

Job change without changing job? Exploring job crafting in Spain

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Abstract

The working paper explores job crafting and their convergent validity with work engagement and proactive personality in Spain. Based on the Job Demands-Resources model with four dimensions (*increasing structural job resources, decreasing hindering job demands, increasing social job resources, and increasing challenging job demands*) the working paper validates a job crafting scale using a sample of 896 employees working for firms in Spain. The results of the confirmatory factor and invariance analyses suggest that the four-factor model satisfactorily describes the dimensional structure of the 21-item scale, with Cronbach's alpha reliability indices between 0.70 and 0.79. Regarding convergent validity, the factors *increasing structural job resources, increasing social job resources, and increasing challenging job demands* correlate positively with the three sub-scales of Work Engagement (vigour, dedication and absorption) and with the Proactive Personality Scale. In contrast, the factor *decreasing hindering job demands* correlates negatively with the sub-scales of work engagement and not at all with proactivity. These results essentially point towards potential interventions that employees could make to influence their skills, learning and professional development; the interaction with and inspiration drawn from supervisors and colleagues; the proactivity in terms of developing new job demands; and reducing job-related mental and emotional intensity and difficulties.

Keywords

Job crafting, Job demands, Job resources, Work engagement, Proactivity, Psychometric properties.

Introduction

The profound changes in the nature of work in recent years have afforded new perspectives on classic work design (Grant and Parker, 2009; Oldham and Hackman, 2010). Previous approaches had already pointed towards a degree of freedom for employees to redesign their jobs by making self-initiated changes, either with or without the involvement of their organisations' management (Kulik et al., 1987). However, the literature on the concept of job crafting has expanded considerably over the last 10 years and has underscored the importance of employees' discretionary and extra-role behaviours (Leana et al., 2009; Berg et al., 2013; Slemp and Vella-Brodrick, 2013).

Job crafting was originally defined as the physical and cognitive changes that individuals make in the task or relational boundaries of their work in order to align their work with their preferences, motivations and passions (Wrzesniewski and Dutton, 2001; Berg and Dutton, 2008). By altering their tasks, workplace relational boundaries and job identities, employees would seek to increase the significance of work and give its purpose more meaning. In this context, an organisation's management would not unilaterally decide how its employees should spend their time and energy. Rather, the employees themselves would decide what to do, over and beyond the job descriptions provided by the management, especially in complex and uncertain situations (Wrzesniewski and Dutton, 2001; Ghițulescu, 2006; Leana et al., 2009; Berg et al., 2010a; Berg et al., 2010b).

This initial approach to job crafting, which focused on job identity and meaning for employees, was subsequently expanded as a result of the incorporation of a new framework of reference, the Job Demands-Resources (JD-R) model (Demerouti et al., 2001; Bakker and Demerouti, 2007). In this analytical framework, job crafting is defined as the self-initiated changes that employees make in their own job demands and job resources to attain and/or optimize their personal (work) goals.

Owing to the lack of available measures, Tims et al. (2012) designed and validated a generic scale – Job Crafting Scale (JCS-21) – for the quantitative measurement of job crafting based on the JD-R model. This working paper intends to adapt the scale to Spanish by drawing on a sample of employees from Spain in order to test the models investigated by Tims et al. (2012) through a confirmatory factor analysis and to provide data about its reliability and validity.

1. The meaning of job crafting

Job crafting is about the self-initiated changes that employees make to certain aspects of their jobs, without implying their complete redesign (Berg and Dutton, 2008). Wrzesniewski and Dutton (2001) distinguish three main forms of job crafting: cognitive job crafting, if job changes are made as a result of individuals' perceptions of their jobs; task job crafting, if job changes are related to job content; and relational job crafting, if job changes involve changes in interactions with other people, whether superiors, co-workers or clients. The materialisation of job crafting implies one or any combination of its three forms (Berg et al., 2008; Tims and Bakker, 2010).

Berg et al. (2010a) have pointed out that individuals use three different job crafting techniques: emphasising their tasks, expanding their work and reformulating their roles, although these techniques may produce negative consequences, such as the onset of stress if they turn out to be frustrating or go against the objectives set or control system established by the organisation's management (Berg et al., 2013).

In the literature, it is also noted that job crafting can occur at all levels of the organisation. It was initially believed that employees with higher levels of autonomy were more prone to capturing and taking advantage of job crafting opportunities (Wrzesniewski and Dutton, 2001). However, that initial finding was very quickly nuanced. Ghițulescu (2006) showed that the combination of discretion and task interdependence significantly predicted one or more forms of job crafting. Griffin et al. (2007) highlighted the importance of the role played by context, especially the degree of unpredictability and task interdependence, in determining the amount and type of job crafting. Berg et al. (2010a) have suggested that the role of perceived job crafting opportunities may be more complex than first thought. In their study of blue-collar and white-collar workers, they found that the behaviour of each group differed, and that they experienced different job crafting opportunities. Although the position or rank of the job crafter is relevant, they also concluded that higher levels of power (ability to influence others) and formal autonomy (freedom to act and influence others) might be associated with greater psychological restrictions in regard to job crafting.

