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Psychological Evaluation

Evidence of Validity for the Hierarchical Job Crafting Scale in Brazil

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Abstract: Job crafting is characterized by worker's proactive behavior aiming to give meaning and significance to their work relations, allowing the individual to assume a leading role by acting as an agent of change. The study aimed to gather evidence of validity for the Job Crafting Hierarchical Scale in Brazil. Study sample consisted of 675 Brazilian workers of both genders, aged between 18 and 82 years. Confirmatory Factor Analysis pointed out that the 18-item model, divided into four reflective factors (increase in resources, increase in challenging demands, reduction in demands, and optimization of demands) and one formative factor (job crafting) presented the best adjustment indexes. Results showed a positive correlation with work engagement and a negative correlation with work exhaustion. In conclusion, the instrument presented psychometric properties that recommend its use in future investigations on job crafting in the Brazilian context.

Keywords: workers, psychological assessment, psychometry, factor analysis

Evidências de Validade da Escala Hierárquica de Job Crafting no Contexto Brasileiro

Resumo: O job crafting é caracterizado pelo comportamento proativo do trabalhador que objetiva dar sentindo e significância a sua relação laboral, possibilitando que o indivíduo assuma um papel de protagonista ao atuar como um agente da mudança. O estudo objetivou reunir evidências de validade da Escala Hierárquica de Job Crafting, no contexto brasileiro. A amostra constituiu-se por 675 trabalhadores brasileiros, de ambos os sexos, com idades variando entre 18 e 82 anos. A Análise Fatorial Confirmatória apontou que o modelo de 18 itens, divididos em quatro fatores reflexivos (aumento de recursos, aumento de demandas desafiadoras, redução de demandas e otimização de demandas) e um fator formativo (job crafting) foi o que apresentou os melhores índices de ajuste. Os resultados demonstraram correlação positiva com engajamento no trabalho e negativa com a exaustão no trabalho. Concluiu-se que o instrumento apresentou propriedades psicométricas que recomendam seu uso em futuras investigações sobre o job crafting no contexto brasileiro.

Palavras-chave: trabalhadores, avaliação psicológica, psicometria, análise fatorial

Evidencia de Validez de la Escala Jerárquica de Job Crafting, en el contexto brasileño

Resumen: Job crafting se caracteriza por el comportamiento proactivo del trabajador que pretende dar sentido y trascendencia a su relación laboral, posibilitándole al individuo asumir un rol protagónico actuando como un agente del cambio. Este estudio tuvo como objetivo recopilar evidencias de validez de la Escala Jerárquica de Job Crafting, en el contexto brasileño. La muestra estuvo compuesta por 675 trabajadores brasileños, de ambos sexos, con edades entre 18 y 82 años. El Análisis Factorial Confirmatorio señaló que el modelo de 18 ítems, divididos en cuatro factores reflexivos (aumento de recursos, aumento de demandas desafiantes, reducción de demandas y optimización de demandas) y un factor formativo (job crafting), fue el que presentó mejores índices de ajuste. Los resultados mostraron una correlación positiva con el compromiso en el trabajo y negativa con el agotamiento en el trabajo. Se concluyó que el instrumento presentó propiedades psicométricas que recomiendan su uso en futuras investigaciones sobre job crafting en el contexto brasileño.

Palabras clave: trabajadores, evaluación psicológica, psicometría, análisis factorial

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In the 1980s, the conception of work changed radically. Until that decade, employees categorically followed the design and scope of work defined by the employer (Moura et al., 2019). With the emergence of ergology, Schwartz et al. (2021) affirm that the work context is always subject to variabilities, since the subjects, imbued with their knowledge and values, do not simply execute something, but make history by acting and creating or modifying

the established norms. Moreover, the globalization and progress involved in technological development has led to some changes in the world of work. These changes, in turn, have provoked a greater competitiveness in the professional field, increasingly demanding that individuals plan their careers, creating strategies and setting goals to achieve their objectives (Moura et al., 2019).

