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How personal resources predict work engagement and self-rated performance among construction workers: A social cognitive perspective

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Traditionally, research focussing on psychosocial factors in the construction industry has focused mainly on the negative aspects of health and on results such as occupational accidents. This study, however, focuses on the specific relationships among the different positive psychosocial factors shared by construction workers that could be responsible for occupational well-being and outcomes such as performance. The main objective of this study was to test whether personal resources predict self-rated job performance through job resources and work engagement. Following the predictions of Bandura's Social Cognitive Theory and the motivational process of the Job Demands-Resources Model, we expect that the relationship between personal resources and performance will be fully mediated by job resources and work engagement. The sample consists of 228 construction workers. Structural equation modelling supports the research model. Personal resources (i.e. self-efficacy, mental and emotional competences) play a predicting role in the perception of job resources (i.e. job control and supervisor social support), which in turn leads to work engagement and self-rated performance. This study emphasises the crucial role that personal resources play in determining how people perceive job resources by determining the levels of work engagement and, hence, their self-rated job performance. Theoretical and practical implications are discussed.

Keywords: Personal and job resources; Work engagement; Self-rated performance.

Traditionally, research focussing on psychosocial factors in the construction industry has focused mainly on the negative aspects of health and on results such as occupational accidents. In order to cover this gap, this study focuses on the specific relationships among the different positive psychosocial factors in construction workers that could be responsible for occupational well-being and outcomes such as performance. Specifically, the main objective of this study was to test whether personal resources predict self-rated job performance through job resources and work engagement. To achieve our objectives, the Social Cognitive Theory (SCT) (Bandura, 1997) and the Job Demands-Resources Model (JD-R) (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) have been considered as the main theoretical frameworks.

This study takes into account three different personal resources, self-efficacy and perceived mental and emotional competences. Although all these components are within the SCT, there are differences among these concepts. Self-efficacy, defined as "beliefs in one's capabilities to organise and execute courses of action required to produce certain achievements or results" (Bandura, 1997, p. 3), is concerned not only with the competences that we think we have but also with judgements about what we can do in the future, with whatever skills we possess. Perceived competences (i.e. mental and emotional) are concerned with feelings of efficacy related to current competences to perform mental or emotional tasks at work, and they are related to being efficacious in the present.

Within the SCT, most literature has focused on efficacy beliefs, less attention being paid to competences. Moreover, the SCT assumes that personal resources, defined as aspects of the self that are generally linked to resilience and refer to individuals' sense of their ability to control and have an impact on their environment

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successfully, help to understand not only people's behaviour but also the antecedents and consequences of these behaviours. Personal resources influence behaviour through goals and aspirations, outcome expectations, affective states and the perceptions of impediments and opportunities in the social environment. When personal resources are high and individuals believe that they can control their environment effectively, they are more likely to perceive job resources as abundant. Consequently, individuals are more likely to engage in their tasks and perform well (Salanova, Schaufeli, Xanthopoulou, & Bakker, 2010). In the same line, this study focuses on the role that personal resources play in the JD-R model and specifically in its motivational process, in order to examine whether personal resources predict performance through job resources and work engagement. Hence, people who perceive themselves as efficacious focus on the job resources that are available and which may make them successful. In this regard, research has shown that self-efficacy is associated with persistence, commitment, satisfaction with the actions we perform and human motivation (Salanova et al., 2010). Moreover, a previous longitudinal study (Vera, Salanova, & Lorente, 2012) has tested this relationship. For all these reasons, this study considers personal resources an antecedent of job resources.

The JD-R model assumes that there are two different underlying psychological processes that play a role in the development of job strain and motivation. First is the erosion process in which poorly designed jobs or chronic job demands exhaust employees' mental and physical resources and may therefore lead to the depletion of energy and health problems. This erosion process has been tested both theoretically (Bakker & Demerouti, 2007) and empirically (e.g. Demerouti, Bakker, Nachreiner, & Schaufeli, 2000).

Second is the motivational process, which this study focuses on, whereby it is assumed that job resources have motivational potential and lead to high work engagement and excellent performance. This process has also been tested both theoretically (Bakker & Demerouti, 2007) and empirically (e.g. Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009a).

