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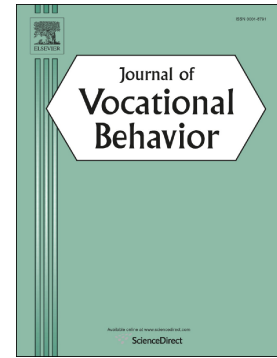
Anne Mäkikangas

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Job Crafting Profiles and Work Engagement: A Person-Centered Approach

Anne Mäkikangas

Faculty of Social Sciences (Psychology), University of Tampere, Finland

Corresponding author:

Anne Mäkikangas, Ph.D., Adjunct Professor of Work Psychology

Faculty of Social Sciences

FI-33014 University of Tampere

Finland

e-mail: anne.makikangas@uta.fi

Abstract

Research on job crafting has thus far focused on how distinct behaviors (i.e., seeking increase in (structural and social) job resources and challenging job demands, and decrease in hindering job demands) relate to employee well-being. However, job crafting behaviors are not necessarily mutually exclusive and can be deployed simultaneously, creating unique associations with job-related well-being, a phenomenon that has remained unexamined in job crafting research. This study extends the job crafting research by examining whether discernable profiles can be identified based on scores on four job crafting behaviors, and if so, whether such profiles differ in relation to work engagement. Study participants were Finnish rehabilitation workers ($n = 131$) who completed day-level measures of job crafting and work engagement twice. At both measurement times, latent profile analysis yielded two job crafting profiles: 1) 'Active job crafters' (94%) and 2) 'Passive job crafters' (6%). Latent transition analysis revealed that employees maintained their profile membership over time. Moreover, 'Active job crafters' reported higher levels of work engagement than 'Passive job crafters' at both measurements. These results indicate that employees actively use multiple job crafting strategies simultaneously, and that this facilitates day-specific work engagement. The results also suggest that the strategy of decreasing hindering job demands is less detrimental to work engagement when used together with other job crafting strategies. Overall, the results demonstrate the benefits of investigating combinations of job crafting behaviors.

Keywords: job crafting, work engagement, person-centered approach, latent profile analysis

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1. Introduction

Job crafting, defined as the proactive customization of one's job demands and resources (Tims & Bakker, 2010; Tims, Bakker, & Derks, 2012), enables employees to adjust their work environment to suit their preferences. A work environment that has been individually optimized leads the employee to feel energized and devoted at work. It has been widely recognized that work engagement, i.e., a positive, fulfilling and consistent state of mind characterized by vigor, dedication, and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002) increases in a work environment that offers enough of both job resources and challenges (Bakker, 2011; Brough et al., 2013; for reviews, see Halbesleben, 2010; Mauno, Kinnunen, Mäkikangas, & Feldt, 2010).

The Job Demands–Resources (JD-R) model (Bakker & Demerouti, 2017; Bakker, Demerouti, & Sanz-Vergel, 2014), used in this study, posits that job crafting occurs via four behaviors (Tims & Bakker, 2010), meaning that job demands and resources can be modified by employee efforts to increase structural (e.g., opportunities for personal development) and social (e.g., feedback from colleagues and supervisor) job resources. Individuals can also make their job demands more challenging (e.g., by starting new projects) and less hindering (e.g., reducing the cognitive demands of the job) (Tims & Bakker, 2010). These job crafting behaviors have been widely investigated since the development of the Job Crafting Scale (JCS) in 2012 (Tims et al., 2012).

Despite the extensive research, the empirical work on job crafting has thus far been variable-oriented, i.e., focused on the relations of job crafting strategies as independent factors, and thus ignored the possibility that employees might use different job crafting strategies simultaneously. For instance, some employees might be 'active crafters', using a variety of job

crafting behaviors, whereas others might be 'passive crafters', not using any job crafting

behaviors to any marked extent or just focusing on reducing their job demands. Hence, the aim

of this study was to investigate job crafting as a multidimensional behavioral pattern to gain

insight into whether, and if so how, different job crafting behaviors combine within employees to

form different job crafting profiles. Consequently, the first contribution of the study is the

investigation of job crafting behavior from a person-centered perspective (see Bergman,

Magnusson, & El-Khouri, 2003; Mäkikangas & Kinnunen, 2016; Wang & Hagnes, 2011), a

topic that has not previously received research attention.

A second contribution of the study is the investigation of job crafting profiles across two

work days with a one-week interval. Investigating day-specific job crafting profiles over time

may provide answers to an important question on the nature of job crafting: does the use of job

crafting behaviors vary from one work day to another, or do employees tend to use the same job

crafting behaviors or combinations of these across work days? It has been theorized that job

crafting represents an everyday behavior that is processual in nature (Wrzesniewski & Dutton,

2001; see also Leana, Appelbaum & Shevchuk, 2009), meaning that employees craft their job

demands and resources from day to day. Although previous research has revealed meaningful

within-person variation in job crafting strategy scores across the working week (Demerouti,

Bakker, & Halbesleben, 2015; Petrou, Demerouti, Peeters, Schaufeli, & Hetland, 2012), the issue

of job crafting variability warrants further investigation. That is, individual job crafting profiles

might capture and explain the within-person variation found in previous studies – the target of

the present investigation.

Increased work engagement has been posited as a typical consequence of job crafting

behavior (Bakker et al., 2014; Tims et al., 2012). However, empirical studies have yielded

inconsistent results on this relation. Specifically, findings on the role of single job crafting behaviors on work engagement have varied widely across studies (the results are presented in detail in section 2.2. below). Moreover, earlier studies have produced conflicting results on the long-term relationship between job crafting and work engagement. The obscurity of the job crafting - work engagement relation has also been exacerbated by the fact that studies have typically combined specific job crafting strategies – either increasing structural and social job resources (Demerouti, Bakker, & Gevers, 2015; Demerouti, Bakker, & Halbesleben, 2015; Petrou et al., 2012; Petrou, Demerouti, & Xanthopoulou, 2017), increasing structural job resources and challenging job demands (De Beer, Tims, & Bakker, 2016), or wholly ignoring the strategy of decreasing hindering job demands (e.g., Bakker, Tims, & Derks, 2012; Harju, Hakanen, & Schaufeli, 2016; Petrou, Bakker, & van den Heuvel, 2017). Whereas the earlier studies utilizing a variable-centered approach have investigated job crafting strategies in isolation with the aim of finding differences between employees, the aim of this study was to explore how different combinations of four job crafting behaviors (i.e., job crafting profiles) are associated with work engagement. Thus, the third contribution of this study is to offer a clarification of the job crafting work engagement relation by applying a person-centered approach.

