

## AN ITALIAN VALIDATION OF THE JOB CRAFTING SCALE: A SHORT FORM

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### SUMMARY

*Research on job crafting is increasing nowadays. Job crafting has been studied in terms of a mediator variable useful to improve positive organizational behaviors, and it has crucial theoretical and practical implications. In order to facilitate its measurement in large surveys, in different settings, we aimed to develop a brief 12-item version, the Job Crafting Scale-Short Form (JCS-SF). Having a brief scale to measure job crafting behaviors will contribute to facilitate research in several organizational contexts. This study presents the main psychometric properties of a brief JC scale based on JC scale developed by Tims et al. (2012). EFA results show support for the original Four-factor solution. Results have been confirmed using CFA. The four subscales showed adequate reliability. The brief scale could be used for researchers and practitioners in public and private organizational sectors.*

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### 1. INTRODUCTION

Current organizational environments are becoming multi-dimensional and, consequently, more complex to be managed every day. The changes of the labour market, in economic, social and technological terms have evolved into a new way to under-

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stand what work is. In this context, the role of the individuals in the definition, maintenance and development of jobs has become each time more valuable, and has shown important effects on organizational outcomes, such as job satisfaction (Callea, Urbini, Ingusci and Chirumbolo, 2016), work engagement (Hakanen, Peeters and Schaufeli, 2018) and organizational identification (Piccoli, Callea, Urbini, Chirumbolo, Ingusci and De Witte, 2016). Thus, strategic management of human resources in the current scenario, is concerned about how employees' proactive behaviors might be useful in coping with the changes and new challenging demands arising in the world of work. One of the most studied concepts, in the last decades in organizational psychology and human resources management literature, is job crafting. Indeed, the interest of researchers and practitioners on this construct is growing and its study is receiving more and more attention. Job crafting concerns the self-initiated changes carried out by people at work to improve their performance and to develop new and better strategies to cope with changes deriving by labour market (Tims, Bakker and Derks, 2012). Thus, it is considered as a specific form of proactive behavior through which individuals can contribute to improvement of personal and organizational results. In this sense, job crafting has been regarded as a strategic tool for managing and facing new challenges, and improving well-being at work (Ingusci, 2016; Cenciotti, Borgogni, Callea, Colombo, Cortese, Ingusci, Miraglia and Zito, 2016). Research has previously identified its potential role as mediator in the relationship between different work and personal factors (e.g. job characteristics, resilience, self-efficacy) and organizational outcomes such as job satisfaction (Ingusci *et al.*, Callea, Chirumbolo and Urbini, 2016) and job performance (Ingusci *et al.*, 2016). One of the more broadly used measures in this field is the Job Crafting Scale, developed by Tims *et al.* (2012). This measure has shown appropriated psychometric properties allowing researchers to test for the relationship between job crafting and its correlates. In Italian context, research about validation job crafting scales is limited. There is an important validation study which focused on the three job crafting dimensions oriented toward a positive direction of "increasing" (Cenciotti *et al.*, 2016). It's a useful tool to measure positive organizational outcomes, but it doesn't focus on the negative dimension (the decreasing of hindering job demands), so it offers a partial vision of job crafting. It's important, in fact, to consider the overall theoretical model in which job crafting is included, that is the job demands-resources model. According to it, Bakker and Demerouti (2014) in their recent review about JD-R Theory, defined job crafting as the proactive changes workers make in their job demands and resources; more in deeply, they stated that job crafting, as a whole concept, including the four dimensions, can predict positive changes in work environment and it also may decrease burnout. So, we consider that it's essential to maintain the original structure of four dimensions for the measure of crafting, but it also decisive to take into account that a short version of the scale can be needed to facilitate practitioners and consultant in human resources management, in training interventions. A short form of job crafting scale is a practical and handy tool, useful to increase skills of adaptability, to enhance their performance, and, finally, to promote over time, a sustainable well-being at work. In sum, a contribution to the validation of a Job Crafting (JC) short version is needed in light of the lack, to our knowledge, of

an Italian job crafting measure in a short form. Thus, there is a need to adapt measures of job crafting to this geographical context. Moreover, researchers have advocated different times for the need of short but valid and reliable measures that make the data collection easy and more flexible, and allow the simultaneous evaluation of multiple constructs, sometimes also from multiple sources or at multiple time points.

### 1.1 *Aims and hypotheses*

This study has a double aim: on one hand to adapt and validate a short version of the Job Crafting Scale (Tims *et al.*, 2012) to the Italian context, starting from the original version, and on the other hand to test the relations between job crafting and life and job satisfaction. More specifically the assumptions are:

- Hypothesis 1: job crafting is positively related to job and life satisfaction.
- Hypothesis 1a: the increasing of Social JR (SOC) is positively related to job and life satisfaction.
- Hypothesis 1b: the increasing of structural JR (STR) is positively related to job and life satisfaction.
- Hypothesis 1c: the increasing of challenging JD (CHA) is positively related to job and life satisfaction.

