TITLE

The role of work-related needs in the relationship between job crafting, burnout and engagement

ABSTRACT

Orientation: Knowing that it is imperative to better understand the antecedents and consequences of needs-supplies fit, the present research had two main objectives. First we wanted to extend our knowledge about the three psychological needs highlighted through the Self-Determination Theory by presenting more specific work-related needs. Second, following the new directions of organizational fit theories, we wanted to better understand how individuals make sense of fit.

Research purpose: The purpose of this study is to propose more specific work-related needs in terms of employment quality and to test job crafting as an antecedent of needs-supplies fit (NS fit). We tested the double mediating role of NS fit (i.e. specific: based on more specific work-related needs, and general: based on global job perceptions) between job crafting and individual outcomes namely burnout and work engagement.

Motivation for the study: By taking into account more specific work-related needs, this study aimed to add more specific information to better help predict well-being at work. Moreover, the present research responds to the need to better understand how individuals make sense of fit.

Research design, approach and method: Data were collected in a Belgian Public Federal Service (N= 1500). Our research model was tested using Structural Equation Modelling with Mplus.

Main findings: Results show (a) that specific NS fit perception was positively related to a global needs-supplies fit perception, and (b) the partial mediating role of (specific and general) NS fit between job crafting and burnout and work engagement.

Practical/managerial implications: Managers should encourage crafting behaviours and should know their team and that team's specific needs.

Contribution/added-value: By taking into account more specific work-related needs, our study suggests that needs-supplies may have more than one dimension. Moreover, it shows that job crafting is a way to increase NS fit.

Keywords: work-related needs, information integration theory, proactive behaviour, person-environment fit and workers' well-being

INTRODUCTION

According to the person-environment fit theory (PE fit), "the misfit between the person and the environment may produce psychological, physiological, and behavioural strains and can take two different forms: (a) the extent to which the demands and requirements of the environment match the skills and abilities of the person and (b) the extent to which the rewards and supplies provided by the environment match the needs and preferences of the person" (Edwards & Van Harrison, 1993, p.628). In this context, because individuals who can choose a working environment in congruence with their personal characteristics will experience more positive work-related outcomes, it is not surprising that PE fit (person-environment fit) has become one of the most studied concepts in work and organizational psychology (Kristof-Brown, Zimmerman, & Johnson, 2005). Following Kristof-Brown and colleagues, (2005), it is now recognized that PE fit is a multidimensional concept which includes person-organization fit (PO fit), person-group fit (PG fit), person-supervisor fit (PS fit), person-vocation fit (PV fit) and person-job fit (PJ fit). Person-job fit can also be divided into two conceptualizations: demands-abilities fit (DA fit) and needs-supplies fit (NS fit). Because it is important to further investigate the antecedents and the consequences of NS fit (Kristof-Brown & Billsberry, 2013), and because "NS fit may be the most important type of fit from an employee point of view" (Cable & De Rue, 2002, p.875), we have chosen to focus on this.

Research purpose and objectives

This study has two main objectives. First, in order to extend our knowledge about the three psychological needs (i.e., competence, autonomy and relatedness) highlighted by the Self Determination Theory (SDT; Deci & Ryan, 2000), we wanted to propose more specific work-related needs in terms of employment quality. So as to better understand the meaning of needs at work and to ascertain the importance of work-related needs fulfilment, we followed a subjectivist approach (i.e., a focus on employees' needs fulfilment; Brown, Charlwood, Forde,

& Spencer, 2007). Following Burchell, Sehnbruch, Piasna, and Agloni (2013), this is "conceptually more advanced than previous attempts to measure the quality of employment "(Burchell et al., 2013, p.8). Second, following the new directions of organizational fit theories (Kristof-Brown & Billsbery, 2013), we wanted to better understand how individuals make sense of fit. To this end, and because it represents proactive behaviour through which people take initiative to make changes in their jobs (Yu, 2013), we tested job crafting (JC) as an antecedent of NS fit. Moreover, because many studies have already highlighted the positive consequences of job crafting on individual outcomes (e.g. Tims & Bakker, 2010; Tims, Bakker, & Derks, 2013), the present research tries to expand our understanding about the underlying mechanisms of this relationship. Thus we tested the double mediating role of specific NS fit (i.e. based on more specific work-related needs) and global NS fit (i.e. based on global job perceptions) between job crafting and two individual outcomes, namely burnout (BO) and work engagement (WE).

