention may foster work engagement and improve in-role performance.

### *Theoretical contributions*

The present study makes four main theoretical contributions. First, as far as we know, this is the first study that revealed significant effects of a JD-R intervention aimed at increasing PsyCap and job crafting behavior compared to a control group. In contrast with earlier studies, which were aimed at either increasing personal resources (Demerouti *et al.*, 2011) or increasing job crafting behavior (Van den Heuvel *et al.*, 2012) our study aimed at increasing both.

The analysis of the three separate job crafting components showed that the crafting of structural job resources and challenging job demands increased significantly, but the crafting of social job resources did not. Most of the time, the participants worked in direct contact with clients, and not in direct contact with colleagues. Participants may experience that they have few opportunities to increase their social job resources at work. The outcomes on PsyCap are in line with findings by Demerouti *et al.* (2011) who showed that an intervention may increase PsyCap. Our results regarding job crafting are in contrast with a study by Van den Heuvel *et al.* (2012) who did not find a significant increase of job crafting after their intervention, although the intervention did improve the work environment. Thus, the current study is the first showing significant effects of an intervention on both PsyCap and job crafting behavior.

The second contribution concerns a significant effect of the JD-R intervention on work engagement. Our study indicates that adapting personal resources, job resources, and job demands contributes to work engagement in the field of healthcare. These outcomes are in line with Bakker and Demerouti (2014) who stated that personal and job resources strengthen each other and gain their motivational potential in a work environment with high job demands such as those found in healthcare organizations. Third, our results illustrate that a JD-R intervention leads to improved (self-rated) in-role performance. Our findings strengthen the JD-R theory (Bakker and Demerouti, 2014) that stated that organizational interventions can foster employees' work engagement and performance. Fourth and last, the additional analyses revealed mediated relations as proposed in JD-R theory.

### *Limitations and avenues for future research*

Three limitations of our study should be mentioned. First, all participants worked at the same healthcare organization which may cause socially desirable behavior and group

pressure. Moreover, participants from different organizations may be less influenced by other participants and may feel more comfortable showing their vulnerability because of anonymity. In addition, the sample consisted of healthcare professionals only. This restricts the generalizability of our findings. Future studies should try to replicate our study among employees of several other occupational groups.

The third limitation concerns the research design. A disadvantage of the chosen quasi-experimental research design with non-random assignment is that intervention effects could be the result of differences between the groups at the beginning of the intervention instead of the result of the intervention. Therefore, a control group and a pre-test were added to the research design. It is relevant to note that we did avoid contamination effects by using this design. Although the locations were different, they are both located in urban areas and are similar in terms of demographic characteristics. The healthcare professionals also execute the same working activities which are designed around similar team structures. Besides the similar work surroundings, activities and team structures there were no changes in staffing or reorganizations in either of the locations during the intervention period. The assumption is that if the intervention and control group are similar at the pre-test, the likelihood that extraneous variables and other subjects and settings differ between those two groups will be smaller. Another limitation of the research design concerns the sample size. Our intervention study took place in a small organization, which determines our sample size. A small sample size may lead to low statistical power, which may cause inflated estimates of effect sizes. Besides the design and sample size, we also acknowledge a limitation concerning the timing of the post intervention measurement. The effects of the intervention were measured shortly after completing the intervention. With this design it is not possible to measure the long-term sustainability of the intervention effects. Future studies should consider the timing of post-measurement as an important aspect of the research design, and investigate how long the effects of a JD-R intervention last. A fourth limitation concerns the measure of in-role performance. In this study, we only measured participants' self-ratings of in-role performance. Future studies may also include other-ratings provided by direct colleagues, supervisors, or clients. This will give a more objective view of the improvement in terms of observable behavior.

Future research may also examine if the effectiveness of a JD-R intervention depends on participants' personal traits. For example, participants' openness to new experiences may be a better predictor for the intervention effects than participants' age or gender. In fact, some personal traits may moderate the intervention effects. Extravert participants, for example, may be more successful in increasing their social job resources compared to introvert participants because they feel themselves more comfortable in social interactions. In addition, future research may also use qualitative research methods like structured interviews. These outcomes may shed light on the experiences of the participants and may reveal how the intervention is useful to them.

#### *Practical implications and conclusion*

A practical implication of the results of this study is that investing in positive organizational interventions might be worthwhile. Within the context of the healthcare sector, where reducing costs is important, our results show that financial investments can impact both the well-being and the performance of employees. Senior management should acknowledge the importance of facilitating and stimulating employees to work on their resources, both personal and job related, and their challenging demands.

The JD-R intervention showed that it is possible to foster employees' PsyCap and to stimulate their job crafting behavior. Besides investing in organizational interventions, senior management can actively support employees' adapting job demands and resources on the individual level, for example by giving them more autonomy at work (Wrzesniewski and Dutton, 2001). Higher levels of autonomy may make it easier for individuals to change their resources and demands (Petrou *et al.*, 2012). Organizations can also use surveys or questionnaires to examine whether employees experience sufficient resources and challenges at work. Based on the outcomes of the surveys, individualized reports could be made including personalized feedback and suggestions on how employees themselves could optimize their resources and challenges at work. This might be especially relevant for healthcare professionals working in a demanding environment.

In the field of healthcare, organizations are looking for ways to foster employee work engagement and job performance. The present study makes a contribution to the literature by assessing the effects of a positive organizational intervention. The findings indicate that organizations may foster work engagement and improve performance by offering interventions aimed at increasing personal resources, job resources, and challenging job demands at work.

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### Further reading

- Demerouti, E. and Bakker, A.B. (2011), "The job demands-resources model: challenges for future research", *South African Journal of Industrial Psychology*, Vol. 37 No. 2, pp. 1-9.

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