In order to achieve these goals, in the first section, the job crafting theoretical approaches are discussed, with great attention to individual and organizational antecedents and consequences. Furthermore, the Job Crafting Scale is described, in the original 21-item form (Tims *et al.*, 2012) and in its short version of 12 item, adopted in our study. The second section explains how the short version of the Job Crafting Scale has been validate by using Structural Equation Model: specifically through a Factor Analysis we confirmed the organization of the questionnaire in four factors with a satisfactory explained information and then that this solution is the model with the best fit indexes. In order to test the reliability and the validity of the test, we calculated Cronbach Alpha and Omega Coefficients. Finally, the measures for life and job satisfaction are introduced. The third section discuss about the results obtained, confirm the four-factor hypothesis, the validity and reliability of this job crafting measure and the hypothesis testing in terms of correlation between the dimension of job crafting, job and life satisfaction. The last section presents the limitations of this study, the possible implications for future and practical research.

### 1.2 *Theoretical background for the study of job crafting*

Two main theoretical approaches have been developed for the study of job crafting, the Wrzesniewski and Dutton's model and the Job Demands-Resources model (JD-R). The first model (Wrzesniewski and Dutton, 2001) has evolved from qualitative and

quantitative research about the proactive behaviours used to change the boundaries of their job and to modify the activities in terms of task, relational and cognitive activities. The second model (Bakker and Demerouti, 2014), starts from the Job Demands and Resource (JD-R) theoretical framework. It considers two main factors at work (job demands and job resources) which are crucial for the development of employees' well-being. Most part of the research developed under the Wrzesniewski and Dutton's model, focuses on the qualitative nature of job crafting. For instance, in a qualitative study in profit and no-profit sectors, Berg, Wrzesniewski and Dutton (2010) showed how workers perceive and adapt to challenges in manipulating their jobs and discussed how these processes are different in employees with different job positions (low versus high level in an organization). Surprisingly, high-ranking employees seemed to feel more limited with respect to their freedom to manipulate their job, rather than the low-ranking employees who felt relatively more freedom to modify proactively their job. Results suggested in fact, that greater formal autonomy and power can sometimes be linked to greater psychological limitation, which, thus, may limit the increase of job crafting behaviors. However, recent literature underlined the need to focus on the quantitative empirical assessment of job crafting to explore organizational outcomes to improve interventions for the enhance of the well-being at work (Ghitulescu, 2006; Leana, Appelbaum and Shevchuk, 2009; Slemp and Vella-Brodrick, 2013). According to Tims *et al.* (2012), job crafting concerns self-initiated changes and behaviors that workers accomplish in order to modify their jobs with their preferences, motivations and needs. Quantitative research on job crafting focused on the construct within the theoretical framework of the job demands-resources (JD-R) model (Tims *et al.*, 2012). The JD-R model differentiates two types of factors at work: job demands and job resources. The interaction between both components is considered to be central for the development of well-being and job performance (Bakker and Demerouti, 2014). Job demands involve aspects of the job that require a physical and psychological (cognitive or emotional) effort, such as heavy or low workload, high work pressure, emotionally demanding interactions with others, or high responsibility. They are not necessarily negative for the individuals, but they can turn into hindrance demands when meeting those demands requires high effort from which the employee has not adequately recovered (Bakker and Demerouti, 2014). In fact, if we consider the effects of job demands on employees' job outcomes, following the JD-R model we can distinguish two types of demands: "challenging job demands", those difficulties that people at work have to overcome to learn and achieve goals; and "hindering job demands", not necessary requirements that reduce worker's personal growth and goal achievement (Bakker and Sanz-Vergel, 2013).

The second factor within the JD-R model, concerns job resources. They are those characteristics of the job that are functional and useful to achieve work goals, to decrease the physiological and psychological cost associated to job demands, and to improve skills learning and development. Examples of job resources are job autonomy, performance feedback, social support, supervisory coaching, and time control (Cenciotti *et al.*, 2016; Bakker and Demerouti, 2014). JD-R model has been widely used by researchers and practitioners for several reasons. Firstly, it is a strong para-

digm, it is flexible and can be applied to all work environments and easily adapted to the specific job occupations. Secondly, the two processes (job demands and job resources) are independent factors that lead to organizational and individual outcomes; specifically: job demands direct the health impairment process, because they can predict exhaustion, psychosomatic health disorders, and repetitive strain injury (Bakker and Demerouti, 2014; Hakanen *et al.*, 2006). Job resources, at the opposite, guide the motivational process, predicting work enjoyment, work motivation and engagement (Bakker and Bal, 2010). In this theoretical framework, job crafting involves all those modifications that workers can active to balance their job demands and job resources, aligning them to their personal abilities and needs (Tims *et al.*, 2012). Within this conceptualization, three broaden dimensions of job crafting are described by Tims *et al.* (2012): increasing job resources, increasing challenging job demands and decreasing hindering job demands. Increasing job resources can affect both positive organizational and individual outcomes, such as work engagement and job satisfaction (Zito, Cortese and Colombo, 2015). They can enhance individual well-being, because increasing job resources helps employees to cope with exhaustion, and achieving the expected outcomes (Hobfoll, 2001; Petrou, Demerouti and Schaufeli, 2015). Decreasing hindering job demands describes those behaviors aiming to reduce the emotionally, mentally and physically demanding aspects of the job (e.g., relational stressors) that can impede employees to achieve their work goals and their performance (Petrou, Demerouti, Peeters, Schaufeli and Hetland, 2012). Finally, increasing challenging job demands helps individuals to choose more difficult goals in order to achieve them and improve their skills (Cenciotti *et al.*, 2016; Ingusci *et al.*, 2016).