The relationship between job crafting motivation and behaviour may also be moderated by individuals' motivational orientations to their work. Regarding the ways in which employees frame their relationships with their jobs (work, career or vocation), the literature shows that there are differing views of job crafting possibilities and alternatives (Wrzesniewski et al., 1997; Wrzesniewski and Dutton, 2001; Wrzesniewski, 2003). In this context, intrinsically motivated employees would work for their own good and would craft their jobs more broadly than extrinsically motivated employees. Extrinsic motivation would be associated more with a rigid and less creative behaviour towards tasks (Amabile et al., 1994).

Faced with the need to construct a more complete explanatory model that includes all the dimensions, Tims et al. (2012) recently made a major contribution to the literature by incorporating job crafting into the JD-R model. In their review of the JD-R model, Bakker and Demerouti (2007) concluded that employees might create job demands and resources as a result of their own behaviour. At the same time, job demands and resources could be affected by employees' perceptions of their work environment (Zapf et al., 1996). These causal effects would be consistent with the job crafting phenomenon in the sense that employees would not be passive receivers of information in their work environment, but instead would interpret their tasks actively (Daniels, 2006).

The JD-R model interprets job demands as elements of a job that require skills and physical and/or mental (cognitive and emotional) effort. Consequently, job demands are associated with certain physiological and/or psychological costs. Regarding job resources, the JD-R model interprets them as elements of a job that enable objectives to be attained, job demands and associated physiological and psychological costs to be reduced, and growth, learning and personal development to be stimulated (Bakker and Demerouti, 2007; Bakker et al., 2012). Tims et al. (2012) hypothesise that, when employees feel that their job demand and job resource levels are not balanced, the misalignment can be reduced through three complementary job crafting dimensions: *increasing job resources*, *increasing challenging job demands* and *decreasing hindering job demands*.

Increasing job resources is expected to be associated with valuable outcomes for the employee, with higher levels of work engagement or satisfaction. The more job resources there are, the more job crafting incentives there will be. On the other hand, a job with few challenging stimuli may lead to boredom and, in turn, to absenteeism and job dissatisfaction (Kass et al., 2001). In contrast, an adequate level of *increasing challenging job demands* could motivate employees to develop their knowledge and skills to reach tougher goals (LePine et al., 2005), which would lead to higher levels of satisfaction and self-efficacy (Gorgievski and Hobfoll, 2008). The more challenging job demands there are, the more job crafting incentives there will be. Finally, prolonged exposure to many job demands, especially when combined with few resources, could produce negative consequences for employees' health, such as burnout (Bakker et al., 2005; Schaufeli et al., 2009). In this respect, fewer job demands would foster job crafting.

2. Job crafting measurement in the JD-R model

The vast majority of studies conducted on job crafting are theoretical or qualitative in nature, with few quantitative approaches (Wrzesniewski and Dutton, 2001; Fried et al., 2007; Lyons, 2008; Berg et al., 2010a; Berg et al., 2010b). In this respect, the literature has highlighted the need for more work to be done on the quantitative empirical assessment of job crafting and its link with other study results (Slomp and Vella-Brodrick, 2013).

Ghițulescu (2006) and Leana et al. (2009) have developed quantitative empirical scales for job crafting. These target specific groups of employees with high levels of autonomy and, therefore, broad incentives for job crafting.

Unlike the previous instruments, and in order to improve their representativeness, Tims et al. (2012) have developed and validated a generic scale to measure job crafting behaviour (Job Crafting Scale, JCS) in the context of the JD-R model and through various studies conducted on employees in the Netherlands. The aim of the first study was to design and test, using exploratory factor analysis, a JCS applied to various occupations in a sample of 375 Dutch employees. The results of the first study provided the conceptual underpinning for the job crafting dimensions, though it concluded that it would be better to use four dimensions instead of the three proposed in the study hypotheses. In fact, while two of the factors obtained belonged to the hypothesised dimensions (*increasing challenging job demands* and *decreasing hindering job demands*), the hypothesised factor *increasing job resources* was represented by two other factors. These were labelled *increasing structural job resources*, referring to a variety of employee autonomy and development opportunity resources, and *increasing social job resources*, referring to social support, supervisory coaching and feedback resources. These 4 job crafting dimensions were reliably measurable on a 21-item scale.

The aim of the second study was to perform a confirmatory analysis of the factor structure and convergent validity of the JCS. It was applied to two additional sub-samples of Dutch employees (415 and 201 employees, respectively). The first hypothesis tested was that the four-factor model was significantly better than the model proposed originally (three-factor) and the joint model (one-factor). Then, convergent validity of the JCS was analysed. The four dimensions of job crafting were expected to be positively related to personal initiative and proactive personality, and a negative correlation with cynicism was predicted. The results validated these hypotheses and the JCS showed convergent validity when correlated with the active constructs proactive personality (+), personal initiative (+), and the inactive construct cynicism (-).

Finally, and for a new sample of 190 employees (95 dyads), the results of the third study indicated that self-reports of job crafting correlated positively with colleague-ratings of work engagement, employability, and performance. Also, self-rated job crafting behaviours correlated positively with peer-rated job crafting behaviours. Due to its factor structure and convergent validity, the JCS has been used and adapted in other studies (Petrou et al., 2012; Nielsen and Abildgaard, 2012).