Literature review

Regarding our two objectives, this paper will firstly present needs-supplies fit theory particularly in terms of the importance of work-related needs for employment quality; we then present job crafting and the link between NS fit, job crafting and individual outcomes.

Needs-Supplies fit and Specific Work-Related Needs

Needs-supplies fit (NS fit) refers to the congruence between needs on one side and job characteristics on the other (Kristof-Brown et al., 2005). NS fit is illustrated by the fit between needs and supplies that gives a general perception of needs fulfilment (Edwards & Shipp, 2007). For Kämpfe and Mitte (2009), neither the individual's current state, nor his/her goals are sufficient to predict well-being; it is more a question of the discrepancies between these. According to this view, the wider the gap, the greater the likelihood of negative consequences on mental and physical well-being; conversely the greater the match, the greater the likelihood of positive consequences such as engagement at work and job satisfaction (e.g., **Erreur ! Source du renvoi introuvable.**, Jaworek, Karwowski, Kozusznik, & Marek, 2013; Edwards & Shipp, 2007; Van Zyl, Deacon, & Rothman, 2010).

Prior studies have already highlighted the positive consequences of psychological needs fulfilment on both individual and organizational outcomes such as job satisfaction, job strain or organizational identification (see Kristof-Brown et al., 2005 for a meta-analysis) and

many theories conceptualize how psychological needs fulfilment is related to well-being at work and positive employee attitudes. First, following the PE fit theory of stress (Edwards, Caplan, & Harrison, 1998), NS fit is an important mechanism for understanding how the relation between the individual and the environment has an impact on mental and physical well-being. Indeed, according to this theory, job stress is defined as the misfit between subjective needs and supplies; it is the "critical mechanism through which the person and environment jointly influence mental and physical well-being" (Edwards & Shipp, p. 24). Second, cybernetic theories of stress (Cumming & Cooper, 1979) advance that the proximal cause of well-being is the perceived misfit between actual and desired states. In this way, "needs-supplies misfit can be interpreted as stress when needs and supplies are both subjective and supplies fall short of needs" (Edwards & Shipp, 2007, p.226). Finally, because of the importance of psychological needs in well-being enhancement, self-determination theory (SDT, Deci & Ryan, 2000) could also explain how perceived NS fit is associated with positive attitudes and behaviours (e.g. Greguras & Diefendorff, 2009). According to SDT, if individuals are able to satisfy their three innate psychological needs (autonomy, competence and relatedness), they will develop their fullest potential and thus function optimally (Deci & Ryan, 2000). As already stated above, we wanted this paper to extend our knowledge about these three psychological needs by presenting more specific work-related needs in terms of employment quality.

Because of the many conceptualizations of employment quality, it is difficult to find a common definition of "a good job" (Burchell, Sehnbruch, Piasna, & Agloni, 2013). Nevertheless, some academics and certain institutions such as the International Labour Organization (ILO) and the EU have attempted to develop a range of indicators to define what is termed "a good job". For example, the ILO, through its concept "Decent Work" (1999), proposes ten indicators of employment quality such as development opportunities, health, safety and work-home balance. In their work for the European Parliament, Muñoz de Bustillo, Fernandez-Macias, Anton, and Esteve (2009) have also proposed twenty job quality indicators including wages, working time, flexibility, security and autonomy. At the academic level, several authors have developed indicators of employment quality in order to help with the definition and measurement of "a good job" (see Körner, Puch, & Wingerter, 2009; **Erreur ! Source du renvoi introuvable.**, Levecque, & Vanroelen, 2015). These authors have highlighted a broad set of indicators of employment quality including: work organization, wages and payment system, security and flexibility, skills and development, workers' rights

and social protection, employability opportunities, safety and ethics in employment as well as the work-life balance. Based on these classifications, we propose a synthetic overview of these sources that define employment quality (see Table 1). Consequently, in this study, "a good job", with high employment quality is defined on the basis of ten indicators: (a) job content, (b) work home balance, (c) working time, (d) working space, (e) wages, (f) training, (g) employability, (h) contract stability, (i) social protection and (j) work-place security.