2. Theoretical background

Below, to lay a theoretical foundation for the formation of possible individual job crafting profiles, job crafting behaviors are first categorized using the approach-avoidance taxonomy. Then, based on the JD-R model and empirical findings, the relationships between job crafting behavior and work engagement are presented.

2.1. Job crafting profiles

According to the basic premises of the JD-R model, every occupation presents both general and occupational-specific job demands and job resources (Bakker & Demerouti, 2007; Bakker & Demerouti, 2017; Bakker et al., 2014). Job demands are physical, psychological, social, or organizational conditions or aspects of a job that require cognitive or emotional effort. Job resources, in turn, are aspects of a job that reduce job demands, are functional in achieving work goals, and have motivational potential leading to positive work-related outcomes such as work engagement (Bakker & Demerouti, 2017; Bakker et al., 2014). Based on the JD-R model (Bakker & Demerouti, 2017; Bakker et al., 2014), job crafting is defined as the changes that employees make in their job demands and job resources to achieve a better fit between their job and their personal preferences and abilities (Tims & Bakker, 2010; Tims et al., 2012).

As described earlier, job crafting may refer to various behaviors, four of which are measured in the JCS (i.e., increase in structural and social job resources, increase in challenging job demands and decrease in hindering job demands) (Tims et al., 2012). These four job resources and demands behaviors measured here were initially drawn from the JD-R theory and from theoretical models of work design with the aim of capturing proactive behaviors adopted by employees to stay healthy and engaged in their jobs (see Tims et al., 2012).

It has been suggested that the taxonomy of 'approach-avoidance', known from the coping literature (Skinner, Edge, Altman, & Sherwood, 2003) and motivational behavior research (Elliot, 2008), may assist in categorizing individuals' job crafting behaviors (Bruning & Campion, 2017; see also Lichtenthaler & Fischbach, 2016). In general, avoidance behaviors are aimed at circumventing and reducing stress, whereas approach behaviors are aimed at meeting impending changes in advance (Skinner et al., 2003). In their recent qualitative study, Bruning and Campion (2017) found that the job crafting behavior of individuals could in general be

characterized by approach-avoidance patterns. The majority of the interviewed employees

produced examples of behaviors that could be interpreted as approach job crafting behaviors,

while a very small minority (3%) produced nothing but examples of behaviors representing the

avoidance type of job crafting. Employees also typically produced examples of both the

approach and avoidance types of job crafting. Applying the approach-avoidance taxonomy to the

JD-R model definition of job crafting (Bakker & Demerouti, 2017; Bakker et al., 2014),

increasing one's job resources and challenging job demands could be understood as approach

behavior that is motivated by the desire to broaden one's existing resources and to take on new

tasks. In contrast, decreasing hindering job demands, through minimizing energy consumption in

a stressful situation or threat of such, would exemplify avoidance behavior.

The correlational studies conducted so far support the approach-avoidance taxonomy of

job crafting behaviors. Studies that have included *all* four job crafting strategies and provided

correlation information about them (Bakker, Rodríguez-Muñoz, & Sanz-Vergel, 2016;

Brenninkmeijer & Hekkert-Koning, 2015; Eguchi et al., 2016; Esteves & Pereira Lopes, 2017;

Oprea & Iliescu, 2015; Tims et al., 2012; Tims, Bakker, & Derks, 2013; Tims, Bakker, & Derks,

2015; Tims, Bakker, Derks, & van Rhenen, 2013) have found the strongest association between

increasing structural job resources and challenging job demands: correlations ranged between .38

and .67, with a mean of .54. Increasing social job resources also correlated significantly with

increasing structural job resources (range .04−.51, mean .36) and with increasing challenging job

demands (range .29−.56, mean .43). The relations between decreasing hindering job demands

and the other job crafting behaviors were low and typically nonsignificant.

Although the correlation patterns described above do not reveal the combinations of job

crafting behaviors within individuals, it is suggested, in line with the avoidance-approach

taxonomy (Bruning & Campion, 2017; Elliot, 2008; Skinner et al., 2003), that use of the decreasing hindering job demands strategy, i.e., an avoidance type of job crafting behavior, differs from the other job crafting strategies in that the latter aim at increasing job resources and challenges. Consequently, it seems plausible that employees who make a lot of use of the avoidance type of job crafting strategies do not simultaneously use the approach type, and vice versa. Based on the approach-avoidance taxonomy presented above, it is hypothesized that at least two job crafting profiles will be found:

> *Hypothesis 1*: Both an Approach type of job crafting (employees who increase their job
> resources and challenging job demands, but who do not decrease their hindering job
> demands), and an Avoidance type of job crafting (employees who decrease their
> hindering job demands, but do not increase their job resources or challenging job
> demands) will be identified in the data.

2.2. Job crafting and work engagement

In the JD-R model, job crafting behaviors by an individual that increase job resources and challenging job demands are theorized to have a positive impact on work engagement (Bakker et al., 2014). The crafting of hindering job demands, however, is not considered to be directly linked with work engagement (Bakker et al., 2014). Although negative relations between job demands and work engagement have been detected, the relations between job resources and work engagement have found to be much stronger (for a review, see Halbesleben, 2010).