Work engagement can be defined as a positive motivational construct related to work that is characterised by three dimensions: vigour, dedication and absorption (Schaufeli et al., 2002). Vigour is characterised by high levels of energy and mental activation while working, the desire and predisposition to invest effort in work, and persistence and resistance when difficulties arise. Dedication denotes an employee's high level of work engagement, together with the manifestation of a high level of meaning attributed to work and feelings of enthusiasm, inspiration, pride and challenge. Finally, absorption is characterised by a state of concentration, of feeling that time is passing quickly, and that employees find it hard to disconnect from their work tasks due to feelings of enjoyment and realisation.

Although the literature has shown that engaged employees are more active in changing their personal initiative and job resources (Hakanen et al., 2008), their work environment (Xanthopoulou et al., 2009) and their levels of autonomy, exchanges of ideas with their supervisors and development opportunities (Bakker and Bal, 2010), some important questions have yet to be answered. Particularly, an analysis of how fluctuations in work engagement are related to job crafting (Bakker and Leiter, 2010), and research into the specific relationship between the various dimensions of job crafting and work engagement (Hakanen et al., 2005; Podsakoff et al., 2007; Crawford et al., 2010; Nielsen and Abildgaard, 2012; Petrou et al., 2012).

In this respect, an analysis of convergent validity between the dimensions of the JCS and work engagement will help to provide a better understanding of the processes, antecedents and consequences of job crafting. A positive relationship is expected to be found between the three dimensions of job crafting (*increasing structural job resources*, *increasing social job resources* and *increasing challenging job demands*) and the three dimensions of work engagement (vigour, dedication and absorption). In contrast, a zero or negative relationship is expected to be found between the dimension *decreasing hindering job demands* and the three dimensions of work engagement.

The common aspect of proactive work behaviours is that they are initiated by employees in order to advance future situations or with the idea of effecting change (Parker and Collins, 2010). Employees with a proactive personality identify opportunities, show initiative, interpret their roles broadly, and redefine their jobs to include new tasks and goals (Belschak and Den Hartog, 2010; Berg et al., 2010b).

The literature shows that a particular form of proactive behaviour is job crafting. Through job crafting, employees can proactively mobilise their skills and resources to

satisfy their needs and prosper at work (Kristof-Brown et al., 2005; Tims and Bakker, 2010). In the context of the person-work environment fit, proactivity has been found to be a motivating agent for job crafting (Simmering et al., 2003). Employees with a proactive personality challenge the person-work environment fit and take part in job crafting with more intensity than employees without a proactive personality (Tims et al., 2012).

In this respect, an analysis of convergent reliability between the dimensions of the JCS and proactivity will help to provide a better understanding of the relationship between the two constructs. As in the case of Tims et al. (2012), a positive relationship is expected to be found between the three dimensions of job crafting (*increasing structural job resources*, *increasing social job resources* and *increasing challenging job demands*) and proactivity. In contrast, no relationship is expected to be found between the dimension *decreasing hindering job demands* and proactivity.

3.Data, models and empirical plan

The study uses primarily survey data for a sample of 896 employees working for firms operating in Spain. Data gathering was performed following networking process. Through the social network of i2TIC (Interdisciplinary Research Group on ICT: <http://i2tic.net/en/>) we contacted with firms, trade unions and business associations in order to get access to a sample of employees. Once the sample of employees was obtained, the questionnaire was sent via e-mail through *Google docs* tool. The questionnaire used in the survey contained 52 questions against which a scoring value had to be assigned. It was subjected to an initial pilot stage (20 surveys) and was answered by a wide range of employees working in Spanish firms, in on-line interviews lasting for half an hour each. For gathering the data on the job crafting scale, the study was presented as a research of Open University of Catalonia. The fieldwork was carried out between May and July 2012.

The sample was selected by random accidental sampling. The response rate was 83.7%. Of the original sample, 12.2% of employees abstained from participating, and a further 4.1% of the questionnaires returned were rejected due to completion mistakes or omissions. After contacting the employees selected to take part in the study, the scales were administered individually in work time with the prior consent of the firms' managers. The participants were given instructions to enable them to answer the scales. They were also given an assurance about the confidentiality and anonymity of the data obtained.

The employees' tasks were diverse: administrative, commercial, production, etc. Of the sample, 47.4% was male and 52.6% female. The employees' mean age was 34.5

years ($SD=9.11$), distributed in the following range: 20-30 years (39.5%), 31-54 years (43.6%), and 46-65 years (16.9%). The participants were highly educated. Most of them had completed at least a bachelor's degree (62.5%). The mean length of service was 6.5 years ($SD=6.33$) in their posts and 8.9 years ($SD=9.06$) in their firms. The employees belonged to firms whose activities covered a wide sectoral range, such as financial intermediation, education and social services, health and hospitals, commerce, telecommunications, metallurgy and other similar activities, pharmaceuticals, chemicals, security, sales-oriented services, information technology (IT), general consultancy, hotel industry, distribution, tourism and food.

The JCS was adapted by following the steps shown in the literature (Hambleton, 1994; Hambleton et al., 2005; Muñiz and Bartram, 2007; Muñiz et al., 2013). First, the items were translated from English into Spanish by research experts (university lecturers) and language experts belonging to the Language Service at the Open University of Catalonia (UOC), Spain. Second, a focus group was held to discuss the translated items (equivalence of meaning, for example). Third, the language experts back-translated the items into English. Fourth and lastly, the equivalence of meaning of the original and adapted versions was checked.