INSERT TABLE 1 HERE

On this basis, and in order to understand the importance of workers' needs in the context of employment quality, we suggest following a subjectivist approach. This approach focuses on specific work-related needs and their perceived fulfilment as the basis for the association between a high quality jobs with positive job attitudes (e.g., Brown et al., 2007). Körner, Puch and Wingerter (2009) have already proposed seven employment quality indicators following a basic needs approach (**Erreur ! Source du renvoi introuvable.**, 1958) as a theoretical foundation. In their work, Körner and colleagues, (2009) argued that individuals will perceive high employment quality if, for example, their needs for safety, income, security and skills development are fulfilled. According to these authors, it thus seems important to take work-related needs into account to understand how high quality jobs may result in positive job attitudes.

Moreover, based on more specific work-related needs, and because existing NS fit scales assess needs-supplies fit through a global fit perception between needs and general job characteristics (e.g. Cable & De Rue, 2002), we further suggest that perceived global NS fit (i.e. based on a global job perception) may result from a specific perceived NS fit (i.e. based on more specific work-related needs). In other words, we propose that individuals may come to an overall fit perception after adding together specific dimensions of fit (Seong & Kristof-Brown, 2012). Such a suggestion has already been proposed and verified in a previous study (Authors, 2015) using information integration theory (IIT; Anderson, 1962) to explain this relationship. Indeed, following IIT, individuals integrate information from a number of sources in order to finally make an overall judgment. Information integration theory is thus a general theory explaining how, using "cognitive algebra", an individual combines several items of information to produce a response. According to Anderson's theory, there are three main steps in the impression formation process. The first is the valuation function, in which individuals map each piece of information on a subjective scale. The second is the integration

function using added (i.e. adding stimulus values) or averaged (i.e. averaging stimulus value) cognitive algebra (**Erreur ! Source du renvoi introuvable.**, 1962) to combine the subjective values of information. The third is the response production function through which the internal impression is translated into a general response.

Thus, following the IIT (Anderson, 1962), our first hypothesis is:

H1: A specific work-related NS fit perception in terms of employment quality is positively associated with a global NS fit perception.

Job Crafting

As a second objective, and because of "the lack of research treating PE fit as an outcome" (Yu, 2013), we tested job crafting as an antecedent of NS fit. This follows from Yu's PE fit model (2009) - in which job crafting can describe how individuals are motivated to fit with their environment.

Job crafting was initially defined by Wrzesniewski and Dutton (2001) as "the physical and cognitive changes individuals make in the task or relational boundaries of their work" (p. 179). According to this definition, employees engaged in crafting behaviours are motivated to alter the meanings of their work by modifying, for example, its design or its social environment. Accordingly, individuals who engage in these proactive behaviours (i.e. anticipatory behaviours aimed at bringing about change to individuals themselves and their environment; Gonzalez, R. & Griffin, D. (2001). A statistical framework for modeling homogeneity and interdependence in groups. Blackwell Handbook of Social Psychology, Vol 2: Interpersonal Processes, M. Clark and G. Fletcher (Eds), p. 505-534.

Grant & Ashford, 2008) may proactively change different aspects of their jobs, such as their tasks (i.e. the amount or the content of tasks), their relationships at work (i.e. the amount or the intensity of contact with their colleagues) or their cognitions about their job (i.e. enhancing the meaning of their jobs) (Tims, Bakker, & Derks, 2012). Individuals adopt such proactive behaviours in order to match with their ability and needs and thus to increase the fit between themselves and their environment (Black & Ashord, 1995).