Previous research has largely supported the assumptions of the JD-R model, i.e., increasing job resources and challenging job demands have shown links with work engagement. However, the associations found have varied greatly between studies. For instance, while cross-sectional studies have found a positive relation between increasing structural job resources and work engagement (Bakker et al., 2016; Brenninkmeijer & Hekkert-Koning, 2015; Demerouti,

Bakker, & Gevers, 2015; Tims et al., 2012; Tims, Bakker, Derks, & van Rhenen, 2013), this has

not been found longitudinally (Harju et al., 2016) or on the day (Demerouti, Bakker, &

Halbesleben, 2015; Petrou et al., 2012) or week (Petrou, Bakker et al., 2017) level. Moreover,

the influence of increasing social job resources on work engagement has varied greatly across

studies, some finding significant associations (Brenninkmeijer & Hekkert-Koning, 2015; De

Beer et al., 2016) and others not (Bakker et al., 2016; Harju et al., 2016; Petrou, Bakker et al.,

2017). Conflicting results have also been reported for increasing challenging job demands, with

some studies finding a significant association with work engagement (Bakker et al., 2016;

Demerouti, Bakker, & Halbesleben, 2015; Harju et al., 2016; Petrou, Bakker et al., 2017; Petrou

et al., 2012; Tims et al., 2012; Tims, Bakker, Derks, & van Rhenen, 2013) and others failing to

find any association (Brenninkmeijer & Hekkert-Koning, 2015; Demerouti, Bakker, & Gevers,

2015). In addition, the association between decreasing hindering job demands and work

engagement has been either nonsignificant (Bakker et al., 2016; De Beer et al., 2016; Tims et al.,

2012) or negatively significant (Brenninkmeijer & Hekkert-Koning, 2015; Demerouti, Bakker, &

Gevers, 2015; Demerouti, Bakker, & Halbesleben, 2015; Petrou et al., 2012).

Another controversial issue concerns the longitudinal relationship between job crafting

and work engagement. On the one hand, some studies have shown, in line with the JD-R model

(Bakker et al., 2014), that job crafting predicts increased levels of work engagement over time.

For example, Vogt and colleagues (Vogt, Hakanen, Brauchli, Jenny, & Bauer, 2016)

demonstrated that the total job crafting score (including increasing structural and social job

resources and challenging job demands) predicted work engagement over three months.

Similarly, in a three-wave design with one-month follow-ups, job crafting had a positive effect

on structural and social job resources which, in turn, increased work engagement (Tims, Bakker, & Derks, 2013).

On the other hand, some studies have suggested that work engagement predicts job crafting behavior, and not vice versa. For example, work engagement positively predicted increasing job resources and challenging job demands and negatively predicted decreasing hindering job demands across a four-year period (Hakanen, Peeters, & Schaufeli, 2017). Work engagement also positively predicted job crafting behavior measured as an increase in the social and physical boundaries of the job (Lu, Wang, Lu, Du, & Bakker, 2014). Therefore, the direction of the relationship between job crafting and work engagement is not clear cut. That is, work engagement may promote job crafting behavior, especially the approach type of job crafting, where employees increase their job resources and challenging job demands. Since high work engagement manifests in the motivation and energy to invest effort in work, and persistence in the face of obstacles (Schaufeli et al., 2002), it is plausible that high work engagement promotes job crafting behavior.

Instead of a one-way causal relation, it is more likely that job crafting and work engagement are reciprocally linked. This has been demonstrated in some previous studies. For example, Tims et al. (2015) showed in a two-month follow-up that high work engagement promoted the crafting of structural and social job resources and challenging job demands, which, in turn, predicted subsequent work engagement. No evidence of linkages with decreasing job demands was found. Moreover, Harju et al. (2016) demonstrated that high work engagement had a positive impact on crafting structural and social job resources over a three-year period, as increase of challenging job demands predicted increased subsequent levels of work engagement. In sum, job crafting enables employees to mold their job in ways that enhance its meaningfulness

and cause them to feel energized and motivated to further increase their job resources and demands in order.

The present aim was to investigate whether different combinations of job crafting behaviors (i.e., job crafting profiles), have different associations with work engagement. It is plausible that combinations of job crafting behaviors affect work engagement differently than the use of single strategies. Thus, examining the linkages between job crafting profiles and work engagement might produce unique information about the relationships between them that is not revealed by a variable-oriented approach. Drawing on the JD-R model (Bakker et al., 2014) and research evidence presented above, it is plausible that approach patterns of job crafting behaviors tend to improve work engagement, as these proactive behaviors help to optimize the work environment in terms of affordable job demands and sufficient job resources (see also Bakker, 2017). In contrast, avoidance job crafting behaviors are likely to associate with low levels of work engagement, as they lead to a decrease in job resources and in challenging job demands, both of which have the potential to motivate employees and imbue work with a sense of meaningfulness. Furthermore, since engaged employees are motivated to stay engaged and have the energy to proactively mobilize their job resources and job demands, it is likely that work engagement fosters the approach type of job crafting behavior (Bakker, 2017). Based on above presented evidence, it is expected that:

Hypothesis 2: Employees characterized by the approach type of job crafting will report high levels of concurrent and subsequent work engagement.

Hypothesis 3: Employees characterized by the avoidance type of job crafting will report low levels of concurrent and subsequent work engagement.

Hypothesis 4: A high level of work engagement predicts use of the approach type of job

crafting.

3. Method

3.1. Data collection and participants

Data were collected among Finnish rehabilitation center employees implementing

courses for medical rehabilitation (the Finnish acronym is ASLAK). In fall 2014, 25 Finnish

rehabilitation centers permitted to organize ASLAK courses were invited to participate in the

research project. Of these, 20 agreed to participate, and thus the study population can be

considered representative of the target occupational group, i.e., rehabilitation workers. The

reasons for the five refusals were, among others, that they were involved in other research

projects. This occupational group was selected as the study target as its members do a demanding

job and work closely with others (Templeton & Satcher, 2007), thus offering a good starting

point for a study of different job crafting behaviors.

Participants were first asked to fill out a general questionnaire two weeks before the first

measurement, and a survey about their working day on two separate days after their weekly team

meeting in the afternoon. The interval between the two working-day surveys was approximately

one week. The questionnaires were sent to the prospective participant's work e-mail address

along with the information that participation was voluntary and that no incentives would be

provided.