We measured job crafting using the four-factor scale created (descriptive statistics of the scale are in the annex table) by Tims et al. (2012). In the original study, the first factor *increasing structural job resources* ($\alpha=0.82$) comprises 5 items; the second factor *decreasing hindering job demands* ($\alpha=0.79$) comprises 6 items; the third factor *increasing social job resources* ($\alpha=0.77$) comprises 5 items; and the fourth factor *increasing challenging job demands* ($\alpha=0.75$) comprises 5 items. The employees answered the questions on a 7-point Likert scale, where: 1=*never* and 7=*always*.

In order to analyse convergent validity, the concepts of work engagement and proactive personality were considered. First, the Utrecht Work Engagement Scale (15 items) was used; this measures the dimensions of work engagement: vigour ($\alpha=0.77$), dedication ($\alpha=0.89$) and absorption ($\alpha=0.73$) (Salanova et al., 2000). It employs a 7-point response scale, where 1=*strongly disagree* and 7=*strongly agree*. Second, proactive personality was assessed using a 10-item shortened version of the Proactive Personality Scale (PPS). Seibert et al. (1999) presented evidence for the validity and reliability of the shortened scale. Cronbach's alpha was 0.85. It employs a 7-point response scale, where 1=*never* and 7=*always*.

Three models were tested. Model 1 (M1) is based on the empirical results of the first and second studies by Tims et al. (2012) and comprises four factors: 1) *increasing structural job resources*, 2) *decreasing hindering job demands*, 3) *increasing social job resources*, and 4) *increasing challenging job demands*. Model 2 (M2) is the theoretical formulation initially proposed by Tims et al. (2012) and comprises three factors: 1) *increasing job resources*, 2) *increasing challenging job demands*, and 3) *decreasing hindering job demands*. In this case, the social and structural aspects of factors 1 and 3 of M1 are incorporated into factor 1 of M2, whereas the other two factors are kept as

they are. These two models are therefore nested. The factors are considered correlated in both cases. Model 3 (M3) proposes that the items are explained by one general underlying dimension.

The factor analyses were performed with EQS 6.1 software, using the Satorra-Bentler bias-corrected maximum likelihood estimation method, as the assumption of multivariate normality was not met: Mardia's multivariate coefficient=18.7 (Finney and DiStefano, 2006; Byrne, 2006). The models' fit was evaluated using the same indices and criteria as those employed by Tims et al. (2012): the Chi-square/degrees of freedom ratio (χ^2/df), the Tucker-Lewis index (TLI), the comparative fit index (CFI), the incremental fit index (IFI) and the root mean square error of approximation (RMSEA). A value lower than or equal to 3 in the χ^2/df ratio indicates a good model fit (Kline, 2008). Similarly, values equal to or higher than 0.90 in the TLI, CFI and IFI, and values equal to or lower than 0.08 in the RMSEA index are considered an acceptable fit (Byrne, 2001).

When a model does not fit well, it is standard practice to incorporate *a posteriori* changes to achieve a satisfactory fit, provided that the changes have a reasonable theoretical foundation. By doing so, the confirmatory analysis is converted into an exploratory analysis and gives rise to several problems, such as capitalisation on chance (MacCallum et al., 1992). In order to mitigate these problems, cross-validation is recommended. If the sample obtained is large enough, it can be randomly divided into two sub-samples. One is used as a calibration sample, where the proposed models are tested and relevant changes are made, and the other is used as a validation sample, where the modified model is tested by an analysis of invariance between samples (Byrne, 2006). In our study, the initial sample of 896 employees was divided into two sub-samples of 447 employees (sample A, calibration) and 449 employees (sample B, validation).

The procedure to test invariance first requires a test to see if the model fits adequately in each sample separately, and second a comparison of the model between the samples using hierarchical analysis, setting increasingly restrictive conditions (Byrne, 2008). The sequence consists in testing: 1) the equality of the factor structure (or configural invariance), which implies having the same number of factors and the same pattern of loadings; 2) equality of factor loadings (or measurement invariance); and 3) equality of relationship between factors (structural invariance) or, more specifically, equality of their variance or covariance (Byrne, 2006). The models are tested in this sequence, such that the one-stage model is the baseline (or unrestricted model) against which the next model with more restrictions (or restricted model) is compared. The statistical comparison uses χ^2 differences between the restricted and unrestricted models ($\Delta\chi^2$), where no significant difference indicates equivalence or invariance. The SBDIFF.EXE program was used to calculate the significance of the differences between the Satorra-Bentler scaled Chi-square ($\Delta_{SB}\chi^2$)

values. The model-based comparison used CFI to assess the relative fit (ΔCFI), where differences lower than 0.01 indicate invariance (Cheung and Rensvold, 2002).

4. Results

The results show that none of the three models had a completely satisfactory fit (table 1). The best model was the four-factor one (M1), which has reasonable fit values in the χ^2/df (3.00) and RMSEA (0.067) indices, yet poor fit values in the others. This model differs significantly from the three-factor model (M2, $\Delta\text{SB}\chi^2=1,323.6$, $\text{df}=3$, $p<0.001$, $\Delta\text{CFI}=0.183$) and the one-factor model (M3, $\Delta\text{SB}\chi^2=919.1$, $\text{df}=6$, $p<0.001$, $\Delta\text{CFI}=0.460$).