Hence, it can be stated that the labor market undergoes constant transformations and liquidity in the most distinct spheres, with greater emphasis on sociotechnical, cultural, and environmental scenarios, in which the individual knows that this is a factual change in their relationship with the environment, and a characteristic that is becoming increasingly latent (Concolatto et al., 2017). Thus, in the current and emerging scenario, organizations expect that the hired professionals are proactive and disruptive, breaking with the *status quo* and differentiating themselves from the environment. Employees must be able to anticipate problems, analyze scenarios, preventing and providing solutions to the plasticity involved in such changes, therefore acting as a dynamic employee and key player in the professional configuration (Gennaro, 2019).

Hence, the individual must clearly grasp the meaning of work, giving significance to their relationship with it and adopting a proactive organizational behavior, generating and favoring what can be called job crafting. Observed by Wrzesniewski and Dutton (2001) during a field research, this phenomenon is defined by physical, cognitive, and relational changes in professional tasks. Thus, the individual assumes an active role in reconfiguring their professional activities, readjusting them, modifying them, and thus giving them an identity (Wrzesniewski & Dutton, 2001). The individual becomes an agent of change, a protagonist in his professional life (Devotto & Machado, 2017), enabling an alignment and clarity between personal and professional values (Wrzesniewski & Dutton, 2001). In the Brazilian context, this construct has been commonly called work redesign.

Proactive behavior aims to embrace organizational change, going beyond the top-down approach coming from the organization's top echelon. Consequently, job crafting emerges as a possibility of changing organizational behavior, introducing a bottom-up perspective undertaken by employees (Bakker, 2015). For Wrzesniewski and Dutton (2001), job crafting can be undertaken by any worker, that is, all workers can modify the meaning of work and their identity at work via job crafting actions. However, the work context may or may not foster job crafting actions, since such behavior gains prominence amidst unfavorable working conditions, driving the individual to be an active protagonist in changing the work design, negotiating its content, and assigning new meaning to their tasks and to the work itself.

Regarding job crafting measurement, the construct started being investigated between 2001 and 2009, mostly by theoretical studies. Compared to other constructs of Organizational Psychology, empirical research related to job crafting is still scarce (Devotto & Machado, 2020). In 2012, the first scale for assessing this construct was developed and validated by researchers Tims et al. (2012), the Job Crafting Scale (JCS). It was validated with three studies conducted in the Netherlands. JCS is a 21-item scale divided into four theoretical factors: increase in structural work resources, increase in social work resources, increase in challenging demands, and decrease in obstacle demands. In 2015, Chinelato et al. adapted this instrument to the Brazilian context and called it *Escala de Comportamentos de Redesenho no Trabalho* (Work Redesign Behaviors Scale – CRT). The final Brazilian version consisted of 14 items divided into three dimensions: increase in structural work resources, increase in social work resources, and increase in challenging demands.

As another way to measure the construct, Slemp and Vella-Brodrick (2013) developed the Job Crafting Questionnaire (JCQ), differing from the Job Crafting Scale by considering the cognitive dimension of work redesign. The scale consisted of 15 items and three factors: cognitive reformulations, task redesign, and relationship redesign. Devotto and Machado (2020) adapted this instrument to the Brazilian context, calling it *Escala de Ações de Redesenho do Trabalho* (Work Redesign Action Scale). Its final version retained all the original items and factors.

In 2019, Costantini et al. sought to further investigate job crafting, arguing that some of its conceptual and methodological aspects remained little explored. Thus, they developed a research to leverage the understanding of the structural nature of job crafting behavior. Costantini et al. (2019) sought evidence of validity for a hierarchical structure of four reflexive factors of job crafting behavior: increased resources, search for challenges, reduction of demands and optimization of demands; and one formative factor, job crafting. From there, the authors developed the measure called Job Crafting Scale, translated here as *Escala Hierárquica de Job Crafting* (Hierarchical Job Crafting Scale).