### 1.3 Description of the Job Crafting Scale (JCS)

In literature there many measures of job crafting available (for a meta-analysis see Rudolph, Katz, Lavigne and Zacher, 2017), different from each other. Among them, the Job Crafting Scale has shown good psychometric properties being broadly used for the analysis of job crafting and its correlates.

One of the most used instruments to measure job crafting is the tool developed by Tims *et al.* (2012). It's called the Dutch Job Crafting Scale (JCS) and is composed of 21 items derived from three previous studies. Its theoretical framework is JD-R model which is strong, flexible and complete in the research and the practical contexts for the well-being at work (Bakker and Demerouti, 2017).

These studies were, developed in the Netherlands in order to test the psychometric characteristics of the JCS with an overall sample of  $N = 1181$ . In study 11 ( $N = 375$ ), the researchers developed the scale and developed an explorative test. They constructed a pool of 42 items to describe the proposed three theoretical dimensions of Job Crafting (JC) (increasing job resources, increasing challenging demands and decreasing hindering demands). However, they found a four-factor structure. The authors deleted 21 items with low or ambiguous factor loadings (factor loading  $> \text{or} = 0.35$ , according to Costello and Osborne, 2005 and Floyd and Wida-

man, 1995). The authors used principal factor analysis (maximum likelihood) with oblique rotation to examine whether the factors could be meaningfully distinguished from each other. In the study 2 researchers analyzed the four factor structure of the 21 items scale. The dimension “increasing job resources” was divided in two sub dimensions: (a) structural job resources, which involves organizational resources (opportunities for development, autonomy and variety), and (b) social job resources (social support, performance feedback and coaching). Convergent validity was calculated, basing on partial correlations and controlling for supervisory job position and educational level. Both dimensions of job resources (increasing structural and social job resources) and increasing challenging job demands, correlated positively with proactive personality and personal initiative (that are studied as active constructs) and negatively with cynicism, while decreasing hindering job demands showed a positive and significant correlation only with cynicism (considered as an inactive construct) (Cenciotti *et al.*, 2016).

Finally, in the study 3, the authors analyzed the criterion validity of the scale and found that increasing structural job resources, increasing social job resources and increasing challenging job demands were positively correlated with work engagement, employability and performance, while decreasing hindering job demands did not show any significant relation with these variables.

Job crafting is a construct broadly studied in recent years for theoretical but overall practical implications (Rudolph *et al.*, 2017). Its use is very frequent for practitioners and for studies that imply job interventions (Wingerden, Bakker and Derks, 2017; Bakker and Demerouti, 2014). As such, there remains a need for a short, robust, and reliable measure of job crafting behaviors that allows academics and practitioners to reduce the burden of long scales of measurement, especially when they are included in broader surveys. Thus, in our study, we aim to adapt and validate a short form (12 items) of the Tims *et al.* (2012) Job Crafting Scale to the Italian context.

In the next sections of the paper we present the development and initial validation of a short 12-item version of the JC. We will explain how we developed the initial formulation of the reduced version. In order to examine the reliability and validity of the scale we will conduct different analysis (see *methods* section). We will examine the criterion validity of the scale by analyzing the relationship between the job crafting scale, and each of the dimensions with two indicators of well-being: life and job satisfaction. These variables have become increasingly important in the recent years of economic downfall in most European countries. Recent research showed that job crafting is positively related to life satisfaction and job satisfaction. In the theoretical framework of JD-R model, personal resources are considered as positive self-evaluations linked to resiliency, they concern the individuals’ ability to control and impact upon their environment successfully (Hobfoll, Johnson, Ennis and Jackson, 2003). These positive self-evaluations can impact on the goal-setting, motivation, performance, job and life satisfaction, and other desirable outcomes (Judge, Van Vianen and De Pater, 2004; Bakker and Demerouti, 2014). Furthermore, recently, many studies highlighted how job crafting works well as a mediating variable in the relation between antecedents and outcomes to improve well-being at work. There are many

definitions of well-being. Research showed that job crafting, as a form of a proactive behavior, is related to beneficial work outcomes such as job satisfaction, as well as the proactive behavior can affect life satisfaction of employees (Greguras and Diefendorff, 2010).

## 2. METHODS

This research is part of a pilot study of an international research project for the study of well-being and performance at work. For the adaptation and validation of the scale a sample of 277 Italian employees was used (description in *Results*).

Preliminary analyses were carried out to select items from the long form of the JC Scale (21 items) developed by Tims *et al.* (2012) using data from the pilot study performed by the international research project in which this research is framed. Firstly, preliminary analyses involved an inspection of the psychometric properties of the long form offered by Tims *et al.* (2012). Specifically, 12 items (3 for each subdimension) were selected based on their results about content validity ratings and factor loadings of all items in the long form. Secondly, as a preliminary test of their factor structure, these 12 items were subjected to a factor analysis conducted only on these items (using data from the pilot study).

### 2.1 *Structural Equations Model: theoretical background*

The main approaches in estimating SEM parameters follow two traditions: the first concerns the parametric approach, with the Maximum Likelihood Estimation (MLE) method developed by Jöreskog (1973); the second one concerns a nonparametric approach, namely Partial Least Squares (PLS) by Wold (1975).