Table 1. Goodness of fit of the calibration sample models

Model	$\text{SB}\chi^2$	df	χ^2/df	CFI	TLI	IFI	RMSEA
M1. Empirical (4-factor)	548.3	183	3.00	0.858	0.838	0.860	0.067
M2. Theoretical (3-factor)	1,024.4	186	5.20	0.675	0.633	0.678	0.101
M3. 1-factor	1,742.3	189	9.22	0.398	0.331	0.403	0.136
M4. Modified M1	375.8	180	2.09	0.924	0.911	0.925	0.049

Note: $\text{SB}\chi^2$ =Satorra-Bentler Chi-square, df =degrees of freedom, χ^2/df =Chi-square/degrees of freedom ratio, CFI=Comparative Fit Index, TLI=Tucker-Lewis Index, IFI=Incremental Fit Index, RMSEA=Root Mean Square Error of Approximation.

Source: Own elaboration.

The fit of the four-factor model (M1) can be improved by taking into account that there are significant error covariances, according to the modification indices (Lagrange Multiplier Test, LMT), between items 6 and 7 ($r=0.401$, $p<0.001$), items 8 and 9 ($r=0.493$, $p<0.001$) and items 15 and 16 ($r=0.399$, $p<0.001$). In this respect, the new M4 model (modified M1) meets the goodness-of-fit criteria in all of its indices (table 1).

Including these relationships is only legitimate if there is a theoretical justification for doing so. Covariances between the errors are considered a systematic rather than a random error, and may be due to specific characteristics of the items (Aish and Jöreskog, 1990), such as a high degree of content redundancy or overlap (Byrne, 2008). This was found to be case in the pairs of items mentioned. In their statements, items 6 and 7 share the notion of ensuring that work is less intense (redundancy), the only difference being that the first says “mentally less intense” and the second says “emotionally less intense”. Items 8 and 9 overlap in the sense that they refer to managing or organising work to minimise contact with people, the only difference being – as in the previous case – the emotional aspect [“whose problems affect me

emotionally”] and the mental aspect [“whose expectations are unrealistic”]). And lastly, items 15 and 16 share the social notion of asking others or colleagues for “feedback” (the same word used in both the Spanish and English versions) in the first instance and “advice” in the second. Thus, if – as detected in the Spanish adaptation – these redundancies are taken into account, then it is possible to assert that the modified four-factor model (M4) satisfactorily describes the dimensional structure of the questionnaire in the calibration sample.

The confirmatory factor analysis performed on the validation sample indicates that the modified four-factor model (M4) has a reasonable fit ($_{SB}\chi^2=431.8$, $df=180$, $\chi^2/df=2.40$, CFI=0.90, TLI=0.88, IFI=0.90, RMSEA=0.06). The results of the analysis of invariance between the calibration and validation samples are shown in table 2. The fit indices of the hierarchical models show a very good fit at each stage. The number of factors and their composition are the same in both (stage 1: $\chi^2/df=2.21$, CFI=0.911, TLI=0.896, IFI=0.911, RMSEA=0.037) and when the loadings are permitted to differ, there are no significant differences (stage 2-stage 1: $\Delta_{SB}\chi^2=30.21$, $df=20$, $p=0.067$, $\Delta CFI=0.002$). Nor are there any significant differences when the factors are permitted to have different variances or covariances (stage 3-stage 2: $\Delta_{SB}\chi^2=3.86$, $df=6$, $p=0.679$, $\Delta CFI<0.001$). Thus, it is possible to assert that there is invariance and that the questionnaire structure can be described by four dimensions.

Table 2. Analysis of invariance between the calibration and validation samples

Model	$_{SB}\chi^2$	df	χ^2/df	CFI	TLI	IFI	RMSEA
1. Configural invariance	807.6	360	2.21	0.911	0.896	0.911	0.037
2. Measurement invariance	839.0	380	1.02	0.909	0.899	0.910	0.037
3. Structural invariance	843.0	386	2.18	0.909	0.901	0.910	0.036

Note: $_{SB}\chi^2$ =Satorra-Bentler Chi-square, df =degrees of freedom, χ^2/df =Chi-square/degrees of freedom ratio, CFI=Comparative Fit Index, TLI=Tucker-Lewis Index, IFI=Incremental Fit Index, RMSEA=Root Mean Square Error of Approximation.

Source: Own elaboration.

The factor loadings and the correlations between factors are described in table 3. As in Tim's et al. (2012) original sample, four factors are obtained: F1=*increasing structural job resources*; F2=*decreasing hindering job demands*; F3=*increasing social job resources*; and F4=*increasing challenging job demands*, with Cronbach's alpha reliability indices between 0.70 and 0.79 in the two sub-samples. Regarding the items, and after the confirmatory factor and invariance analyses, the final scale obtained for the sample of Spanish employees has 21 items: 5 items for the first factor, 6 items for the second factor, 5 items for the third factor, and 5 items for the fourth factor.