Recently, to include a larger set of job characteristics that employees may modify, several authors (e.g. Tims, Bakker, & Derks, 2012; Tims, Bakker, Derks, & Van Rhenen,

2013) defined job crafting using the job demands-resources (JD-R) model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). In the JD-R model, job characteristics are divided into two categories: job demands, defined as "the physical, social or organizational aspects of the job that require sustained physical or mental effort and are therefore associated with certain physiological and psychological costs (Demerouti et al., 2001, p. 501) and job resources, that refer to those aspects of the job that may be functional in achieving work goals, may reduce job demands and stimulate individuals' personal growth and development (Demerouti et al., 2001). In this way, and based on the JD-R model, job crafting has been defined by Tims, Bakker and Derks (2012) as "the changes that employees may make to balance their job demands and job resources with their personal abilities and needs" (p. 174).

Many studies have already explored the positive consequences of job crafting (e.g. Tims & Bakker, 2010; Tims, Bakker, & Derks, 2013) advancing that people who engage in crafting behaviours are more engaged in their job, more satisfied with their job and less likely to develop burnout syndrome. These authors explain this process through job crafting's three main dimensions (i.e. increasing job resources, increasing challenging job demands and decreasing hindering job demands). More precisely, individuals may proactively increase their resources and challenging job demands and decrease their hindering job demands, in order to increase their personal growth and job satisfaction (Tims et al., 2012).

Regarding the relationship between fit perceptions and job crafting, even if a few studies have already shown that job crafting is an antecedent of person-job fit (e.g. Lu, Wang, Lu, Du, & Bakker, 2014), none of these have focused on the role of perceived needs-supplies fit between job crafting and individual outcomes. Following the job crafting definition based on the JD-R model (Demerouti et al., 2001), and knowing that job demands and job resources are two important work environment characteristics to consider to explain burnout and work engagement, it seems important to further investigate which mechanisms underlie the relationship between job crafting and these specific individual outcomes. Thus, in the present study, we argue that specific NS fit and global NS fit play a mediating role between job crafting and individual outcomes, namely burnout and work engagement. To define burnout, we have decided to follow the Maslach, Jackson, and Leiter (1996) definition. According to these authors, burnout refers to a syndrome of exhaustion, cynicism and reduced professional efficacy (Maslach, Jackson, & Leiter, 1996). Regarding work engagement, we have decided to define it as as "an affective-motivational, work related state of fulfilment that is characterized by vigour, dedication and absorption" (Schaufeli & Bakker, 2004, p. 95).

In line with the theoretical background developed in this paper, we expect that workers engaged in job crafting behaviours will proactively modify their job to increase the fit between their specific work-related needs and their current job characteristics. This will therefore be associated with an increase of their global NS fit perception (i.e. based on global job perception), which, in turn, will increase work engagement and decrease burnout. In view of these assumptions, our second and third hypotheses are:

H2: "There is a double mediation of Specific Needs-Supplies fit and Global Needs-Supplies between job crafting and burnout"

H3: "There is a double mediation of Specific Needs-Supplies fit and Global Needs-Supplies between job crafting and work engagement"

Figure 1 summarizes our research model in view of our 3 hypotheses.

INSERT FIGURE 1 HERE

RESEARCH DESIGN

Research Method

Research participants

Our sample is made up of workers from a Belgian Federal Public Service. For this study, we randomly selected 1500 respondents from a larger dataset[1]. In this organisation, there were three different levels of professional status (from lowest (A) to highest (C)): level A (26.4%), B (54.4%) and C (18.7%), with 0.5% unknown. These levels are comparable to the traditional differentiations within a traditional workforce: blue-collar, clerical and managerial. The majority of respondents (85%) are male and Dutch speaking (61.4%) and the average age of the sample is 44 years (SD= 8.5).

Measuring instruments

Unless otherwise specified, the questionnaires were originally in English. We followed the back-translation procedure to propose version in French and Dutch.