Costantini et al.'s scale (2019) differs from previous instruments by presenting a Hierarchical Model with Reflexive and Formative Indicators. The formative factor includes measured variables that form the construct, and do not present a correlation with each other. This approach predicts that the unobservable construct results from the occurrence of several components that reproduce a better and more complete picture. On the other hand, the reflexive factors explain the items and are a causal driver, that is, the latent construct is fulfilled by the observable variables (Hair et al. 2021). Costantini et al. (2019) based their instrument on the proposal by Zhang and Parker (2019), where job crafting behavior is a formative construct and consists of expansion and contraction strategies in which employees tend to engage proactively, thus generated by their factors: increase of resources, increase of challenges, reduction of demands, and optimization of demands.

Costantini et al.'s validation research (2019) was consolidated by three different studies. The first study used a sample composed of 936 participants of both genders and from different organizational contexts. At this stage,

the participants answered demographic and work redesign questions. Of the total sample, 630 participants were also asked to report their levels of engagement and exhaustion at work. Results from both the Exploratory Factor Analysis and the Confirmatory Factor Analysis pointed to a four-factor solution. Still in sample one, the authors tested a hierarchical model with reflexive indicators and a formative one. To test the job crafting hierarchical structure, Costantini et al. (2019) used measures of work engagement and exhaustion. The analyses performed recommended job crafting as a formative factor built by expansion and contraction strategies in which employees can proactively engage, that is, by the behavioral factors increase of resources and challenges, reduction and optimization of demands. Such behavioral dimensions are, in turn, reflected by the items of job crafting. In addition, a positive and significant correlation between job crafting and work engagement was observed ($\beta = 0.51$, $p < 0.001$), as well as a negative and significant correlation between job crafting and work exhaustion ($\beta = -0.25$, $p < 0.001$).

The second study sample consisted of 199 Italian workers of both genders and from different work contexts, who completed a three-week weekly diary and answered a general questionnaire using paper and pencil. Participants received the same instructions, filling out a diary at the end of each work week. Of the 240 kits distributed, only 199 completed the survey, generating a response rate of 83%. Multilevel Confirmatory Factor Analysis showed that the four-factor model had the best adjustment indexes (Costantini et al., 2019).

Data for the third study were collected in eight Italian private companies from different segments (commerce, pharmaceutical, social services, personal care, and handicrafts). Participants of both genders filled out questionnaires applied in three waves with bimonthly intervals between collections. In the first wave, 350 forms were distributed, and 287 returned (response rate = 82%); in the second wave, 238 forms were returned (response rate = 68%), and, in the third wave, 226 were completed (response rate = 64%). Participation in the research was anonymous and voluntary. Traceability was performed by assigning a unique code to each participant to monitor participation. Sample reliability was tested by Test-Retest. Results showed that increase of resources presented a correlation of 0.84 ($p < 0.01$) in waves one and two, of 0.82 ($p < 0.01$) between waves one and three, and of 0.87 ($p < 0.01$) between waves two and three; increase of challenges, in turn, presented a correlation of 0.84 ($p < 0.01$) in waves one and two, of 0.79 ($p < 0.01$) in waves one and three, and of 0.82 ($p < 0.01$) in waves two and three; reduction of demand presented a correlation of 0.80 ($p < 0.01$) between waves one and two, of 0.76 ($p < 0.01$) between waves one and three, and of 0.76 ($p < 0.01$) between waves two and three; finally, optimization of demand showed a correlation of 0.74 ($p < 0.01$) between waves one and two, of 0.72 ($p < 0.01$) between waves one and three, and of 0.80 ($p < 0.01$) between waves two and three (Costantini et al., 2019).

Further knowledge on job crafting is of paramount importance because promoting this organizational behavior favors the development of characteristics such as autonomy, the meaning of work, work engagement, among other competencies that enable business results maximization and well-being (Costantini et al., 2019). That said, the Hierarchical Job Crafting Scale should be investigated in different contexts and cultures for this instrument allows to deepen knowledge about the nature of job crafting behavior, assessing characteristics not explained in its measurement and operationalization. By integrating the dimension of demand optimization into the general scale, the instrument favors investigating this four-dimensional concept of job crafting behavior by the Job Demands-Resources (JD-R) model (Petrou et al., 2012). The studies conducted by Costantini et al. (2019), based on the JD-R model, pointed to four distinct dimensions: search for resources, search for challenges, reduction of demands, and optimization of demands. Thus, dimensions can be used to distinguish the behaviors employees can adopt to engage in job crafting. In addition, the instrument proposed by Costantini et al. (2019) comprises a hierarchical model consisting of reflexive and formative indicators, differing from most measures in psychology, which only present reflexive factors in their internal structure. Finally, their findings pointed out that, although work resources and demands fluctuate daily or weekly, they exert influence on well-being at work and on the most distinct strategies of job crafting.