Table 3. Job Crafting Scale: Factor loadings and correlations between factors

	F1	F2	F3	F4
Aumento de los recursos estructurales de empleo [Increasing structural job resources]				
1. Yo trato de desarrollar mis capacidades [I try to develop my capabilities]	0.794			
2. Yo trato de desarrollarme profesionalmente [I try to develop myself professionally]	0.782			
3. Yo trato de aprender cosas nuevas en el trabajo [I try to learn new things at work]	0.718			
4. Yo me aseguro de que puedo utilizar mis capacidades al máximo [I make sure that I use my capacities to the fullest]	0.647			
5. Yo decido por mí mismo cómo hacer las cosas [I decide on my own how I do things]	0.253			
Disminución de las demandas de trabajo [Decreasing hindering job demands]				
6. Yo me cercioro de que mi trabajo sea mentalmente menos intenso [I make sure that my work is mentally less intense]		0.647		
7. Yo trato de asegurarme de que mi trabajo sea emocionalmente menos intenso [I try to ensure that my work is emotionally less intense]		0.617		
8. Yo puedo administrar mi trabajo, así que trato de minimizar el contacto con personas cuyos problemas me afectan emocionalmente [I manage my work so that I try to minimize contact with people whose problems affect me emotionally]		0.517		
9. Yo organizo mi trabajo con el fin de minimizar el contacto con las personas cuyas expectativas no son realistas [I organize my work so as to minimize contact with people whose expectations are unrealistic]		0.445		
10. Yo trato de asegurarme de que no tengo que tomar decisiones difíciles en el trabajo [I try to ensure that I do not have to make many difficult decisions at work]		0.627		
11. Yo organizo mi trabajo de tal manera que me aseguro que no tengo que concentrarme durante un período demasiado largo. [I organize my work in such a way to make sure that I do not have to concentrate for too long a period at once]		0.672		
Aumento de los recursos sociales de empleo [Increasing social job resources]				
12. Yo le pido a mi supervisor que me haga de coach [I ask my supervisor to coach me]			0.687	
13. Yo me pregunto si mi supervisor está satisfecho con mi trabajo [I ask whether my supervisor is satisfied with my work]			0.812	
14. Yo miro a mi supervisor para tener inspiración [I look to my supervisor for inspiration capabilities]			0.631	
15. Yo pido a los demás que me den feedback sobre mi desempeño en el trabajo [I ask others others for feedback on my job performance]			0.611	
16. Yo pido consejos a los colegas [I ask colleagues for advice]			0.365	
Creciente demanda de desafíos en el trabajo [Increasing challenging job demands]				
17. Cuando aparece un proyecto interesante, yo me ofrezco de manera proactiva a los compañeros de trabajo para trabajar en él [When an interesting project comes along, I offer myself proactively as project co-worker]				0.793
18. Si hay nuevos desarrollos, yo soy uno de los primeros en aprender acerca de ellos y probarlos [If there are new developments, I am one of the first to learn about them and try them out]				0.777
19. Cuando no hay mucho que hacer en el trabajo, yo lo veo como una oportunidad para iniciar nuevos proyectos [When there is not much to do at work, I see it as a chance to start new projects]				0.647
20. Regularmente yo realizo tareas adicionales a pesar de que no recibo salario extra por ellas [I regularly take on extra tasks even though I do not receive extra salary for them]				0.540
21. Yo trato de hacer el trabajo más difícil para examinar las relaciones subyacentes entre los distintos aspectos de mi trabajo [I try to make my work more challenging by examining the underlying relationships between aspects of my job]				0.384
F2	-0.113			
F3	0.144*	0.184**		
F4	0.573**	-0.121	0.292**	

Note: * p<0.05, ** p<0.01; in all loadings, p<0.01.

Source: Own elaboration.

Regarding convergent validity of the Job Crafting Scale (table 4), and as we had hypothesised, it is found that factors *F1=increasing structural job resources*, *F3=increasing social job resources*, and *F4=increasing challenging job demands* in the two sub-samples correlate positively with vigour, dedication and absorption (sub-scales of work engagement) and proactivity (PPS). In contrast, factor *F2=decreasing hindering job demands* correlates negatively with the sub-scales of work engagement, though only significantly in the validation sub-sample. No significant correlation between this factor and proactivity was found.

Table 4. Job Crafting Scale: Descriptive statistics, internal consistency, confidence intervals, external correlates (alternative scales used for comparison purposes: Utrecht Work Engagement Scale and Proactive Personality Scale), and correlations between factors and contrast scales