The first is mainly considered to evaluate extend estimations obtained on a sample to all the population as a reproducibility of the results obtained. Since this estimation method has the aim of extend the results from the sample to the population, it requires some assumptions about the data and an underlying theory about the relationship between manifest and latent variables (Fornell and Bookstein, 1982).

The PLS for Path Modelling, instead, is very flexible and robust estimator; it requires no distributional assumption and fewer requirements for the identification of the model (Lohmoller, 1989; Esposito Vinzi, Chin, Henseler and Wang, 2010). It is a suitable method to analyse several issues as business strategy, organizational culture, leadership, organizational learning, cross cultural studies and to define models with a higher degree of abstraction (Hair, Sarstedt, Pieper and Ringle, 2012; Ciavolino, 2012; Ciavolino and Nitti, 2013a,b; Nitti and Ciavolino, 2014; Ciavolino *et al.*, 2015a,b; Richter, Cepeda, Roldán and Ringle, 2016).

Moreover, in the recent years a semi-parametric approach based Generalized Maximum Entropy (GME) by Golan *et al.* (1996), has been developed in field of multivariate analysis (Ciavolino and Al-Nasser, 2009; Bernardini Papalia and Ciavo-

lino 2011; Ciavolino and Dahlgard, 2009; Ciavolino *et al.*, 2015a,b; Ciavolino and Carpita, 2015; Carpita and Ciavolino, 2017) as a method to overcome some limits of the MLE and PLS like: it allows the introduction the measurement errors obtained from the previous analyses, no error distributional assumptions, multicollinearity between variables, ill-posed problems.

Given the above preamble and based on the sample and theoretical assumptions, in our paper we adopted the MLE in order validate the theoretical construct of the job crafting with the opportunity to extend and generalize the results obtained on the sample to the population.

## 2.2 Measures

Job crafting was measured with the short version of the Job crafting scale developed by Tims *et al.* (2012). It comprises 12 items measuring four dimensions increasing structural job resources (three items, e.g. “I try to develop my capabilities”), increasing social job resources (three items, e.g. “I ask my supervisor to coach me”), increasing challenging job demands (three items, e. g. “When an interesting project comes along, I offer myself proactively as project co-worker”), and decreasing hindering job demands (three items, e.g. “I make sure that my work is mentally less intense”), The 12 items were selected from the original scale of 21 items as explained in the producer and sample section. The reduced scale of the questionnaire developed by Tims *et al.* (2012) contains 3 items per dimension. We selected them according to the factor loadings obtained by Tim *et al.* (2012). More specifically, the three items with higher factor loadings (Table 1) in each subscale were included in our reduced scale. The survived items show all a cutoff value above 0.60, except for “When there is not much to do at work, I see it as a chance to start new projects” that has a factor loading of 0.58, very near the 0.60 cutoff value.

We examined the validity and the reliability of the scale in its short form. Items were measured on a 5-point frequency scale, ranging from 1 = *Never* to 5 = *Always*. Job satisfaction was measured with the short version of the Job Satisfaction Scale (IJSS, Warr, Cook, and Wall; 1979), developed by Cooper, Rout, and Faragher (1989). This scale is composed by 5 items that measure intrinsic satisfaction, and 4 items that measure extrinsic satisfaction. Items were assessed on a 7-point satisfaction scale (from 1= very dissatisfied to 5 = very satisfied).

Life satisfaction was measured with the Satisfaction with Life Scale SWLS (Diener, Emmons, Larsen and Griffin, 1985). It is composed by five items, measured on a 7-point agreement scale, ranging from 1 = completely disagree to 5 = completely agree.

All the scales were translated (from English to Italian) and back-translated (from Italian to English) with the help of an English native speaker. The result showed a good correspondence between items.



TABLE 1. - *The 21-item original Job Crafting Scale developed by Tims et al. (2012). In bold the item with the greatest factor loading that are in the reduced version if 12 item*

N° Item	Items	Factors			
		CHA	HIND	SOC	STR
1	<i>I try to develop my capabilities</i>				0.84
2	<i>I try to develop myself professionally</i>				0.73
3	<i>I try to learn new thing at work</i>				0.64
4	<i>I make sure that I use my capacities to the fullest</i>				0.51
5	<i>I decide on my own how I do things</i>				0.41
6	<b><i>I make sure that my work is mentally less intense</i></b>		0.75		
7	<b><i>I try to ensure that my work is emotionally less intense</i></b>		0.63		
8	<b><i>I manage my work so that I try to minimize contact with people whose problems affect me emotionally</i></b>		0.60		
9	<i>I organize my work so as to minimize contact with people whose expectations are unrealistic</i>		0.56		
10	<i>I try to ensure that I do not have to make many difficult decisions at work</i>		0.50		
11	<i>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</i>		0.50		
12	<i>I ask my supervisor to coach me</i>			0.80	
13	<i>I ask whether my supervisor is satisfied with my work</i>			0.70	
14	<i>I look to my supervisor for inspiration</i>			0.68	
15	<i>I ask others for feedback on my job performance</i>			0.41	
16	<i>I ask colleagues for advice</i>			0.38	
17	<i>When an interesting project comes along, I offer myself proactively as project co-worker</i>	0.65			
18	<i>If there are new developments, I am one of the first to learn about them and try them out</i>	0.63			
19	<i>When there is not much to do at work, I see it as a chance to start new projects</i>	0.58			
20	<i>I regularly take on extra tasks even though I do not receive extra salary for them</i>	0.55			
21	<i>I try to make my work more challenging by examining the underlying relationships between aspects of my job</i>	0.42			

Note. CHA = increasing challenging job demands; HIND = decreasing hindering job demands; SOC = increasing social job resources; STR = increasing structural job resources.