Despite its importance, the Hierarchical Job Crafting Scale (Costantini et al., 2019) has yet to be adapted to the Brazilian context, according to a survey conducted in the Scielo, PePSIC, and ResearchGate databases in May 2022. Based on such considerations, this study sought to gather evidence of validity for the Hierarchical Job Crafting Scale in Brazil. More specifically, it sought to obtain evidence of validity regarding internal structure, internal consistency, and correlation with external variables. To obtain this last evidence of validity, like Costantini et al. (2019), the constructs work engagement and work exhaustion will be used. The original Hierarchical Job Crafting Scale developed by Costantini et al. (2019) consists of four first-order factors (reflexive) and one formative factor. Thus, we formulated the following hypothesis:

Hypothesis 1: The Brazilian version of the Hierarchical Job Crafting Scale (Costantini et al., 2019) will comprise four reflexive factors (increase of resources, search for challenges, reduction of demands, and optimization of demands) and one formative factor (work redesign).

As for the correlation between job crafting and external variables, work engagement can be conceptualized as a rewarding and affective-motivational state that presents itself as vigor, dedication, and absorption in work activities (Schaufeli, 2021). In this perspective, employees with greater engagement tend to present higher performance and energy indices when executing their tasks, keeping themselves happy, fulfilled, focused, and absorbed in their professional activities (Hakanen et al., 2017). Thus, this emotional state has shown a positive association with job crafting behavior (Costantini et al., 2019; Zhang & Parker, 2019). Thus:

Hypothesis 2: Job crafting has a positive correlation with work engagement.

According to Carlotto and Câmara (2007), emotional exhaustion is characterized by a chronic condition of high emotional and physical stress resulting from excessive obligations, pressures, and demands in the professional environment. Emotional exhaustion results from employees perceiving their physical and emotional resources as inadequate and scarce to cope with labor impositions and, consequently, to be able to redesign their work. Thus, empirical evidence indicates that work exhaustion has a negative correlation with job crafting (Costantini et al., 2019; Rudolph et al., 2017). Thus:

Hypothesis 3: Job crafting has a negative correlation with work exhaustion.

Method

Participants

The study sample consisted of 675 Brazilian workers of both genders from different professions, mostly from the state of Rio de Janeiro (76.6%), followed by the state of São Paulo (10.1%). Most respondents were women (71.7%). Regarding marital status, data were pulverized, with a slightly predominance of married or in a stable union (37.3%), followed by single people (33.3%). As for education, 51.1% answered post-graduation and 35.6%, complete higher education. More than half of the study sample performs their work in person (53.5%), followed by online (25.8%), and a hybrid modality. Among the participants, 40.1% held managerial positions, 22.7% administrative, and 18% operational. Regarding the type of employment relationship, 54% were CLT (Consolidated Labor Laws) workers, followed by self-employed (27%). Age ranged from 18 to 82 years (M = 42.5; SD = 10.6). Length of service in the current job ranged from 1 to 44 years (M = 7.7; SD = 8.6), while total length of service ranged from 1 to 52 years (M = 18.7; SD = 10.7). Inclusion criteria consisted of people over 18 years old working for at least one year in the same organization.