		Sample A (calibration) N=447				Sample B (validation) N=449			
		F1	F2	F3	F4	F1	F2	F3	F4
Mean		28.20	21.14	16.68	23.64	28.15	21.37	16.47	23.18
SD		3.88	6.50	6.01	5.76	4.15	6.77	5.99	5.65
Reliability		0.70	0.77	0.78	0.76	0.75	0.79	0.77	0.75
Confidence interval		0.65- 0.73	0.73- 0.80	0.74- 0.81	0.73- 0.80	0.71- 0.79	0.76- 0.82	0.74- 0.80	0.71- 0.80
Work engagement	Vigour	0.52**	-0.08	0.12**	0.50**	0.50**	-0.14**	0.15**	0.44**
	Dedication	0.46**	-0.07	0.14**	0.42**	0.44*	-0.13**	0.16**	0.37**
	Absorption	0.41**	-0.04	0.13**	0.48**	0.37**	-0.15**	0.17**	0.38**
Proactivity		0.52**	-0.03	0.14**	0.54**	0.50**	0.05	0.10*	0.50**
Percentiles	10	23.0	13.0	9.0	16.0	22.0	13.0	9.0	15.0
	20	25.0	16.0	12.0	18.0	25.0	15.0	11.0	18.0
	30	27.0	17.0	13.0	20.0	27.0	18.0	13.0	21.0
	40	28.0	19.0	14.0	22.0	28.0	19.0	14.0	22.0
	50	29.0	20.0	15.0	24.0	29.0	21.0	16.0	24.0
	60	30.0	22.0	17.0	26.0	30.0	23.0	18.0	25.0
	70	31.0	24.0	19.0	27.0	31.0	25.0	19.0	26.0
	80	32.0	26.0	22.0	29.0	32.0	27.0	21.0	28.0
	90	33.0	30.0	25.0	31.0	33.0	30.0	25.0	30.0
Note: ** p<0.01; * p<0.05. (F1) Increasing structural job resources, (F2) Decreasing hindering job demands, (F3) Increasing social job resources, (F4) Increasing challenging job demands. Validity: Application of Fisher's z transformation (at 1%) between the two sub-samples. There are no significant differences; the validity evidence is therefore stable									

Source: Own elaboration.

5. Conclusions and discussion

This working paper explores job crafting and their convergent validity with work engagement and proactive personality. Based on the Job Demands-Resources model, the paper analyses the psychometric properties of the job crafting scale in a sample of Spanish workers, an instrument that allows job crafting to be assessed by means of four factors: F1) *increasing structural job resources*, F2) *decreasing hindering job demands*, F3) *increasing social job resources*, and F4) *increasing challenging job demands*. The results of the confirmatory factor analysis confirmed that, like the original version, the four-factor model had the best fit, differing significantly from the three-factor theoretical model and from the one-factor model. However, this model's fit could be improved by taking into account those items with a high degree of content redundancy or overlap in the Spanish adaptation. In this respect, and after performing an invariance analysis, it was possible to assert that the four-factor model satisfactorily described the dimensional structure of the questionnaire, with 5 items for the first factor, 6 items for the second factor, 5 items for the third factor, and 5 items for the fourth factor. Cronbach's alpha reliability indices were between 0.70 and 0.79 in the two sub-samples (calibration and validation).

Regarding convergent validity of the job crafting scale, the expected results were obtained, as factors *F1*, *F3* and *F4* correlated positively with the sub-scales of work engagement (vigour, dedication and absorption) and the proactive personality scale. In contrast, the *F2* correlated negatively with work engagement and was independent from proactivity. In conclusion, and taking into consideration the results obtained, the Spanish adaptation of the job crafting scale can be deemed to have reasonable validity and reliability, and, like the original instrument, is useful for assessing job crafting.

The limitations of the article represent the starting point for research that we intend to conduct in the future. Basically, three lines of future research have been identified. First, it would be appropriate to carry on analysing the discriminant validity of the job crafting scale. In this respect, and as highlighted in the most recent research (Nielsen and Abildgaard, 2012; Berg et al., 2013), it is crucial to get a more in-depth understanding of how job crafting and its four dimensions can lead to the materialisation of development opportunities for different groups of employees (white-collar versus blue-collar, directors versus employees, highly-skilled versus non-skilled, younger versus older, and men versus women, among others). These distinct characteristics of employees and of their industrial relations, which are very important in a crisis scenario like the one that the labour market in Spain is facing, may explain differential job crafting forms and behaviours.

Second, and beyond a more detailed analysis of employee groups, also worthy of note is the importance of considering the time dimension of job crafting to establish its

persistence and evolution over time. In the future, the research will be expanded with new samples of employees and a comparative time analysis.

And third, further analysis of the validity of the job crafting scale criteria will need to be performed. In particular, we intend to look at the relationship between job crafting and employees' intra-entrepreneurial and innovative attitudes as a mechanism for creating better quality jobs, and at the relationship between job crafting and organisational structures that offer the best assurances of securing employee engagement, satisfaction and wellbeing.

Regarding their applicability, the scale's four dimensions essentially point towards potential interventions that employees could make to influence their levels of job crafting. In particular, this refers to every behaviour and action aimed at increasing: their skills, learning and professional development (*increasing structural job resources*); their interaction with and inspiration drawn from supervisors and colleagues (*increasing social job resources*); their proactivity in terms of developing new job demands (*increasing challenging job demands*); and reducing job-related mental and emotional intensity and difficulties (*decreasing hindering job demands*).