Following with this motivational process, in this study, we considered job control (i.e. to be able to decide when to start and finish tasks and the order in which they are to be performed) and supervisor social support (i.e. to have the supervisor's trust and support) as the main job resources that construction workers can find in their daily work. Moreover, in specific qualitative studies about job resources in the construction sector (Salanova, Gracia, & Lorente, 2007), workers state that the most valued job resources were those mentioned above.

Furthermore, a significant qualitative change was introduced into the JD-R model when Xanthopoulou, Bakker, Demerouti, and Schaufeli (2007) expanded it by examining the relationship between personal resources and the model's processes. Xanthopoulou et al. (2007, 2009a) included three personal resources in their studies: self-efficacy, organisation-based self-esteem and optimism. They showed that personal resources played a significant mediating role in the JD-R model. In their model, they argued that personal resources mediate the relationship between job resources and engagement, on one hand, and job demands and exhaustion on the other hand. But also, and in line with our expectations, they found that personal resources influence the perception of job resources, acting as antecedents.

Moreover, in a two-wave study, Xanthopoulou et al. (2009a) stated that there are reciprocal relationships between personal and job resources and engagement, that is, these reciprocal relationships are tested in the motivational process of the JD-R model. In the same line, Lorente, Salanova, Martínez, and Schaufeli (2008) also added personal resources (i.e. perceived mental and emotional competences) to the JD-R model, they found that the role of personal resources as a significant predictor in the JD-R model disappears when controlling for baseline levels of burnout and engagement at T1. In the same line Vera et al. (2012) found that self-efficacy played a predicting and not a mediating role in both processes (i.e. erosion and motivational) in the JD-R model.

As we have mentioned above, job resources lead to work engagement, defined by Schaufeli, Salanova, González-Romá, and Bakker (2002, p. 74) as "a motivational and positive state of mind related to work that is characterised by vigour, dedication and absorption". Vigour is characterised by high levels of energy and mental resilience, the willingness to invest effort and persistence even in the face of difficulties. Dedication is characterised by a sense of significance, enthusiasm, inspiration, pride and challenge. However, some research suggests that absorption plays a slightly different role and may perhaps be a consequence of engagement rather than a constituent component (Freeney & Tiernan, 2009). Therefore, this study includes only these two indicators of engagement.

With regard to its antecedents, there is convincing empirical evidence that personal resources (Xanthopoulou et al., 2007) and job resources (Schaufeli & Bakker, 2004) are the most important predictors of work engagement, due to their extrinsic and intrinsic motivational potential. High levels of resources lead employees to be engaged at work. In turn, engaged employees report higher levels of well-being and exhibit better performance, that is, better objective as well as subjective perceptions of results at work.

Therefore, it seems clear that personal resources affect the perception of job resources, which in turn predict work engagement. However, research has still not got a totally clear idea about the underlying psychological

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mechanisms explaining this relationship. The SCT states that high levels of personal resources will predict more available job resources and they will enhance work engagement.

As far as the relationship between work engagement and job performance is concerned, previous research has studied the link between some psychosocial constructs and job performance. Beal, Weiss, Barros, and MacDermid (2005) provided a theoretical basis for examining the impact of state engagement on performance. Other empirical studies have shown that work engagement is positively related to in-role and extra-role performance. Xanthopoulou, Bakker, Demerouti, and Schaufeli (2009b) found this relationship among employees in restaurants. In the same line, Salanova, Agut, and Peiró (2005) showed that levels of work engagement of contact employees working in hotels and restaurants are related to employee performance, as perceived by customers. In short, it appears that these studies corroborate that engagement positively relates to performance in different settings.

To sum up, based on the predictions of the SCT and considering the motivational process of the JD-R model, we introduced personal resources as the predicting variable of this motivational process, in which personal resources lead to job resources, which in turn lead to work engagement and job performance. Specifically, we hypothesise a mediating model where the relationship between personal resources and job performance is fully mediated by job resources and work engagement.

METHOD

Participants

Sample is composed by 228 employees (100% men) from ten different Spanish small and medium size enterprises. The response rate was 64% (age range: 16–64 years, $M_{\text{age}} = 39.6$, $SD = 11.89$). Forty-one (18%) of the employees were foreigners and 86 (38%) had a temporary work contract. Employees answered the questionnaire during their breaks either at the beginning or at the end of their work shift and usually in the workplace. Participation was voluntary.