Instruments

Job crafting behaviors were measured using the *Hierarchical Job Crafting Scale* (Costantini et al., 2019). This instrument consists of 18 items, divided into four first-order factors: increase of resources (six items), increase of challenges (three items), reduction of demands (four items), and optimization of demands (five items), and one formative factor. Answers were given in a five-point Likert scale ranging from 1 (Never) to 5 (Always). Example of item from the increase of resources factor: 'I ask others for information about my performance.' Example of item from the increase of challenges factor: 'I ask for more work to do when my usual tasks are over.' Example of item from the reduction of demands factor: 'I try to make sure my work is less emotionally intense.' Example of item from the optimization of demands factor: 'I find solutions to accomplish my tasks more easily.' Internal consistency indices, in the three waves of application by Costantini et al. (2019), calculated by Cronbach's alpha, showed means of 0.88 (increase of resources), 0.86 (increase of challenges), 0.89 (reduction of demands), and 0.90 (optimization of demands). Translation of the scale was performed by translation and back-translation as recommended by Grégoire (2018), as follows: (a) translation into Portuguese; (b) back-translation into English. Comparative analysis of the two versions was performed to assess the conceptual equivalence of the items.

Work engagement was measured using the *Escala de Engajamento no Trabalho* (Work Engagement Scale) short version, by Ferreira et al. (2016), adapted from the Utrecht Work Engagement Scale (UWES), a nine-item instrument answered in a six-point Likert scale ranging from 1 (Never) to 6 (Always). An example: 'I feel happy when I work intensely.' In this study, the scale obtained an internal consistency index (Cronbach's alpha) of 0.93.

Work exhaustion was measured by the Maslach Burnout Inventory emotional exhaustion factor, adapted to the Brazilian context by Carlotto and Câmara (2007), a nine-item instrument answered on a five-point Likert scale ranging from 1 (Never) to 5 (Daily). An example: 'I feel like my job is wearing me down.' Internal consistency index (Cronbach's alpha) was 0.92. In addition to the scales, participants also answered a sociodemographic questionnaire developed for this study to obtain the sample characteristics.

Procedures

Data collection. After approval by the Research Ethics Committee of the authors' institution, data were collected virtually. Respondents expressed their agreement to participate in the study by completing the informed consent form. Online survey was developed using Google Forms. Research participants were invited between September and October 2020 via messages published on Facebook, LinkedIn, Instagram, and WhatsApp containing the access link.

Data analysis. After collection, data were tabulated using SPSS version 21 statistical software and then analyzed by MPlus (version 8). Internal structure of the scale was tested by confirmatory factor analyses performed using Structural Equation Modeling. Weighted Least Square Mean and Variance Adjusted (WLSMV) estimator presented the items as categorical-ordinal variables. Adjustment indices were evaluated according to Fischer and Karl (2019), for whom a well-adjusted model should present the following indicators: $\chi^2/df < 5$; CFI > 0.95; TLI > 0.95; RMSEA < 0.08, and a minimum acceptable factorial load value of 0.40. Reliability of each scale was assessed by calculating the internal consistency indexes using Cronbach's alpha and McDonald's omega coefficients. Associations between the Hierarchical Job Crafting Scale (Costantini et al., 2019) and the other constructs were estimated by calculating factorial correlations.

Ethical Considerations

Research approved by the Research Ethics Committee of the main institution, under opinion No. 52195221,7,0000,5289. Respondents were informed about the voluntary nature of the research and the anonymity of their answers, and expressed their agreement to participate by completing the informed consent form.

Results

To analyze the structure of the instrument, based on Costantini et al. (2019), we tested a hierarchical model with four reflexive factors and one formative factor. Unlike the second-order model, in which a general factor explains the first-order ones, in such a model, the formative factor is explained by the reflexive factors (Hair et al., 2021). Alternative models were also tested, namely: a one-factor model, a model composed of four first-order factors, and a model composed of four first-order factors and one second-order factor. Results showed that the hierarchical model had the best adjustment indexes, with only one item presenting a factorial load below 0.50. However, this item showed a factorial load of 0.40, the minimum accepted in a Confirmatory Factor Analysis (CFA) (Xia & Yang, 2019). Table 1 shows the adjustment indexes from the confirmatory factor analyses for all models tested.