### 2.3 Data analysis

In order to assess the factorial validity of the Italian short version of Job Crafting scale, first we performed an exploratory factor analysis (EFA) with SPSS 25, and then a confirmatory factor analysis (CFA) with Mplus 7. A sample of 277 employees was divided randomly, into two subsamples: the first composed of 120 participants for the EFA, while the second composed of 157 participants for the CFA. According to literature (Guadagnoli and Velicer, 1988), we randomly splitted the sample and we balanced it in order to have a sample of at least 150 subjects for conducting the CFA. Furthermore, the model was assessed by several goodness of-fit criteria: the chi-square value ( $\chi^2$ ); the Comparative Fit Index (CFI); the Tucker-Lewis Index (TLI); the Root Mean Square Error of Approximation (RMSEA); the Standardized Root Mean Square Residual (SRMR) (Bollen and Long, 1993). Moreover, correlations were performed (on the whole sample) to verify the association between the job crafting short version scale and other relevant variables expected to be correlated, such as job and life satisfaction.

For the CFA five steps were pursued: 1) model specification; 2) identification; 3) model estimation; 4) testing model fit; 5) model re-specification (Tabachnick and Fidell, 2001). Convergent validity test was conducted in order to secure a satisfactory level of reliability and validity, and a proportion of variance in common (Hair, Black Babin, Anderson and Tatham, 2006). In order to assess psychometrics characteristics of job crafting scale, correlations between variables that are expected to be correlated with job crafting were performed. Moreover, different models were tested to confirm the factorial structure.

## 3. RESULTS

### 3.1 Description of the sample

As previously anticipated, the sample was composed of employees of companies from small towns in the South of Italy.

We contacted twenty organizations, most of them are small enterprises (65%), and their employers to invite them to the research. Employees were from private sector (overall 18.1% secondary and 81.9% tertiary). Employees from these companies voluntarily decided to participate in the study. We collected data through a paper-and-pencil questionnaire. Researchers gave to the participants the instructions to fulfill the questionnaire and confidentiality of data was guaranteed.

For the exploratory factor analysis, we used a sample of 120 participants: most of them were from tertiary sector (83.3%), just 16.7% were from secondary sector. Fifty-nine % of the employees were female, the majority of them is younger than 35 years old (48.2 %), most of them is between 35 and 50 years old (39.5%) and the other are older than 50 years (50.3%). The 52.3 % of them were married, with children (55.5%). Most of them had a middle educational level (70.3%). Participants

with an organizational tenure of over five years were the 54.5%, 32.1% had between 1 and 5 years of organizational tenure. Subjects with job tenure of over 5 years were 55.4%. We used a second sample ( $N = 157$ ) for the confirmatory factor analysis. Participants were mostly from tertiary sector (80.9%), the 51.3% were male; the majority of them is between 35 and 50 years old (52.6%), most of them are older than 50 years (30.1%), and the other are younger than 35 years old (17.2%). The 71.6 % of the sample was married, with children (76.2%); furthermore, most of them had a middle educational level (39.4 %). Participants with an organizational tenure of over five years were the 67.7 %; with job tenure of over 5 years were 69.1 %.

### 3.2 Procedure and identification of the model

Considering the structure of the original scale of JC scale, Explorative Factor Analysis (EFA) was performed through a 4-factor solution with oblimin rotation (Kaiser's normalization) and ML extraction. EFA allows relating one or more latent variable to observed ones and the hypothesis is not specified in advance, before the analysis. Through this technique, it is possible to find and suggest underlying pattern of the data, as different factor for many items of a questionnaire. In this paper, EFA shows a 4-factor structure of the scale in line with literature. More specifically, the structure showed four factors: increasing challenging job demands (CHA; three items,  $\alpha = 0.74$ ;  $\omega = 0.77$ ), decreasing hindering job demands (HIND; three items,  $\alpha = 0.77$ ;  $\omega = 0.82$ ), increasing social job resources (SOC; three items,  $\alpha = 0.77$ ;  $\omega = 0.78$ ), and increasing structural job resources (STR; three items,  $\alpha = 0.80$ ;  $\omega = 0.81$ ). Factor loadings range between  $|0.98|$  and  $|0.48|$  for CHA, between  $|0.97|$  and  $|0.51|$  for HIND, between  $|0.93|$  and  $|0.55|$  for SOC, and between  $|0.87|$  and  $|0.78|$  for STR.