Materials and procedure

The research team contacted several key informants in the construction sector through the National Associations of Construction Employers in Spain. During these early stages, the objectives and methodology of the study were explained to 16 of the companies that had been approached. Finally, 10 of the 16 companies showed great interest and agreed to participate in the study. A questionnaire was designed to assess the work conditions and psychosocial factors in the construction industry. Due to the characteristics of the sample (i.e. low level of education, where 34% had not completed primary school education, and immigrants, who might have had problems with the specific meaning of the items), researchers were present while workers were filling out the questionnaire, in case they needed some help in understanding the meaning of any of the words or items. Finally, four groups of variables were considered: personal resources, job resources, work engagement and performance. All the variables had an α coefficient higher than .70 (Nunnaly & Bernstein, 1994). In the case of supervisor social support, the scale was calculated as the intercorrelation between the two items.

Personal resources

Self-efficacy was measured with seven self-constructed items based on the guide for constructing self-efficacy scales (Bandura, 2006) and following Bandura's recommendation for the use of specific domain scales. Thus, it was assessed with a validated 7-item constructed scale (Lorente, Salanova, & Martínez, 2011), which is specific for the construction industry. An example of a self-efficacy item is: "I can do my work well, even if my co-workers work with delays". Mental and emotional competences were measured using a self-constructed item for each of them (i.e. mental competence: "In my work, I am able to watch and remember many things at once", and emotional competence: "In my work, I am capable of objectively and directly tackling problems with the people I work with").

Job resources

Job control and supervisor social support were measured using an item for job control, based on Jackson, Wall, Martin, and Davis (1993), and two items for supervisor social support (Van Muijen et al., 1999). The item of job control is: "In my work, I have sufficient autonomy to decide when to start the task and finish it, as well as the order in which I do my tasks". An example item of supervisor social support is: "In my work the supervisor shows his or her concern about our personal problems".

Work engagement

The vigour and dedication dimensions of work engagement were measured using the Spanish reduced version of the Utrecht Work Engagement Scale (UWES) (Schaufeli et al., 2002), which has three items for each dimension (examples of items: "In my work, I feel full of energy" and "My work is challenging").

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TABLE 1
Means, standard deviations, internal consistencies and correlations (N = 228)

	M	SD	α	*1*	*2*	*3*	*4*	*5*	*6*	*7*
1 Self-efficacy	4.05	1.17	.81							
2 Mental competences	4.92	1.30	—	.23**						
3 Emotional competences	4.49	1.73	—	.15**	.40**					
4 Job control	3.21	2.20	—	.33	.31**	.25**				
5 Social support	4.03	1.61	.44**	.11	.12	.23**	.14*			
6 Vigour	4.81	0.94	.72	.20**	.32**	.14*	.10	.10		
7 Dedication	4.51	1.10	.70	.12	.30**	.17**	.14**	.20**	.47**	
8 Performance	4.99	0.90	.73	.26**	.20**	.08	.02	.13	.22**	.14*

*$p < .05$. **$p < .01$. ***$p < .001$.

Performance

This was assessed with three items based on Goodman and Svyantek (1999). In this scale adaptation, participants were asked to indicate the extent to which they found each statement characteristic of themselves. One example is: "I achieve the objectives of the job".

All the questionnaire items were to be answered using a 7-item Likert scale with 0 (*never/nothing*) and 6 (*always/everyday*).

Data analyses

We performed descriptive analyses and internal consistency tests for each scale and the correlations of all the variables. The common method variance bias was also tested (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Moreover, as the sample was so diverse, we performed two kinds of analyses to test whether differences in the sample were affecting the research variables. Thus, *T*-test analyses were carried out in the case of nationality and type of contract. Analyses of variance (ANOVAs) were included to check age, academic level and work experience.

Finally, we applied the structural equation modelling (SEM) methods, as implemented by AMOS 16.0, to test the research model. Maximum likelihood estimation methods were used, and the input for each analysis was the covariance matrix of the items. The goodness-of-fit of the model was evaluated using absolute and relative indices. The absolute goodness-of-fit indices calculated were (a) the χ^2 goodness-of-fit statistic, (b) the root mean square error of approximation (-RMSEA), (c) the goodness-of-fit index (GFI) and (d) the adjusted goodness-of-fit index (AGFI). The following relative goodness-of-fit indices were calculated: (a) incremental fit index (IFI) and (b) comparative fit index (CFI). Values near .08 for RMSEA are considered to indicate an acceptable model fit, as a rule of thumb, and those smaller than .08 are considered to indicate a good model fit (Cudeck & Browne, 1993). Finally, relative fit index values greater than .90 are considered to indicate a good fit (Hoyle, 1995).