[1] The original dataset was composed of 7016 data (response rate= 25%). This low response rate was due to the fact that the majority of the population was from level A (the lowest hierarchical level) and mainly working in the field and with low access to e-mails. Then, because of the multiple objectives of our research project, 1500 data were randomly selected for the present study. This allowed us to undertake other analyses on the remaining dataset.

Job Crafting (JC), was measured with the four dimensions of the Job Crafting Scale developed by Tims, Bakker, and Derks (2012; e.g. "I try to develop my capacities"), and using a five-point frequency scale ranging from 1 (never) to 5 (often). This questionnaire is made up of four main dimensions (increasing structural job resources, decreasing hindering job demands, increasing social job resources and increasing challenging job demands). Tims et al., (2012) reported that the four dimensions had good reliability (Cronbach's alphas were all above .70 and ranged from .75 to .82).

Specific Needs-Supplies Fit (S-NS Fit), was measured with a questionnaire created for the purpose of this research (see Authors, 2015) and focused on employment quality indicators (see Table 1). It comprises 37 items distributed over twelve work-related needs factors, namely the need for: a challenging job (3 items, α=.72), work-family balance (3 items, α=.83), a clear time schedule (3 items, α=.69), work flexibility (3 items, α=.85), additional rewards (3 items, α=.72), regular financial rewards (3 items, α=.82), personal development opportunities (3 items, α=.91), employability (3 items, α=.78), job security (3 items, α=.86), social protection (3 items, α=.69), a comfortable work environment (3 items, α=.84), and fairness and recognition from the supervisor (4 items, α=.88) (see Table 2 for sample items of each dimension and appendix 1 for the overall questionnaire). The questionnaire was originally developed in French and we followed standard back-translation procedures to present a Dutch version. For each item, participants were asked to indicate their ideal state as compared to their present state on a seven-point scale from -3 (I would like much less than now) to +3 (I would like much more than now), with 0 (I am satisfied with my current state) as the middle value.

As the main aim of this paper is to focus on the importance of fit and not on its valence (i.e., positive or negative fit), we used the absolute values of the original scale (Warr & Inceoglu, 2012). We first took the absolute value of this response scale from 0 (no discrepancy = fit, i.e., satisfied with current state) to 3 (high perceived discrepancy, irrespective of its being negative or positive). In order to increase comprehensibility, we then reversed these scores so that a high value represented optimal fit, while a low value represented misfit (either over-fit or under-fit).

INSERT TABLE 2 HERE

Global Needs-Supplies Fit (G-NS Fit), was assessed using the three-item scale developed by Cable and DeRue (2002; e.g., "There is a good fit between what my job offers me and what I am looking for in a job"). A five-point Likert scale ranging from 1 (totally

disagree) to 5 (totally agree) was used. Previous research has shown good Cronbach's alphas for these three items (between .89 and .93; see Cable & DeRue, 2002).

Work Engagement (WE), was measured on a 7-point frequency scale (1, never to 7, often) with the nine items of the Utrecht Work Engagement Scale (UWES-9; Schaufeli, Bakker, & Salanova, 2006; e.g. "At my work, I feel bursting with energy"). The UWES-9 items scale is made up of three main dimensions (3 items for vigour, 3 items for dedication and 3 items for absorption) and previous research (see Schaufeli et al., 2006) has shown good overall instrument reliability (Cronbach's alpha ranging from .85 to .92) as well as good sub-dimensions reliability (vigour= .77; dedication= .85 and absorption= .78).

Burnout (BO), was assessed with the Oldenburg Burnout Inventory (OLBI; Demerouti, Bakker, Vardakou, & Kantas, 2003). Even if burnout has been defined as consisting of three dimensions (i.e., exhaustion, cynicism and reduced professional efficacy; Maslach et al., 1996), we decided to use the OLBI instead of the Maslach Burnout Inventory (MBI) to measure burnout. Following Demerouti and Bakker (2008) the OLBI overcomes an important psychometric shortcoming of the MBI by including positively and negatively framed items to assess two core dimensions of burnout: exhaustion (which can be compared to the exhaustion dimension of the MBI) and disengagement (which can be compared to the cynicism dimension of the MBI). According to Demerouti and Bakker (2008), "professional efficacy was not included in the OLBI as a separate burnout dimension because it is not considered as a core dimension of burnout "(Demerouti & Bakker, 2008, p. 5).