Therefore, the 12-item solution with three items for each factor, has been tested in the Confirmatory Factor Analysis (CFA). CFA needs a model constructed in advance, where the number of latent variable is set by theory or research. One of the most important step in Explorative and Confirmatory Factor Analysis is the identification of the model. One model is considered identified if its parameters are uniquely determined. There are different rules to check if one model is identified. The first rule consider one model identified is its degrees of freedom are greater than 0 (Corbetta, 1992). In our case we have 12 observed exogenous variables  $X$  ( $q = 12$ ) and 4 exogenous latent variables. The dimension of the coefficients matrix between  $X$  and  $\xi$  will be  $\lambda_x = 12.4$ . The formula to calculate the degrees of freedom is:  $\frac{1}{2}(p + q)(p + q + 1) - t$ , where  $t$  are the free parameters, in this case 30. Therefore, the degrees of freedom will be:  $\frac{1}{2}(12 * 13) - 30$ , or 48, and greater than 0. This is the optimal situation: in fact the equations are more than the variable. The covariances are greater than the parameters to estimate and in this situation there are the condition to potentially falsify the model. Another sign of an identified model is the low values for standard errors in terms of regression coefficients for estimates of latent variables. The maximum value obtained is 0.1, a very low result. A non-identified model shows negative variances in the analysis. All the variances calculated in the unstan-

standardized model are positive. Finally, if the model is not identified, the algorithm cannot complete its convergence. The algorithm of model hypothesized in this paper terminated normally after 24 iterations.

### 3.3 *Principal results*

The factor solution hypothesized explicates 61.75% of the total variance: in particular, CHA explains 27.79% of the information, HIND explains 12.59%, SOC explains 10.32%, and STR explains 11.05%.

Within factors correlations the higher resulted between CHA and STR ( $r = 0.50$ ), followed by the correlations between CHA and SOC ( $r = 0.38$ ), moreover between HIND and SOC ( $r = 0.37$ ), between CHA and HIND ( $r = 0.33$ ), between SOC and STR ( $r = 0.22$ ), between HIND and STR ( $r = 0.18$ ). Results are presented in Table 2. The correlations are in line with the original version of the scale (Tims *et al.*, 2012).

CFA was performed on the second sample ( $N = 157$ ), based on the EFA solution. As shown in Table 3, different models were tested with ML method: with one factor, with two and three factors combining different factor solutions, and with four factors to test the EFA result. The model with the best fit resulted Model 1, with the four-factor solution, as expected. All fit indices are satisfactory and the CFI and the TLI, both considered less dependent on sample size, each exceeded the value of 0.90, indicating a good fit between the model and the five data sets (Hoyle, 1995).

Looking at the four-factor model, all items loaded only on the intended factors: the factor loadings for STR ranged from 0.68 to 0.78; the factor loadings for HIND ranged from 0.38 to 0.93; the factor loadings for SOC ranged from 0.70 to 0.80, and the factor loadings for CHA ranged from 0.53 to 0.82.

Looking at the other models and their fit indices, it is evident that the only acceptable model is the four-factor solution. Model 11 that proposes an overall job crafting factor on which all items are loading is not adequate. This is clear from the model fit indices, and because the chi-square difference test between Model 11 and Model 1 shows a substantial increase of fit:  $\Delta\chi^2(21) = 348.469$ ,  $p < 0.00$ . Moreover, also other models do not fit the data well, making these solutions not acceptable. The conclusion is that the short four-factor solution with Italian items is the best choice and in line with the original factor structure.

In order to assess other psychometric characteristics of the short version of the job crafting scale, this study considered also the correlations between the four factors of job crafting and other constructs that are expected to be correlated with them.

The correlation index between factors shows a positive association and, in line with exploratory factor analyses, the model displays a high correlation between STR and CHA, and between SOC and CHA. This factor solution resulted balanced in the number distribution of items and Cronbach's alphas are high: STR  $\alpha = 0.80$ ; SOC  $\alpha = 0.70$ , HIND  $\alpha = 0.77$ , CHA = 0.74. Omega coefficients were calculated and their values are high: STR = 0.81, SOC = 0.78, HIND = 0.82, CHA = 0.77. As for correlations (Table 4), as expected, these four factors positively correlate with the total

TABLE 2. - *Explorative factor analysis (ML extraction; oblimin rotation, Kaiser's normalization); N = 120*

N° Item	Items	Factors			
		CHA	HIND	SOC	STR
11	...quando viene proposto un progetto interessante, mi propongo attivamente per collaborare all'idea presentata <i>...when an interesting project comes along, I offer myself proactively as project co-worker</i>	<b>0.98</b>	0.26	0.28	0.47
10	...quando non c'è molto da fare al lavoro, io lo considero una buona occasione per iniziare nuovi progetti <i>...when there is no much to do at work, I see it as a chance to start new projects</i>	<b>0.65</b>	0.26	0.36	0.49
12	...se ci sono progetti innovativi, sono uno/a dei primi ad approfondirli e sperimentarli per verificare che siano validi <i>...if there are new developments, I'm one of the first to learn about them and try them out</i>	<b>0.48</b>	0.26	0.28	0.29
4	... mi assicuro che il mio lavoro sia mentalmente il meno faticoso possibile <i>...I make sure that my work is mentally less intense</i>	0.26	<b>0.97</b>	0.28	0.13
5	... mi assicuro che il lavoro sia emotivamente il meno faticoso possibile <i>...I try to ensure that my work is emotionally less intense</i>	0.31	<b>0.91</b>	0.28	0.13
6	... gestisco il mio lavoro in modo tale da ridurre i contatti con quelle persone i cui problemi potrebbero turbarmi emotivamente <i>...I manage my work so that I try minimize contact with people whose problems affect me emotionally</i>	0.25	<b>0.51</b>	0.37	0.20
7	...chiedo al mio dirigente/capo che mi guidi e che mi orienti <i>...I ask my supervisor to coach me</i>	0.27	0.27	<b>0.93</b>	0.17
9	...cerco di imparare dal mio capo <i>... I look to my supervisor for inspiration</i>	0.23	0.23	<b>0.55</b>	0.16
8	...chiedo al mio dirigente/capo se si ritiene soddisfatto del mio lavoro <i>...I ask whether my supervisor is satisfied with my work</i>	0.42	0.33	<b>0.60</b>	0.16
2	...cerco di svilupparmi professionalmente <i>... I try to develop myself professionally</i>	0.42	0.15	0.13	<b>0.88</b>
1	...provo a perfezionare le mie competenze <i>... I try to develop my capabilities</i>	0.38	0.12	0.23	<b>0.80</b>
3	...provo ad apprendere nuove procedure <i>... I try to learn new things at work</i>	0.46	0.18	0.16	<b>0.78</b>
Alpha		0.74	0.77	0.77	0.80
Omega Coefficient		0.77	0.82	0.78	0.81
Mean (item)		3.60	2.91	3.01	4.24
Standard Deviation		0.93	1.09	1.06	0.72
<b>Correlation between factors</b>					
		<b>CHA</b>	<b>HIND</b>	<b>SOC</b>	<b>STR</b>
		1			
		0.33	1		
		0.38	0.37	1	
		0.50	0.18	0.22	1