Personal and job resources, work engagement and self-rated performance are latent variables in the structural model. Specifically, personal resources have three indicators, that is, self-efficacy and perceived mental and emotional competences. Job resources have two indicators, that is, job control and supervisor social support, and work engagement has two, that is, vigour and dedication, whereas performance has three indicators (i.e. the three items).

RESULTS

Harman's single factor test with confirmatory factor analyses (CFA; e.g. Iverson & Maguire, 2000) was used for the variables. Results reveal a significantly poorer fit of the model with one single factor [$\Delta\chi^2 = 253.12$, $p = .001$] compared to the model with four latent factors (i.e. personal resources, job resources, work engagement and self-rated performance). Hence, one single factor cannot account for the variance in our dataset, and therefore, we cannot consider common method variance to be a serious deficiency.

The means, standard deviations, intercorrelations and internal consistence (Cronbach's alpha) of each variable were calculated (see Table 1). As mentioned before, all the α values met the criterion of .70 (Nunnaly & Bernstein, 1994). Cronbach's alpha was used for all variables, except for social support. Social support has only two items and a Pearson correlation was used. This value was .44, which is acceptable (Robinson, Shaver, & Wrightsman, 1991).

Regarding the *T*-tests and ANOVAs, there were no significant differences in terms of age, academic level, work experience, nationality and type of contract, except for emotional competences ($F(223, 228) = 19.77$; $p = .000$), where Spaniards showed higher levels than workers from other countries.

According to Baron and Kenny (1986), when a mediational model involves latent constructs, SEM provides the basic data analysis strategy. In accordance with the four basic steps to be taken in order to establish the mediation effects proposed by these authors, and in order to test the hypothesis, our research

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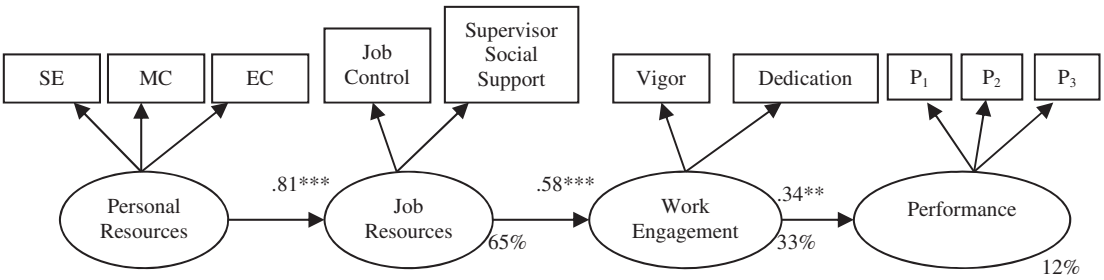

Figure 1. The research model with standardised path coefficients. SE (self-efficacy), MC (mental competences), EC (emotional competences), P (performance). $^{**}p < .01$, $^{***}p < .001$.

TABLE 2
Model fit (N = 228)

Model	χ^2	df	*RMSEA*	*GFI*	*AGFI*	*CFI*	*IFI*	$\Delta\chi^2$	$\Delta\delta\phi$
M_1	53.95	33	0.05	0.95	0.92	0.94	0.94		
M_2	52.35	31	0.05	0.95	0.91	0.94	0.94	$M_2 - M_1 = 1.6$ n.s.	2
M_3	53.95	33	0.05	0.95	0.92	0.94	0.94	$M_3 - M_1 = 0$ n.s.	0
								$M_3 - M_2 = 1.6$ n.s.	2

AGFI = adjusted goodness-of-fit index; CFI = comparative fit index; *df* = degrees of freedom; GFI = goodness-of-fit index; IFI = incremental fit index; RMSEA = root mean square error of approximation; M_1 = research model, M_2 = direct paths from self-efficacy and resources to performance; M_3 = new alternative model.