6. Annex

Annex 1. Job Crafting Scale: descriptive statistics

	Mean	Std. Dev.	Min.	Max.	Asymm.	Kurtosis
Increasing structural job resources						
1. I try to develop my capabilities	5.844	1.082	2.0	8.0	-0.907	0.487
2. I try to develop myself professionally	5.893	1.157	1.0	7.0	-1.129	1.045
3. I try to learn new things at work	5.987	1.092	2.0	7.0	-1.108	0.931
4. I make sure that I use my capacities to the fullest	5.451	1.154	1.0	7.0	-0.522	-0.133
5. I decide on my own how I do things	5.001	1.304	1.0	7.0	-0.513	-0.328
Decreasing hindering job demands						
6. I make sure that my work is mentally less intense	3.701	1.510	1.0	7.0	0.246	-0.763
7. I try to ensure that my work is emotionally less intense	3.824	1.527	1.0	7.0	0.114	-0.838
8. I manage my work so that I try to minimize contact with people whose problems affect me emotionally	3.693	1.706	1.0	7.0	0.162	-1.002
9. I organize my work so as to minimize contact with people whose expectations are unrealistic	3.915	1.711	1.0	7.0	-0.002	-1.080
10. I try to ensure that I do not have to make many difficult decisions at work	2.899	1.541	1.0	7.0	0.787	-0.193
11. I organize my work in such a way to make sure that I do not have to concentrate for too long a period at once	3.216	1.604	1.0	7.0	0.503	-0.601
Increasing social job resources						
12. I ask my supervisor to coach me	2.969	1.708	1.0	7.0	0.588	-0.682
13. I ask whether my supervisor is satisfied with my work	2.988	1.715	1.0	7.0	0.613	-0.619
14. I look to my supervisor for inspiration capabilities	3.089	1.689	1.0	7.0	0.492	-0.787
15. I ask others for feedback on my job performance	3.325	1.616	1.0	7.0	0.372	-0.682
16. I ask colleagues for advice	4.209	1.498	1.0	7.0	0.009	-0.773
Increasing challenging job demands						
17. When an interesting project comes along, I offer myself proactively as project co-worker	5.025	1.464	1.0	7.0	-0.536	-0.451
18. If there are new developments, I am one of the first to learn about them and try them out	5.069	1.429	1.0	7.0	-0.556	-0.382
19. When there is not much to do at work, I see it as a chance to start new projects	4.647	1.638	1.0	7.0	-0.354	-0.743
20. I regularly take on extra tasks even though I do not receive extra salary for them	5.031	1.726	1.0	7.0	-0.662	-0.636
21. I try to make my work more challenging by examining the underlying relationships between aspects of my job	3.643	1.708	1.0	7.0	0.190	-0.980

Source: Own elaboration.

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Resumen

El documento de trabajo analiza el “job crafting” y su validez convergente con el “work engagement” y la personalidad proactiva en España. Basado en el modelo de demandas y recursos laborales (Job Demands-Resources model) con cuatro dimensiones (aumento de los recursos estructurales del empleo, disminución de las demandas de trabajo, aumento de los recursos sociales de empleo y creciente demanda de desafíos en el trabajo) el documento de trabajo valida una escala de “job crafting” a partir de una muestra de 896 empleados de empresas en España. Los resultados de los análisis factorial confirmatorio y de invariancia sugieren que el modelo de cuatro factores describe satisfactoriamente la estructura dimensional de la escala con 21 ítems, con unos índices de fiabilidad (alfa de Cronbach) situados entre 0,70 y 0,79. En relación con la validez convergente, los factores aumento de los recursos estructurales del empleo, aumento de los recursos sociales del empleo y creciente demanda de los desafíos de trabajo correlacionan positivamente con las tres sub-escalas del “work engagement” (vigor, dedicación y absorción) y con la escala de personalidad proactiva. Por el contrario, el factor disminución de las demandas de trabajo correlaciona negativamente con las tres sub-escalas del “work engagement”, y no se observa correlación con la proactividad. Estos resultados ponen de relieve posibles intervenciones que los trabajadores pueden realizar con el objetivo de mejorar sus habilidades, aprendizaje y desarrollo profesional, la interacción con sus supervisores y colegas, la proactividad para desarrollar nuevas demandas de empleo, y la reducción de la intensidad y las dificultades mentales y emocionales del trabajo.

Palabras clave

Job crafting, Demandas de empleo, Recursos para el empleo, Work engagement, Proactividad, Propiedades psicométricas.

Resum

El document de treball analitza el “job crafting” i la seva validesa convergent amb el “work engagement” i la personalitat proactiva a Espanya. Basat en el model de demandes i recursos laborals (Job Demands-Resources model) amb quatre dimensions (augment dels recursos estructurals del treball, disminució de les demandes de treball, augment dels recursos socials del treball i creixent demanda dels reptes del treball), el document de treball valida una escala de “job crafting” a partir d’una mostra de 896 treballadors d’empreses a Espanya. Els resultats de l’anàlisi factorial confirmatori i d’invariància suggereixen que el model de quatre factors descriu satisfactòriament l’estructura dimensional de l’escala amb 21 ítems, i amb uns índexs de fiabilitat (alfa de Cronbach) situats entre 0,70 i 0,79. Pel que fa a la validesa convergent, els factors augment dels recursos estructurals del treball, augment dels recursos socials del treball i creixent demanda dels reptes del treball correlacionen positivament amb les tres sub-escala de “work engagement” (vigor, dedicació i absorció) i amb l’escala de personalitat proactiva. En canvi, el factor disminució de les demandes de treball correlaciona negativament amb les tres sub-escala de “work engagement”, i no s’observa correlació amb la proactivitat. Aquests resultats posen de relleu possibles intervencions que els treballadors poden fer amb l’objectiu de millorar les seves habilitats, aprenentatge i desenvolupament professional, la interacció amb els seus supervisors i col·legues, la proactivitat per a desenvolupar noves demandes de treball, i la reducció de la intensitat i les dificultats mentals i emocionals del treball.

Paraules clau

Job crafting, Demandes de treball, Recursos per al treball, Work engagement, Proactivitat, Propietats psicomètriques.

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