Note. CHA = increasing challenging job demands; HIND = decreasing hindering job demands; SOC = increasing social job resources; STR = increasing structural job resources.

TABLE 3. - *Results of the CFA: model comparison (N = 157)*

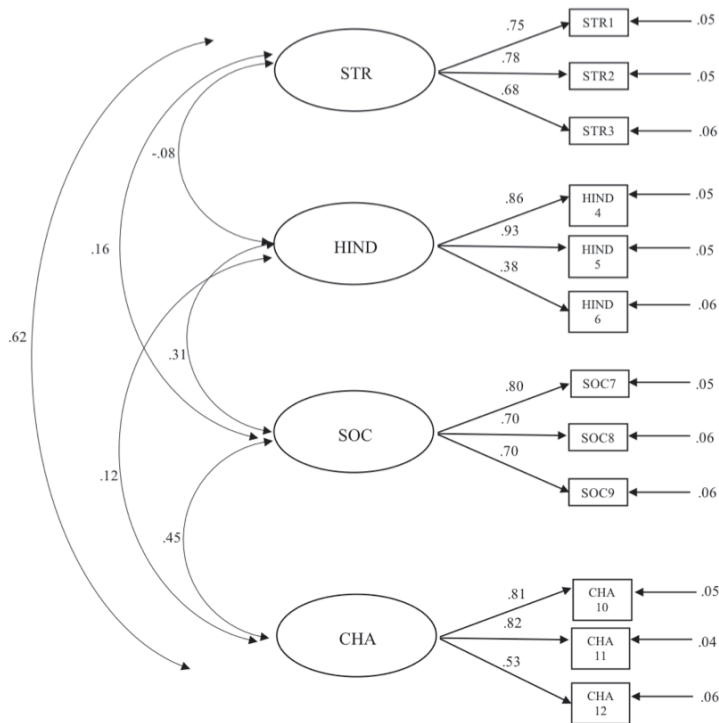
MODEL	$\chi^2$	df	p	RMSEA	CFI	TLI	SRMR	Model comparison	$\Delta\chi^2$	df	p
Model 1: 4-Factor Model	84.720	48	0.001	0.07	0.95	0.93	0.06				
Model 2: 3-Factor Model STR+CHA, HIND, SOC	152.175	51	0.000	0.11	0.84	0.80	0.09	M2-M1	67.455	3	-0.001
Model 3: 3-Factor Model STR+HIND, CHA, SOC	268.135	51	0.000	0.17	0.67	0.58	0.14	M3-M1	183.415	3	-0.001
Model 4: 3-Factor Model STR+SOC, HIND, CHA	229.577	51	0.000	0.15	0.73	0.65	0.14	M4-M1	144.857	3	-0.001
Model 5: 3-Factor Model CHA+SOC, STR, HIND	181.808	51	0.000	0.13	0.80	0.75	0.10	M5-M1	97.088	3	-0.001
Model 6: 3-Factor Model CHA+HIND, SOC, STR	271.067	51	.000	0.17	0.67	0.57	0.17	M6-M1	186.347	3	-0.001
Model 7: 3-Factor Model SOC+HIND, CHA, STR	217.198	51	0.000	0.14	0.75	0.68	0.13	M7-M1	132.478	3	-0.001
Model 8: 2-Factor Model STR+CHA, SOC+HIND,	281.893	53	0.000	0.17	0.66	0.57	0.14	M8-M1	197.173	5	-0.001
Model 9: 2-Factor Model STR+HIND, SOC+CHA,	361.532	53	0.000	0.19	0.53	0.42	0.15	M9-M1	276.812	5	-0.001
Model 10: 2-Factor Model STR+SOC, HIND +CHA,	408.682	53	0.000	0.21	0.47	0.34	0.21	M10-M1	323.962	5	-0.001
Model 11: 1-Factor Model	433.189	54	0.000	0.21	0.43	0.30	0.16	M11-M1	348.469	6	-0.001

job crafting (JC\_Total), with a higher correlation in particular between JC\_total and SOC ( $r = 0.76$ ), and CHA ( $r = 0.76$ ). Moreover, JC total is positively associated with Life Satisfaction ( $r = 0.21$ ), and with Job Satisfaction ( $r = 0.31$ ), in line with literature. Finally, three out of the four dimensions of job crafting (except HIND) were positively correlated with the scales of Life Satisfaction or Job Satisfaction or with both. In particular, CHA dimension correlated with Life Satisfaction ( $r = 0.21$ ), and with Job Satisfaction ( $r = 0.29$ ); SOC showed positive correlation with Job Satisfaction ( $r = 0.25$ ); STR showed a positive correlation with Life Satisfaction ( $r = 0.17$ ) and with Job Satisfaction ( $r = 0.33$ ).