The two working-day surveys were sent to a total of 188 rehabilitation workers. The

response rate for the first daily survey was 82.6% ($n = 147/178$), after excluding 10 people who

reported that because they were unable to attend the daily team meeting they would be unable to

fill in the survey at the requested time. The response rate for the second working-day survey was

75.7% ($n = 131/173$), after excluding 15 non-participants at the weekly meetings. Thus, the final

sample comprised 131 respondents and 262 completed questionnaires. Most of the participants were women (75%). Mean sample age was 48 years ($SD = 9.8$, range 26−64). The participants were highly educated, with 98% holding an academic degree, and 89% a permanent job contract. In addition, mean work experience in rehabilitation was rather long ($M = 16.4$ years, $SD = 10.35$) and mean length of service in the same rehabilitation center was 9.92 years ($SD = 7.84$).

3.2. Measures

Day-specific job crafting was measured with the modified version of the Job Crafting Scale (Petrou et al., 2012; Tims et al., 2012). All job crafting behaviors were assessed by two items modified to capture daily job crafting behavior: 1) increasing one's structural job resources (e.g., 'Today, I tried to learn new things at work'; Pearson correlations[1] = .60 T1 and .48 T2, $p <$ .001); 2) decreasing one's hindering job demands (e.g., 'Today, I tried to ensure that my work is emotionally less intense'; Pearson correlations = .45 T1, and .51 at T2, $p < .001$); 3) increasing one's social job resources (e.g., 'Today, I asked others for feedback on my job performance'; Pearson correlations = .54 T1, and .61 T2, $p < .001$); and 4) increasing one's challenging job demands (e.g., 'Today, I asked for more responsibilities'; Pearson correlation = .46 T1, and .47 T2). A five-point rating scale was used (1 = *totally disagree*, 5 = *totally agree*).

Day-specific work engagement was measured with the short form of the Utrecht Work Engagement Scale (UWES-9; Schaufeli, Bakker, & Salanova, 2006). The items concerned how work-engaged the respondent had been that day. The UWES-9 consists of the three different subscales; vigor (e.g., 'Today, I felt bursting with energy at my work'), dedication (e.g., 'Today, I was enthusiastic about my job'), and absorption (e.g., 'Today, I got carried away when I was working'), which were captured with three items each. Cronbach´s alphas for the work

engagement scale were .94 T1 and .95 T2. All items were scored on a 7-point rating scale (1 = *never*, 7 = *daily*).

The correlations between the study variables together with the descriptive information are presented in Table 1.

3.3. Discriminant validity

To investigate the distinctiveness of the four job crafting behaviors, their discriminant validity was tested by using confirmatory factor analysis (CFA). The parameters were estimated using maximum-likelihood estimation with robust standard errors to take into account the effect of any non-normality in the variables (MLR estimator; Muthén & Muthén, 1998-2017). According to the Satorra-Bentler scaled difference chi-square test for MLR (Satorra & Bentler, 2001), $\Delta\chi^2 = 23.59$, $\Delta df = 6$, $p < .001$, a four-factor model, where the items of increasing one's structural job resources, decreasing one's hindering job demands, increasing one's social job resources and increasing one's challenging job demands were constrained to load on their own factors, $\chi^2(14) = 36.07$, $p < .001$, scaling correction factor for MLR = 0.89, fitted significantly better than the one-factor model, where all eight job crafting items were constrained to load on a single factor, $\chi^2(20) = 62.70$, $p < .001$, scaling correction factor for MLR = 1.06. Similar results were also obtained at Time 2: $\Delta\chi^2 = 16.32$, $\Delta df = 6$, $p < .01$. These findings indicate the distinctiveness of the four job crafting strategies.

3.4. Statistical analysis

Latent profile analysis (LPA) was used to identify latent profiles based on the levels of the four simultaneously estimated job crafting behaviors. The LPAs were performed separately for both measurements. LPA identifies latent profiles (e.g., subpopulations) from the observed data and estimates parameters for these profiles (Muthén & Muthén, 1998–2017; Sterba, 2013).

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The profiles are considered latent because the participants' profile membership is not directly observed but instead inferred from the relationship between the measured variables. The parameters of the profile solutions were estimated using the full information maximum likelihood (ML) estimation with standard errors that are robust to non-normality (MLR estimator) (Muthén & Muthén, 1998–2017). This method allowed the use of all the observations in the data set to estimate the parameters in the models. The LPA was performed using Mplus (version 8) (Muthén & Muthén, 1998–2017).

To determine the adequate number of latent profiles, the Bayesian Information Criterion (BIC) and the Bootstrap Likelihood Ratio Test (BLRT) were used (Muthén, 2003; Nylund, Asparouhov, & Muthén, 2007). The model with the lowest BIC values is considered the best. The BLRT test compares solutions with different numbers of latent patterns. For the test, a p-value lower than .05 suggests that the solution with k profiles fits the data better than the solution with k-1 profiles. Furthermore, the distinctiveness of the profiles is assessed using entropy and average latent class posterior probabilities (AvePP). Entropy illustrates how accurate the overall classification is, and AvePP evaluates the likelihood, using posterior probabilities, of an observation being assigned to a specific profile. Using the most likely latent membership, AvePP is calculated for each profile. Both the entropy and AvePP values range from 0 to 1; for entropy, values close to 1 indicate a clear classification (Celeux & Soromenho, 1996). For the cases in the most likely latent profile, an AvePP of greater than .70 indicates that the solution found can be interpreted using the mean profiles (Nagin, 2005).

Latent Transition Analysis (LTA) was used to investigate the stayer-mover patterns across job crafting profiles over time (Collins & Lanza, 2010; Muthén & Muthén, 1998–2017). In the present study, the latent profiles obtained with LPA were used in the LTA. At each time

point, LTA estimates the proportion of individuals in each profile and the probability of being in

a specific latent profile at Time T, which is conditional on latent profile membership at Time T-1

(Collins & Lanza, 2010). Transition probabilities range between 0 (no transitions have occurred)

and 1 (all members of one profile have transitioned to another class).