This scale is made up of two main dimensions (disengagement and exhaustion), and item examples are: "I feel more and more engaged in my work", "When I work, I usually feel energized". According to the authors' recommendations and because the OLBI has positive and negative stated attributes, some of the items' scores were reversed so that a high value represented higher level of burnout. Demerouti, Mostert, and Bakker (2010) reported that the two dimensions of the OLBI scale both had a good reliability (.69 for disengagement and .74 for exhaustion). Good reliability was been observed for the overall questionnaire (Cronbach's alpha= .84; Demerouti et al., 2003). A four-point Likert scale ranging from 1 (totally disagree) to 4 (totally agree) was used.

Covariates, based on the full partial method recommended by Little (2013), we accounted for the influence of covariates by specifying paths from all socio-demographic variables to all endogenous and exogenous variables. After running this initial model, we

removed the non-significant effects. Thus, we controlled statistically for language, gender, age and status. Following Muthén & Muthén (1998-2014), because language and gender are nominal variables, they were dummy-coded. This option is used to specify that the variable (language for example) is a binary variable. Language is thus a treatment dummy variable where zero represents the control group (or the most representative group, in this study: Dutch= coded 0) and one (1) represents the treatment group (or the less representative group, in this study: French= coded 1). Regarding age and status, these variables can be considered as ordinal because there is a clear rank from low to high. These variables have already been found to be correlated with job crafting (e.g. Berg, Wrzesniewski, & Dutton, 2010), NS fit (e.g. Krumm , Grube, & Hertel, 2013), burnout (e.g. Ahola, Honkonen, Virtanen, Aromaa, & Lönnqvist, 2008) and work engagement (e.g. Langelaan, Bakker, Van Doornen, & Schaufeli, 2006).

Research procedure and ethical considerations

Data was collected online through an electronic link to the survey included in an e-mail explaining the purpose of the study and emphasising the confidentiality of the responses (anonymous participation). The researchers also outlined the roles and responsibilities of all the parties involved.

Prior to launching the survey, the present study and its design were presented for approval to the ethical committee of the Faculty of Psychology of the researchers' University. The final decision of the ethical committee was positive suggesting that the present study fulfils all the ethical rules regarding the methodological design.

Statistical analysis

Our research model was tested using Structural Equation Modelling (SEM) (Mplus 7.11, Muthén & Muthén, 1998-2014). Following **Erreur ! Source du renvoi introuvable.** (2011), the model's goodness-of-fit was evaluated with absolute and relative indices. As suggested by this author, the absolute goodness-of-fit were: the root mean square error of approximation (RMSEA; Steiger & Lind, 1980) and the standardized root mean square residual (SRMR; Hu & Bentler, 1999). The relative index tested was: the comparative fit index (CFI; Bentler, 1990). According to Kline (2011), a RMSEA index smaller than .08, a SRMR smaller than .10 and a CFI value greater than .90 indicate a good fit.

Data were then analysed following a two-stage process suggested by Anderson and Gerbing (1988). First, we assessed the measurement model through a series of confirmatory factor analyses to ensure that the constructs examined in our study were independent. Second, we proceeded with the assessment of the hypothesized structural relationships among latent variables. For this second stage, to reduce the number of parameters to be estimated, we used parcelling strategy (Little, Rhemtulla, Gibson, & Schoemann, 2013). We thus reduced to three the number of indicators for: S-NS fit, G-NS fit, JC, WE and BO, using the balancing technique. Using this technique, we constructed indicators by combining the items with the highest and lowest loadings (Little, Cunningham, Shahar, & Widaman, 2002). Practically, the item with the highest loading is paired with the item with the lowest loading. The next highest and next lowest items' loadings are paired in the second parcel, etc. In this way, an item with a high loading would provide strong support for the construct to match with a weaker item (Little et al., 2013). This balancing technique allowed us to: (a) limit the number of parameters to be estimated (Landis, Beal, & Tesluk, 2000) (b) maintain the robustness of the analysis and preserve common construct variance while minimizing unrelated specific variance (Little, Cunningham, Shahar, & Widaman, 2002), and (c) enhance the items' reliability (Little et al., 2013). Moreover, these authors also advance that using parcelling strategy can significantly improve model convergence and model stability. In this way, and regarding the above comments, we believe that parcelling is an important way to reinforce model stability and model fit to the data even with large sample size.