Table 1
CFA of the Hierarchical Job Crafting Scale

Models	χ^2 (DF)	**CFI**	**TLI**	**RMSEA**	Δ Factorial Loads
Unifactorial	3,564.84 (135)	0.62	0.57	0.194 (0.189-0.200)	0.22-0.84(*M*=0.50)
4 first-order factors	1,161.69 (129)	0.89	0.87	0.109 (0.103-0.115)	0.39-0.90(*M*=0.69)
Second order[1]	721.73 (125)	0.94	0.92	0.084 (0.078-0.090)	0.40-0.95(*M*=0.66)
Formative factor[2]	584.28 (138)	0.96	0.95	0.069 (0.063-0.075)	0.40-0.90(*M*=0.66)

Note. χ^2 = chi-square; DF = degrees of freedom; CFI = Comparative Fix Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; Δ = variation. 1: Job crafting explained by the four first-order factors; 2: Job crafting explained by the four reflexive factors.

Thus, the final Brazilian version of the Hierarchical Job Crafting Scale comprised four first-order factors (search for resources – six items, search for challenges – three items, reduction of demands – four items, and optimization of demands – five items) and one formative factor, confirming Hypothesis 1. Factorial loads ranged from 0.40 to 0.90 (M = 0.66), indicating that the factors explain most of the item variance. Internal consistency indexes of the scale factors had Cronbach's alpha of 0.68 (increase in resources), 0.77 (increase in challenging demands), 0.75 (reduction in demands), and 0.77 (optimization of demands). Moreover, McDonald's omega estimated internal consistency indexes of 0.75 (increase in resources), 0.81 (increase in challenging demands), 0.83 (reduction in demands), and 0.86 (optimization of demands). Table 2 summarizes the items and their respective standardized factorial loads.

Correlation between the instrument and external variables was tested by a model including the Hierarchical Job Crafting Scale, the Work Engagement Scale and the Work Exhaustion Scale. Calculations showed a positive correlation between job crafting and work engagement (0.36; $p < 0.001$), and a negative association between job crafting and work exhaustion (−0.15; $p < 0.01$), thus confirming Hypotheses 2 and 3. Figure 1 illustrates this model with the standardized factorial loads of the items.

Table 2
Standardized items and factorial loads of the Hierarchical Job Crafting Scale

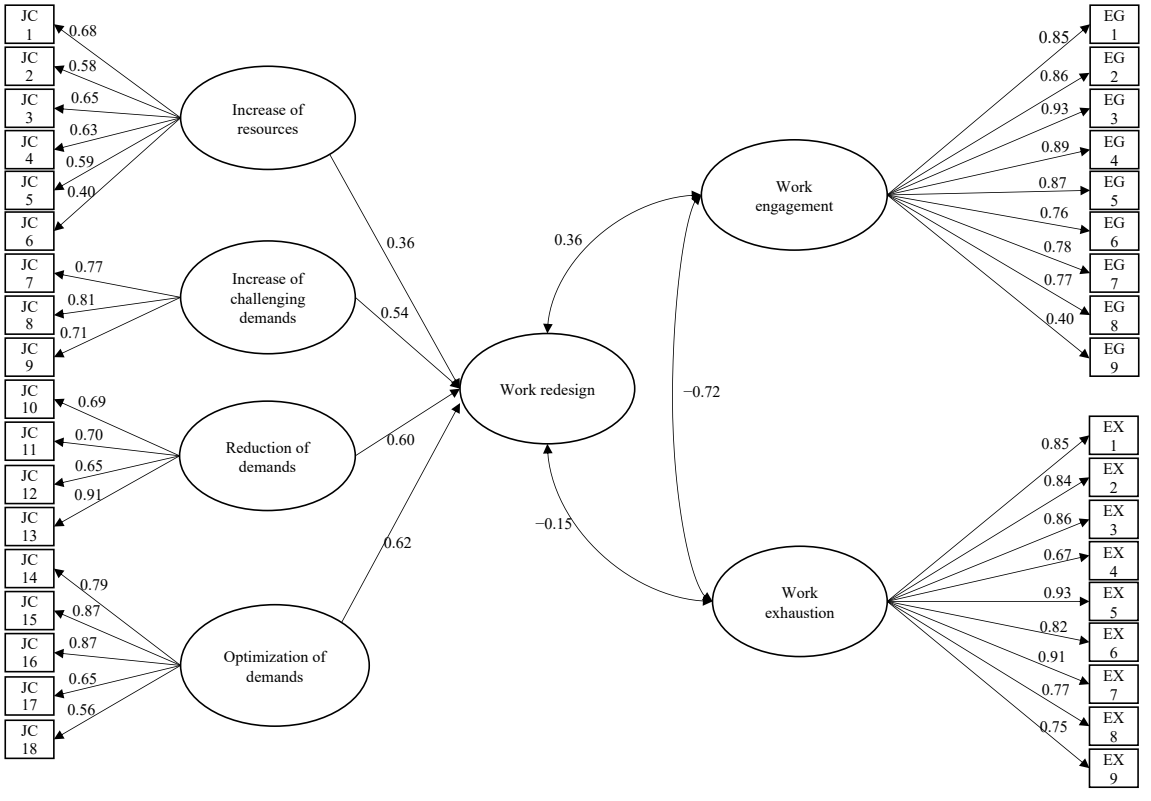
Reflexive Factors	Items	Factorial loads
Increase of resources	I ask others for information about my performance	0.68
	I ask my colleagues for advice	0.58
	I ask my immediate boss for advice	0.65
	I try to learn new things	0.63
	I talk to other people (e.g., colleagues, supervisors) to get the information I need to complete my tasks	0.59
	When I have difficulties or problems, I discuss with people in my work environment how to solve them	0.40
Increase in challenges	I ask for more work to do when my usual tasks are over	0.77
	I ask to have more responsibilities at work	0.81
	I ask to do more extra work	0.71