Concurrent and subsequent differences between the job crafting profiles in work

engagement were investigated using the BCH command implemented in Mplus (Asparouhov &

Muthén, 2014; see also Bakk & Vermunt, 2016). The command uses auxiliary variables (here,

work engagement) as distal outcomes that are compared between the latent profiles. The BCH

command produces an overall test and pairwise comparisons between the latent profiles on the

auxiliary variables using a Wald chi-square test. To investigate whether the initial level of work

engagement predicted subsequent job crafting profile membership, the R3STEP command in

MPlus was used (Asparouhov & Muthén, 2014). The R3STEP command performs multinomial

logistic regressions to determine whether an antecedent variable (here, work engagement at Time

1) is related to a higher probability of a participant belonging to one profile rather than another.

4. Results

4.1. Job crafting profiles

The results of the LPA for the simultaneously estimated four job crafting behaviors are

presented in Table 2. As shown, at Time 1 the two-profile solution was supported by the BIC

value and the BLRT test, both of which have proven very effective in identifying the model that

best covers a sample's true parameters (Nylund et al., 2007). In addition, the entropy value (.99)

of the two-profile solution was very high as also were the AvePPs (range .98−.99), illustrating

the distinctiveness of the profiles in the two-profile solution. This profile solution was also

replicated, indicating that the solution was global rather than local (see Jung & Wickrama, 2008).

The first job crafting profile contained 94% of the participants (AvePP = .99) and was

characterized by above average use of all four job crafting behaviors (see Figure 1). The raw

(i.e., actual mean scores), also indicated that the employees in this profile used all four job

crafting strategies (see Figure 2). Thus, this profile was labeled 'Active job crafters'. The second

profile, labeled 'Passive job crafters' (AvePP = .98) accounted for the remaining 6% of the

participants. In comparison with the 'Active job crafters', their use of job crafting strategies was

below the overall mean level (see Figure 1). The raw scores in Figure 2 further reveal that while

the 'Passive job crafters' sought to decrease their hindering job demands to some extent, but they

did not try to increase their job resources or challenging job demands.

The job crafting profiles were also investigated at Time 2 to explore whether the profile

solution found at Time 1 was replicated. At Time 2, the BIC index and BLRT test clearly

favored the two-profile solution (see Table 2). Also at the second measurement, the great

majority of the participants belonged to the profile of 'Active job crafters', who utilized all the

job crafting strategies above the sample mean (see Figure 3). The minority, in turn, belonged to

the 'Passive job crafters' profile, whose members used all the job crafting strategies below the

mean level (see Figure 3).

LTA was used to model possible transitions between the profile memberships across

measurements. The entropy value for the LTA model was high (.98), indicating that the

classification quality of the model was good. The latent transition probabilities were zero,

indicating that no transitions occurred. Consequently, the study participants remained in the same

profiles across measurements: 'Active job crafters' at Time 1 were also in the 'Active job

crafters' profile at Time 2. Similarly, the initial 'Passive job crafters' also remained in the same

profile at Time 2. Consequently, the profile memberships remained unchanged, no transitions across the profiles having occurred over the one-week period.

To summarize, the result, showing that the employees' job crafting behavior was characterized by two clearly different profiles, was replicated over time. The employees maintained the same profile membership over the study period. The 'Passive job crafters' decreased their hindering job demands to some extent, but did not increase their job resources or demands, and consequently their job crafting behavior could be understood as of the avoidance type. However, the 'Active job crafters' used all the job crafting strategies simultaneously, i.e., they also decreased their hindering job demands while increasing their job resources and challenging job demands. Therefore, the approach-avoidance taxonomy only partially characterized the content of the job crafting profiles, and hence Hypothesis 1 was partially supported.

4.2. Job crafting profiles and work engagement

Significant differences in work engagement between the two job crafting profiles were evident at both measurements (Wald's chi square test values were 23.67, $p < .001$ at Time 1 and 20.44, $p < .001$ at Time 2). The 'Active job crafters' ($M = 4.92$, $S.E. = 0.08$ at Time 1 and $M = 5.18$, $S.E. = 0.13$ at Time 2) exhibited higher work engagement than the 'Passive job crafters' ($M = 3.36$, $S.E. = 0.31$ at Time 1 and $M = 4.14$, $S.E. = 0.17$ at Time 2). The job crafting profile solution at Time 1 also predicted meaningful differences in work engagement at Time 2, as indicated by Wald's chi square test (5.71, $p < .05$). Consequently, the 'Active job crafters' also reported higher subsequent work engagement than the 'Passive job crafters'. It was further tested whether the level of work engagement at Time 1 predicted the likelihood of belonging to a specific job crafting profile at Time 2. The results of the multinomial regression analyses

conducted via R3STEP command (Asparouhov & Muthén, 2014) showed that work engagement at Time 1 (estimate 1.629, $p < .03$) predicted the likelihood of belonging to the 'Active job crafters' profile at Time 2.

To summarize, Hypotheses 2 and 3 were supported, as the level of work engagement was found to be highest in the employees who mostly used the approach type of job crafting and lowest in the employees who used the avoidance type of job crafting. The profile differences emerged concurrently as well as longitudinally. Hypothesis 4 was also supported, as a high initial level of work engagement predicted membership of the 'Active job crafters' profile.

5. Discussion

This study contributes to the literature on job crafting in three ways. First, this is the very first study to identify job crafting profiles by adopting a person-centered approach. Via this approach, two job crafting profiles with meaningful differences emerged, demonstrating that employees use job crafting strategies in different combinations. Second, employees maintained their profile membership over time, that is, the employees used similar job crafting combinations across workdays. Third, the associations between job crafting and work engagement were an outcome of combinations of job crafting, and not of the use of any single job crafting strategy. Below, each of these contributions is discussed in detail.