model (M_1) was fitted to the data (see Figure 1). The results show (see Table 2) that the research model fitted the data and that all the fit indices met the criteria ($\chi^2_{(25,\, N = 228)} = 53.95$; RMSEA = .05; GFI = .95; AGFI = .92; CFI = .94; IFI = .94). All the path coefficients were significant except the path from personal resources to engagement, which did not meet the criteria of 1.96 ($t = .05$). These results indicate that job resources fully mediate the relationship between personal resources and engagement. All four steps described by Baron and Kenny (1986) were met. Regarding the first step (i.e. the independent variable [IV] should be related to the dependent variable [DV] without the mediator included in the model), results showed that personal resources were related to engagement ($\beta = .55, p = .023$). The second step (the IV should be related to the mediator) showed that personal resources were related to job resources ($\beta = .81$, $p = .000$). The third step (the mediator should be related to the DV, controlling for the IV) showed that job resources were related to engagement ($\beta = .52$, $p = .025$). Finally, the fourth step (the effect of IV on the DV is reduced to non-significance when the mediator's effect on the DV is taken into account) showed that the effect of personal resources to engagement disappears ($\beta = .05$, n.s.), when we include the job resources as mediators. Thus, these results show the full mediating role of job resources between personal resources and work engagement. In order to test whether the impact of personal resources and job resources on performance was mediated by work engagement, additional analyses were carried out. First, direct paths from personal resources and job resources to job performance were added to the initial model (M_1), and this new model (M_2) was fitted to the data. The model fitted the data ($\chi^2_{(23,\, N = 228)} = 52.35$, RMSEA = .05; GFI = .95; AGFI = .91; CFI = .94; IFI = .94), and none of the new parameter estimates were statistically significant.

Secondly, the value of the parameters estimating the impact of engagement on performance of the research model (M_1) was fixed to the value presented by this parameter (unstandardised coefficient) of the M_1, and a new alternative model was fitted to the data (M_3). The model fitted the data with all fit indices meeting the criteria ($\chi^2_{(25,\, N = 228)} = 53.95$; RMSEA = .05; GFI = .95; AGFI = .92; CFI = .94; IFI = .94), and the difference between the χ^2 statistics associated with M_3 and M_2 was not statistically significant. According to Vandenberg and Grelle (2009), if two models do not significantly differ as regards model fit, the most parsimonious model should be preferred (i.e. M_1). Thus, the influence of resources on performance is fully mediated by work engagement, and the influence of personal resources on performance is fully mediated by job resources and work engagement.

Moreover, we used Sobel tests to know whether a mediator variable significantly carried the influence of an independent variable to a dependent variable; that is, whether the indirect effect of the independent variable on the dependent variable through the mediator variable was, or was not, statistically significant. The results show that the effect of personal resources on engagement through job resources was significant (Sobel test = 2.71, $p = .008$) and that job resources on performance through

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work engagement was also significant (Sobel test = 2.39, $p = .002$).

These results confirmed our hypothesis, as we found a full mediation of job resources between personal resources and work engagement, along with a full mediation of work engagement between job resources and performance. Hence, the more the personal resources there are, the better performance will be mediated by job resources and work engagement. The model explained 12% of the variance of performance, 33% of work engagement and 65% of resources.

DISCUSSION

The main objective of this study was to test whether personal resources predict self-rated performance through job resources and work engagement. Following the predictions of Albert Bandura's SCT, we expected the perception of job resources and work engagement to fully mediate the relationship from personal resources to performance. As expected, the results confirm that personal resources (i.e. self-efficacy and mental and emotional competences) play a predicting role in the perception of job resources (i.e. job control and supervisor social support) in the motivational process of the JD-R model. Thus, personal resources positively relate to job resources which, in turn, lead to engagement.

Work engagement shows a positive relationship with self-rated performance, which is in agreement with the JD-R model (Schaufeli & Bakker, 2004), in terms of the model's assumption that work engagement mediates the relationship between resources and performance (i.e. the motivational process). This process was therefore confirmed in this study, specifically, in a sample of construction workers.

Briefly, the relationships that were found to corroborate our hypothesis as perceived job resources and work engagement fully mediate the relationship between perceived personal resources and self-rated job performance.