(continued...)

Table 2
Continuation

Reflexive Factors	Items	Factorial loads
Reduction of demands	I try to make sure my work is less emotionally intense	0.69
	I try to make my work less mentally intense	0.70
	I try to make sure my work is less physically intense	0.65
	I try to simplify the complexity of my tasks	0.91
Optimization of demands	I simplify processes or procedures to make my tasks easier	0.79
	I find solutions to accomplish my tasks more easily	0.87
	I optimize processes or procedures to make my tasks easier	0.87
	I look for ways to do my tasks more efficiently	0.65
	I change processes or procedures that delay my tasks	0.56
	Formative Factor: Job Crafting	
Increase of resources → JC	0.36	
Increase of demands → JC	0.54	
Reduction of demands → JC	0.60	
Optimization of demands → JC	0.62	

Figure 1
Graphical representation of the tested model



Note. All correlations were statistically significant. Job Crafting factors correlated with each other, but were not included in the graphical representation to simplify the figure. Model fit indexes: $\chi^2 = 3{,}082.76(613)$; CFI = 0.95; TLI = 0.94; RMSEA = 0.077 (0.075-0.080).

Discussion

This study sought to gather initial evidence of internal structure validity and convergent validity for the Hierarchical Job Crafting Scale applied to a sample of Brazilian workers. After confirmatory factor analyses, the best-fit model was a hierarchical model with four reflexive factors and a formative one. Thus, the original framework by Costantini et al. (2019) was maintained in the Brazilian version.

Theoretical implications

Our findings allowed to deepen knowledge about the nature of work behavior redesign, examining characteristics

underlying its measurement and operationalization. By including optimization of demands in the general scale, we were able to analyze this four-dimensional construct by mapping the JD-R Model (Petrou et al., 2012), the most assertive solution to clarify work behavior redesign.

Thus, results from the JD-R Model for job crafting showed that the four behavioral dimensions can register different aspects of employees' efforts to counterbalance the particularities of their work activities. Similar to Costantini et al. (2019), we recommend applying the four dimensions (increase of resources, increase of challenging demands, reduction of demands, and optimization of demands) to distinguish proactive behaviors enabling job crafting, which confirmed Hypothesis 1.