5.1. Theoretical contributions

This study highlights the fact that employees use several job crafting behaviors simultaneously on a daily basis, and shows that the use of multiple job crafting behaviors can be captured by latent profile analysis; in the present instance, two theoretically meaningful profiles were identified. Specifically, the employees in the largest of the profiles, i.e., 'Active job crafters' utilized all four job crafting strategies. A notable finding is that the employees in the

'Active job crafters' profile decreased their hindering job demands at the same time as they

sought to increase their job resources and challenging job demands. Moreover, instead of seeking

to decrease their hindering job demands across a broad front, the 'Passive job crafters' barely

used any job crafting strategies at all. The finding that the job crafting behavior of the 'Active

job crafters' ran counter to expectations based on the approach-avoidance theory (Elliot, 2008;

Skinner et al., 2003) is not necessarily counterintuitive in light of the findings of earlier job

crafting studies showing that employees utilize both types of job crafting (Bruning & Campion,

2017). It has also commonly been found in the person-centered coping literature that so called

active copers also frequently use avoidance and symptom reduction (Mauno, Rantanen, &

Tolvanen, 2014), which are, however, generally considered maladaptive stress reduction

strategies. It is thus plausible that flexibility and the diverse use of all kinds of job crafting

strategies is a sign of a healthy active worker with the energy and will to invest in his/her work in

a variety of ways. Overall, the present results lead to the conclusion that it is essential to

understand and investigate job crafting as a multifaceted construct, instead of investigating single

strategies in isolation.

Job crafting behavior has been theorized to occur on a daily basis (Wrzesniewski &

Dutton, 2001; see also Leana et al., 2009), as is also expected in the operationalization of the JD-

R model, i.e., employees balance their job resources and demands on a day-to-day basis (Bakker

et al., 2014). Previous studies have confirmed this by revealing significant daily fluctuations in

job crafting behavior (Demerouti, Bakker, & Halbesleben, 2015; Petrou et al., 2012). However,

the present findings further elaborate the literature by showing not only that day-to-day

fluctuations can be captured by job crafting profiles but also that the profiles showed consistency

over time. In the other words, the present employees showed temporal stability in their self-

reported job crafting behavior. This is a novel finding which suggest that job crafting behavior may be partially dispositional in nature. It is plausible that job crafting behavior is linked, at least in part, to stable personality characteristics (see Rudolph, Katz, Lavigne, & Zacher, 2017) and biologically determined temperament (Bipp & Demerouti, 2015), thus explaining the cross-situational consistency of this behavior. Thus, when considering the current version of the JD-R model (Bakker & Demerouti, 2014), it would be useful to acknowledge that personality characteristics also foster job crafting behavior, and not just vice versa (see Bakker, 2017). However, the finding might also indicate that the employees investigated in this study have, through relatively long experience, found ways of job crafting appropriate to their personal work context. If so, this would explain the consistency of their job crafting behavior. It is nevertheless noteworthy that while the reported job crafting profile held stable, the degree of job crafting responses fluctuated somewhat across work days. As the time-lag in the present study was one week and only two work days were investigated, the stability observed in job crafting behavior should be interpreted with caution and further investigated over a longer period and with several measurements.

Earlier variable-centered studies have yielded conflicting findings on the impact of job crafting strategies on work engagement (e.g., whether efforts to decrease hindering job demands are linked to low work engagement or not; Bakker et al., 2016; Brenninkmeijer & Hekkert-Koning, 2015; De Beer et al., 2016; Demerouti, Bakker, & Gevers, 2015; Demerouti, Bakker, & Halbesleben, 2015; Tims et al., 2012; Petrou et al., 2012). The present findings demonstrate that job crafting profiles can show meaningful and robust linkages with work engagement. It was found that the relationship with work engagement was an outcome of combinations of job crafting behaviors, and not of the use of any single job crafting strategy. For instance, decreasing

hindering job demands is less detrimental to work engagement when used together with other more adaptive job crafting strategies, as in the profile of 'Active job crafters'. Consequently, the combination of the job crafting strategies used matters, a finding that further testifies to the benefit of investigating profiles of job crafting behaviors.

The present findings also suggest that the approach type of job crafting behavior and work engagement are associated concurrently as well as longitudinally. On the one hand, employees who actively shape their work environment are seeking to be better adjusted in relation to their job demands and to acquire the new job resources needed to maintain and increase their work engagement. On the other hand, experiences of work engagement affect employees' ability to utilize job resources and cope with job demands. Mutual relations of this kind have also been demonstrated by earlier variable-oriented research (Tims et al., 2015). This finding has an important practical implication: job crafting behavior does not occur exclusively in a work situation characterized by plentiful job resources and new challenges - employees also need to possess the energy and motivation to utilize and mobilize the job-related resources available to them.

5.2. Limitations and future research

The study has its limitations. First, the data were female-dominated (75%), raising the question of whether the findings would hold among male-dominated or more gender-neutral samples. Second, only rehabilitation employees (i.e., mostly physicians, physiotherapists, psychologists, social workers and vocational rehabilitation specialists) were studied. Hence, job crafting profiles should also be investigated with samples drawn from a wider variety of occupations. Third, although the sample was representative of the target occupational group of the study, i.e., rehabilitation workers implementing vocationally oriented medical rehabilitation

courses, it was rather small. Fourth, owing to constraints on the length of the daily survey, each

job crafting strategy was measured by only two items per construct. This naturally limits the

possibilities for comparisons with other studies, for example on some of the mean values.

Finally, job crafting and work engagement were based on self-reports, which raises the

possibility of common method bias. However, these subjective experiences are best evaluated by

using self-reports while the use of longitudinal data diminishes the likelihood of common

method bias (Doty & Glick, 1998).

As noted in the limitations above, the present findings need to be further validated.