Main contributions

Regarding theoretical implications, the results of this study empirically support the robustness of, and also extend, the motivational process of the JD-R model (Schaufeli & Bakker, 2004), as we found the fully mediating role of work engagement between resources and performance. Furthermore, as a novelty, we extended this motivational process by including other personal resources (i.e. self-efficacy and mental and emotional competences), with a predicting role.

Thus, we found evidence that positive personal and environmental factors increase not only engagement but, in turn, also specific positive behaviours, such as job performance (see Bakker & Demerouti, 2007; Salanova et al., 2005). From a positive psychological perspective, this study stresses the importance of enhancing the levels of personal and job resources at work in order to improve the levels of work engagement and performance.

Although some studies in the literature (Lorente et al., 2008; Vera et al., 2012) have tested the predicting role of personal resources within the JD-R model, so far none have included performance or have been conducted in the construction industry. Moreover, achieving these data is quite complicated due to the characteristics of these workers (34% who had not completed primary school and immigrants who might have problems with the specific meaning of the items and need help to answer). Beyond that, the construction industry is one of the sectors that has been hit the hardest by the financial crisis.

In this line and moving to practical implications, taking into account the construction workers' conditions and characteristics, it is very important to find ways of increasing positive beliefs and motivating these workers. And this is not only about increasing positive aspects of employees also about increasing performance, as it has been proved that increasing positive beliefs about their competence will result in a better perception of their performance.

Moreover, it is important to highlight the importance of the two kinds of resources, that is, their personal capacity and future competence, and the perception of the resources available in their current job. This study found that both kinds of resources are necessary to lead engagement and performance, but personal ones are affecting the perception of the job resources. In this line, it is also important to point out that differences in the sample were not affecting the research variables, except for nationality in emotional competences. We do not know why Spaniards showed higher levels of these kinds of competences, but we suspect that language is playing a role here and this must be tested in future research. Finally, researchers could apply these results to the construction industry, for example, to improve safety performance by enhancing employees' levels of efficacy beliefs, which could contribute to reduce high accident rates.

Study limitations

Perhaps, the most relevant limitation of this study lies in the fact that we used a subjective measure as the indicator of performance, although the different companies participating in our study did not use any objective measure of workers' performance. Therefore, it was not possible to collect such a measure. However, self-rating performance is also a reliability measure used frequently in the literature and we should not undervaluate the importance of this variable.

Another possible limitation of the study concerns the kind of information analysed as all the measures were

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self-reports. Some experts consider this kind of measure an important limitation because they consider that there are many other factors that influence it. In this sense, Podsakoff, MacKenzie, and Podsakoff (2012) indicate that although there is some disagreement about the way "method" and method "biases" are defined, the evidence shows that method biases can significantly influence item validities and reliabilities as well as the covariation between latent constructs. Therefore, researchers must be knowledgeable about the ways to control method biases that might be present in their studies. For this reason, we used Harman's single-factor test and the results reveal that common method variance is not necessarily a serious deficiency in this dataset, although this is only one and by no means a final solution to this problem. Moreover, it is important to note that because of the nature of variables under study, we have to measure it with self-rating measures as we are interested in the perception of individuals regarding the number of personal and job resources they feel they have. We also want to know about the perception of how much engagement they have experienced at work. At this point, we think that no one better than themselves to report this kind of information.

Finally, there is the use of a cross-sectional design, instead of a longitudinal one, although no causality is claimed. However, to deal with this limitation, further research might use longitudinal techniques. Despite the situation of crisis that the construction industry is currently undergoing, it would be very difficult to obtain data at a second time, as there is a great deal of mobility among construction workers.

Future research

Future research could study the influence that personal resources have on how construction workers perceive job demands and other job resources and also study the relationship between personal resources and other variables, like burnout or health variables, to see their effects on performance. Furthermore, it would be very interesting to identify the most effective sources of self-efficacy and sense of competence in each activity setting, which in our case is the construction industry, as they would prove most useful when it comes to designing interventions aimed at increasing these workers' perception about their ability and improving their levels of engagement and job performance.

Finally, as noted above, future studies could also test these relationships by means of longitudinal designs.

Final note

The significance of this study lies in the fact that the predicting role of personal resources in the motivational process of the JD-R model has been shown, based on the predictions of the SCT by Albert Bandura. This study emphasises the crucial role that personal resources play in determining how people perceive job resources by determining the levels of work engagement and, hence, their self-rated job performance.

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