According to several authors' recommendations (e.g. Hayes, 2009), we used the bootstrapping method to test the indirect effects. Indeed, these authors suggested using the bootstrapping technique for studying relations in mediation models, instead of using the traditional Sobel test that presents some limitations. The method was set at 5000 draws (Hayes, 2009). The confidence interval was set at 95%. When zero is not in the 95% confidence level, we can conclude that the indirect effect is significant.

Regarding the missing values, we used a full information maximum likelihood approach [FIML] with Maximum Likelihood [ML] as a normal estimation method. Therefore, all available information in the data set was used to estimate the individual log likelihood functions.

RESULTS

Confirmatory Factor Analyses

First, we examined the fit of our hypothesized five-factor measurement model (i.e., JC, S-NS fit, G-NS fit, BO and WE). The results indicate that this hypothesized measurement model fitted the data reasonably well (χ^2(df) = 336.83 (80), p<.001, CFI= .98, SRMR= .04, RMSEA= .05).

Starting from this five-factor model, we tested a series of more constrained measurement models to ensure that our constructs were independent (Anderson & Gerbing, 1988) : (a) four-factor model (S-NS, G-NS = 1 factor), (b) four-factor model (BO,WE = 1 factor), (c) four-factor model (JC, BO= 1 factor), (d) four-factor model (JC, WE = 1 factor), (e) three-factor model (JC, BO, WE = 1 factor), (f) two-factor model (G-NS, JC, BO, WE = 1 factor), (g) one-factor model (all the variables as a single factor). Chi-square difference tests were then used to compare the fit of each of these nested models with that of the five-factor model (Bentler & Bonett, 1980). The significance of the chi² differences (p<.05) suggests that the five-factor model is superior to the other compared models.

Results of these confirmatory factor analyses indicate that the five-factor model was significantly superior to all alternative models. Consequently, we treated these five constructs as independent from each other in subsequent analyses. Table 3 displays fit indices of these alternative models.

INSERT TABLE 3 HERE

Relationships among variables

Means, standard deviations, Cronbach's alphas and correlations among variables are presented in Table 4. As presented in Table 4, the reliability of our scales is good with values greater than .7.

INSERT TABLE 4 HERE

Test of the measurement models

In order to suggest partial mediation instead of total mediation, we compared the fit of our hypothesized model (Figure 1) with a series of alternative models. This was done to assess whether our hypothesized model offered the best depiction of our data. We then successively added direct theoretically plausible paths among our latent variables (see Table 5): the first path between G-NS fit and JC (alternative model 1), the second between S-NS fit and BO (alternative model 2). As a result of a Chi² differences' test (Gonzalez & Griffin, 2001), alternative model 2 presented a fit that was superior to preceding models. We then

added a path from S-NS fit and WE (alternative model 3), but this model did not have a significantly better fit than alternative model 2 ($\Delta\chi^2(1) = .66$, $p > .05$).

Then, starting again with alternative model 2, we finally add paths from JC to WE (alternative model 4) and from JC to BO (alternative model 5). As shown in Table 5, the alternative model 5 (Figure 2) presented better fit indices (χ^2(df) = 495.93(129), p<.001, CFI= .96, SRMR= .04, RMSEA= .05) than the previous models. Thus, a model with additional direct links between (a) job crafting and global NS fit, (b) job crafting and burnout, (c) job crafting and work engagement, and finally (d) specific NS fit and burnout presented better fit indices. The alternative model 5 was thus retained as the best fitting model.