Besides replication of the profiles, three other future topics for job crafting research can be

suggested in light of the present results. First, the situational vs. dispositional nature of job

crafting needs further investigation. Do employees craft their jobs similarly across situations or is

it that work days are rather similar in their demands and resources, and thus lead to similar

crafting behaviors over time? To address this issue, work characteristics must be included in

future person-centered job crafting research. Second, in this study, the job crafting profiles were

identified and operationalized on the basis of the JD-R model (Bakker et al., 2014; Tims et al.,

2012). Future research should therefore consider investigating intra-individual job crafting

combinations based on other operationalizations (Nielsen, Antino, Sanz-Vergel, & Rodríguez-

Muñoz, 2017; Slemp & Vella-Brodrick, 2013). Third, although the three-step procedure yielded

information about the associations between job crafting profiles and work engagement, the

method does not establish the direction of causality between these variables. This issue thus

requires further investigation.

5.3. Conclusion and practical implications of the study

This study was the very first to investigate job crafting behavior from a person-oriented perspective. The use of this approach contributes to the job crafting literature by demonstrating that: 1) employees use combinations of job crafting strategies on a daily basis; 2) configurations of job crafting strategies possess continuity across measurements, suggesting that job crafting behavior is dispositional in nature; and 3) links with work engagement are an outcome of combinations of job crafting, and not of the use of any single job crafting strategy. In sum, employees seem to use a diversity of job crafting strategies simultaneously, and thus variable-centered studies are likely to miss the richness of the ways these behaviors combine within individuals. This study contributes to guiding empirical research and theory building aimed at bringing real-world individual mechanisms under the spotlight. In practice, the findings indicate that employees should be trained to use all kinds of job crafting strategies, including avoidance strategies, actively and flexibly. Based on the present findings, successful job crafting can be characterized as active use of the broad variety of job crafting strategies available to the individual.

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Footnotes

[1] Internal consistency for the two-item job crafting dimensions were calculated using Pearson correlation.

Figure Captions

Figure 1. Standardized scores for the latent job crafting profiles at Time 1

Note: Proportions for the latent profiles are presented in parentheses

Figure 2. Estimated mean scores for the latent job crafting profiles at Time 1

Note: Proportions for the latent profiles are presented in parentheses

Figure 3. Standardized scores for the latent job crafting profiles at Time 2

Note: Proportions for the latent profiles are presented in parentheses

Table 1

Means (M), Standard Deviations (SD), and Correlations between Study Variables

	M	*SD*	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Structural JR T1	3.88	0.70									
2. Hindering JD T1	3.44	0.74	.32								
3. Social JR T1	2.64	0.98	.30	.26							
4. Challenging JD T1	2.76	1.01	.31	.03	.37						
5. Work engagement T1	4.83	1.05	.61	.26	.39	.19					
6. Structural JR T2	3.83	0.59	.55	.33	.28	.26	.31				
7. Hindering JD T2	3.40	0.75	.35	.51	.24	.15	.23	.28			
8. Social JR T2	2.65	0.91	.28	.12	.69	.29	.34	.27	.25		
9. Challenging JD T2	2.70	0.81	.14	.07	.27	.37	.16	.08	.16	.23	
10. Work engagement T2	4.94	1.00	.51	.25	.26	.22	.54	.56	.25	.37	.16

Note. Structural JR = Increasing structural job resources; Hindering JD = Decreasing hindering job demands; Social JR = Increasing social job resources; Challenging JD = Increasing challenging job demands. $r = .19-.23$, $p < .05$; $r = .24-.29$, $p < .01$; $r \geq .30$, $p < .001$.

Table 2

Fit Statistics for the 1-3 Profile Solutions of Job Crafting at Time 1 and Time 2

Number of latent profiles	logL	BIC	Entropy	BLRT p value	Latent profile proportions (%)
Time 1					
1	-838.661	1717.299	-	-	100
2	-799.894	1684.741	0.99	0.001	94/6
3	-781.700	1693.327	0.98	0.153	6/88/6
Time 2					
1	-743.647	1527.271	-	-	-
2	-704.862	1494.677	0.99	0.001	94/6
3	-686.756	1503.439	0.98	0.085	5/87/6