Regarding internal consistency, all factors presented adequate Cronbach's alpha and McDonald's omega values, except for increase of resources (0.68). However, values above 0.60 are satisfactory. Moreover, the McDonald's omega consistency index was 0.75. According to Hauck-Filho and Valentini (2020), the alpha coefficient is sensitive to violations of some assumptions, such as equality of factorial loads, symmetry in the item scores, and therefore tends to be underestimated. Conversely, the same does not occur with the omega coefficient, suggesting that this coefficient offers an estimate closer to reliability. Thus, we decided not to modify the structure of the instrument. Our findings indicate that the four factors and the general factor scores can be estimated accurately, or at least satisfactorily, even with the reduced number of items in samples of different nationalities. Hence, the instrument scores are minimally accurate, that is, show few measurement errors due to the lack of internal consistency (Hauck-Filho & Valentini, 2020).

As for correlation with external variables, job crafting showed a significant and positive correlation with work engagement, thus confirming Hypothesis 2. This result was consistent with other studies that also found positive associations between these constructs (Costantini et al., 2019; Zhang & Parker, 2019). Thus, our findings provided evidence that employees who experience an affective-emotional state shown through vigor, commitment, and absorption in professional activities (Schaufeli, 2021) tend to exhibit more proactive work behaviors (Costantini et al., 2019; Zhang & Parker, 2019).

Finally, Hypothesis 3 also obtained empirical support, confirming the negative correlation between job crafting and work exhaustion. This result is in line with findings from previous studies (Costantini et al., 2019; Rudolph et al., 2017). These findings indicate that when employees perceive their emotional and physical resources as unfit and deficient for work confrontation (Carlotto & Câmara, 2007), they feel exhausted and, in turn, are unable to show a proactive behavior when performing work activities (Costantini et al., 2019; Rudolph et al., 2017). Such correlations between job crafting and external variables provide evidence for the convergent validity of the scale, which, alongside the results on internal structure validity and internal consistency, ratify using the Hierarchical Job Crafting Scale in Brazil.

Practical Contributions

This study also brings practical contributions. Due to the empirical evidence found, both managers and organizations can use the Hierarchical Job Crafting Scale to monitor and diagnose the impacts of proactive behavior, crossing them with individual and organizational indicators. Moreover, based on such results, resource professionals can develop and outline strategic actions aimed at management to maximize labor resources, such as the meaning and significance of work, work engagement and autonomy, aiming to increase the level of job crafting and, consequently, the employees' and organization's performance (Costantini et al., 2019).

Limitations and Future Studies

Some limitations of the study should be noted. Most sample participants came from a single Brazilian state (Rio de Janeiro), had at least a bachelor's degree and were working, at the time of data collection, in a telework regime (total or partial), thus hindering generalization. Secondly, the study was based exclusively on self-reported measures, which may have impacted the common variance of the method. Nonetheless, such problems may have been minimized by the anonymity of answers and by the lack of right or wrong questions that could entail personal or professional risks. Moreover, the instrument items alluded to different variables, which also hinders biased responses (Jordan & Troth, 2020). Another limitation refers to the fact that data collection was performed entirely online, without mediation by the researcher. Thus, we have no guarantee that the answers matched reality. Moreover, the several labor categories included were not considered in the data analyses. Finally, one item from the "increase of resources" dimension presented minimum acceptable factorial load (0.40), which might explain its low weight in explaining the formative factor "job crafting." Nonetheless, we decided to maintain the item and conserve the original structure of the scale, which presented good adjustment indexes.

Future studies should focus on gathering evidence on the invariance of the scale by comparing the internal structure of specific occupational classes. Or even address the nomological network of job crafting. Thus, research should use job crafting as an antecedent, consequent, or even mediating variable. Longitudinal studies could better explore the issue of causality on the correlations between variables. Moreover, diary studies aiming to analyze possible changes and impacts on the daily lives of workers and organizations could increase knowledge about job crafting.

Despite the limitations reported, our findings indicate that the Hierarchical Job Crafting Scale presented initial evidence of internal structure validity, internal consistency, and correlation with external variables when applied to a Brazilian sample. Thus, it can be a suitable instrument to evaluate job crafting behavior in future research and in organizational diagnoses, particularly in samples similar to ours.

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