TABLE 4. - *Correlations, means e standard deviations (Pearson's r)*

	M	SD	1	2	3	4	5	6	7
1. JC_TOTAL	3.44	0.69	(0.80)						
2. STR	4.24	0.73	0.54**	(0.80)					
3. HIND	2.91	1.08	0.63**	0.13	(0.77)				
4. SOC	3.02	1.06	0.76**	0.21**	0.31**	(0.70)			
5. CHA	3.67	0.92	0.76**	0.49**	0.22**	0.43**	(0.74)		
6. LIFE SATISFACTION	4.98	1.22	0.20**	0.17**	0.80	0.11	0.21**	(0.84)	
7. JOB SATISFACTION	5.27	0.95	0.31**	0.33**	0.16	0.25**	0.29**	0.50**	(0.86)

*Note.* \*\*  $p < 0.01$ ; Cronbach's on diagonal (between brackets); JC = Job Crafting; CHA = increasing challenging job demands; HIND = decreasing hindering job demands; SOC = increasing social job resources; STR = increasing structural job resources.



Note. CHA = increasing challenging job demands; HIND = decreasing hindering job demands; SOC = increasing social job resources; STR = increasing structural job resources.

FIGURE 1. - Results of the confirmatory factor analysis (N = 157)

4. DISCUSSION

This aim of this study was the adaptation and validation of the short 12-item Job Crafting Scale to the Italian context. In order to do this several steps were followed. First, we calculated the factorial structure, then we confirmed it through CFA analysis, secondly the reliability, thirdly we assessed the convergent, the discriminant and finally, the criterion validity. Results support the four factor scoring hypothesis; internal consistency and reliability suggest that the new scale is a reliable and valid measure of job crafting. For researchers and practitioners who need a short measure that provides an index of job crafting, the 12-item JC is recommended. Job crafting is a proactive behavior and can be defined as “the action employees take to shape, mold, and redefine their jobs” (Wrzesniewski and Dutton, 2001). Different studies showed as it is related to important consequences on individual and organizational field, like job attitudes (job satisfaction, turnover intention), occupational well-being (work engagement, job strain) and work performance (job performance, contextual performance). For these reasons job crafting conceptualization, in term of modera-



tion or mediation effect, can be very useful to understand how people face the growing levels of uncertainty and complexity in the workplace. Italy is one of the most important economy in the world, and in the last decades assisted to very important changes in the world of work. This paper's aim is to adapt and validate the original version of Job Crafting Scale by using a short form, more flexible and useful in order to encourage researchers to consider job crafting as an important behavior in understanding work dynamics.

##### 5. LIMITATIONS, FUTURE RESEARCH AND PRACTICAL IMPLICATIONS

For the purpose of this study, we used convenient sample from South of Italy. In this geographical area, most of the companies are small or medium, workers have similar sociodemographic characteristics which could hinder to generalize the results. Moreover, the sample presents some unbalancing characteristics. One solution could be to use in future researches more balanced sample or extracting different sub-sample (stratified proportional and stratified non-proportional), testing the stability of the result through bootstrapping-like procedure (Salvatore, Fini, Mannarini, Feltri, Avdi, *et al.*, 2018). A further study limitation is the use of a self-report questionnaire and a cross-sectional research design that does not permit the establishment of definitive relations of causality between variables. In the future, it could be interesting to explore this scale introducing it in a longitudinal research design which will make possible analyze the sustainability of the scale over time.

Regarding the practical implications, there are several advantages for its use. Firstly, in the organizational interventions, it can be a useful and smart tool to measure job crafting. The short form is important to reduce the burden of the participants. Thus, it offers a brief assessment of a proactive strategy that might be important for increasing well-being at work, also in a "boundaryless" perspective (Cenciotti *et al.*, 2016; Ingusci, 2018; Ingusci *et al.*, 2016). Furthermore, its brevity and its comprehensive content allows to design surveys including other important organizational variables and relate each other to better understand their impact on well-being at work in a sustainable perspective. Correlations, in fact, show that both job and life satisfaction, are positively correlated with the general index of job crafting and with all the dimensions related with the expansive part of job crafting. This result is in line with studies considering satisfaction and well-being associated with the increasing of job resources or challenging job demands of job crafting (Petrou *et al.*, 2012). In fact, from a practical implications standpoint, measuring job crafting is useful both for research, and for human resources management since detecting and promoting job crafting could be a strategy to make employees aware about the potential of job crafting. Having information on the possibility to shape an activity and to make it with autonomy, could be a resource also to experiment motivation, leading to well-being also functional to employees' performance.

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