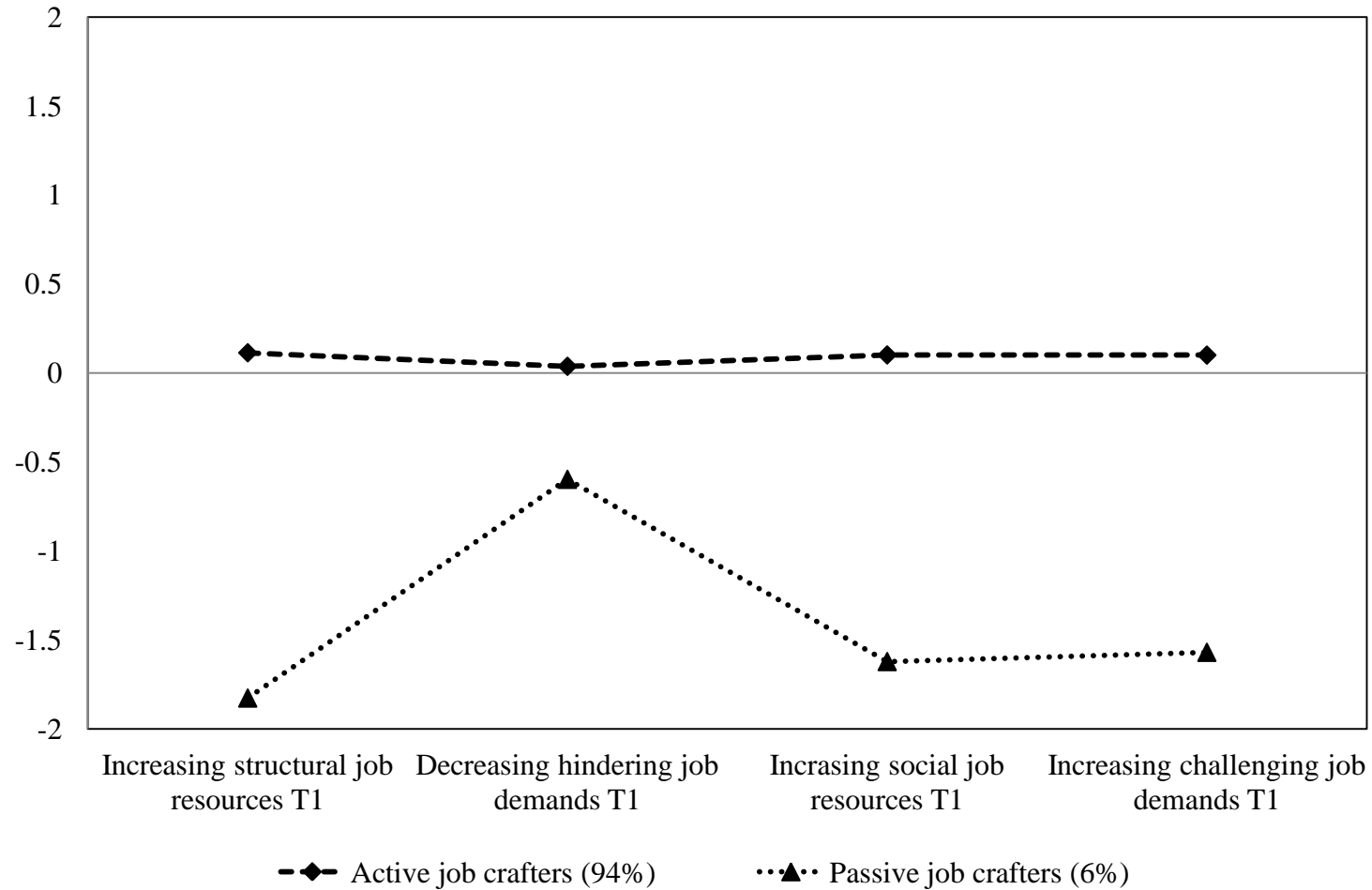*Note.* BIC = Bayesian Information Criterion; BLRT = Bootstrap Likelihood Ratio Test
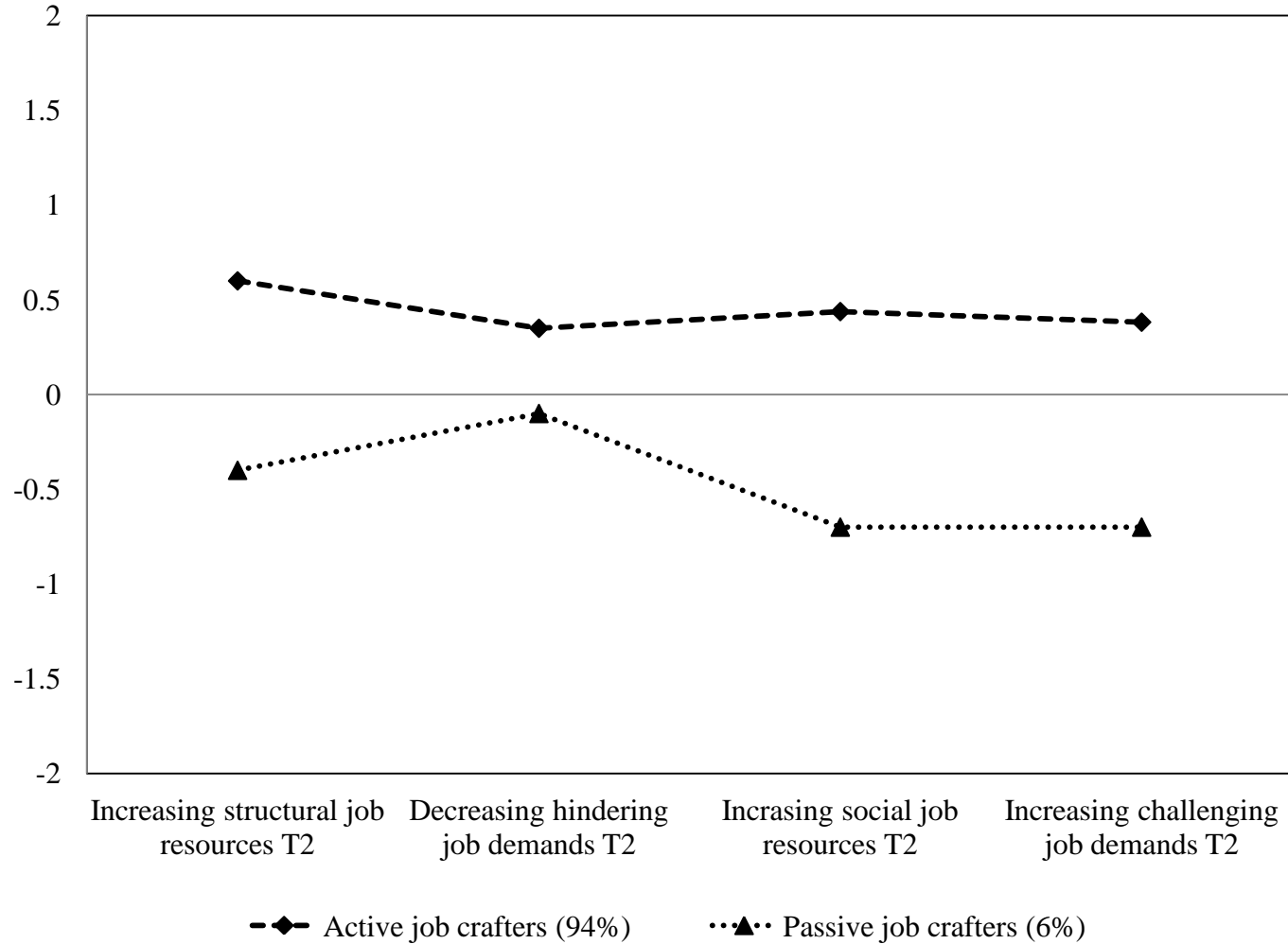
Figure 1.

Figure 2.

Figure 3.

Highlights:

- Employees use different job crafting strategies simultaneously on a daily basis

- Profiles of job crafting strategies possess continuity across measurements

- Active simultaneous use of all four job crafting strategies facilitate work engagement

  rather than the use of single strategies