INSERT TABLE 5HERE

Standardized parameter estimates for the final model are shown in Figure 2. For the sake of clarity, only structural relationships are shown and the effects of the covariates are described in the text. Language was negatively related to job crafting (γ= -.07, p<.01) and positively related to work engagement (γ= .14, p<.001). Gender was significantly related to specific NS fit (γ=.09 p<.001). Age was positively related to specific NS fit (γ=.18, p<.001) and negatively to job crafting (γ= -.09, p<.001). Status was positively related with S-NS fit (γ= .09, p<.001), job crafting (γ= .09, p<.001) and burnout (γ= .11, p<.001). Controlling for these variables, job crafting was positively associated with specific NS fit (γ=.10, p<.001) which, in turn, was positively associated with general NS fit (β =.65, p<.001); this in turn was negatively associated with burnout and positively associated with work engagement (respectively, β =-.41, p<.001; γ=.58, p<.001). Job crafting was also directly associated with global NS fit (γ=.15, p<.001), burnout (γ= -.25, p<.001) and work engagement (γ=.32, p<.001). Specific NS fit was directly and negatively associated with burnout (γ= -.38, p<.001).

Testing the indirect effect

To examine whether the relationships between (a) job crafting and burnout and (b) job crafting and work engagement were mediated by specific needs-supplies fit and global needs-supplies fit, we used the bootstrapping method (Hayes, 2009). Using this method and in order to evaluate the total mediating role of S-NS fit and G-NS fit, we constructed two-sided bias-corrected 95% confidence intervals (results are reported in Table 6).

Regarding the indirect effect of job crafting on burnout and work engagement (via specific and general NS fit), bootstrap analyses indicated that no confidence interval included 0, highlighting the significance of these indirect effects (p<.001) (see Table 6).Therefore, because job crafting is directly associated with burnout and work engagement, NS fit perceptions (specific or general) play a partial mediating role between job crafting and the outcomes. Thus, our hypotheses H2 and H3, are partially supported.

INSERT TABLE 6 HERE

INSERT FIGURE 2 HERE

DISCUSSION

Outline of the results

Because of the importance of continuing to study NS fit and since too little research considers fit perceptions as an outcome (Yu, 2013), the present study has explored two main objectives. First, by taking into account more specific work-related needs, we wanted to extend our knowledge about SDT (Deci & Ryan, 2000) that advances that individuals have three fundamental needs (autonomy, competence and relatedness). In this vein, while NS fit seems to be one-dimensional (e.g. Cable & DeRue, 2002), our study suggests that NS fit may be composed of more than one dimension. Second, because it is imperative to better understand how individuals make sense of fit (Kristof-Brown & Billsberry, 2013), we tested the double mediating role of S-NS fit (i.e. based on more specific work-related needs) and G-NS fit (i.e. based on global job perception) between job crafting and individual outcomes namely burnout and work engagement.

Our first hypothesis (H1): "a specific work-related NS fit perception in terms of employment quality is positively associated with a global NS fit perception", is supported. According to Information Integration Theory (IIT, Anderson, 1962), individuals integrate information from a number of sources before finally making an overall judgement. In the context of our research, workers first judge whether their job characteristics fulfil their specific needs in terms of employment quality before coming to an overall NS fit perception regarding their job in general. In work and organizational psychology, such a differential has already been advanced in organizational justice research. More precisely, Fairness Heuristic Theory (FHT; Lind, 2001) suggests that a global impression of fair treatment (i.e. an overall

justice perception) is rapidly formed through a "judgment phase" using procedural, distributive and interpersonal justice. Then, these specific elements are aggregated to form a global justice judgment.

Moreover, while NS fit is traditionally seen as a single factor concept (e.g. Cable & De Rue, 2002; Greguras & Dieffendorf, 2009), the present research highlights that individuals form a specific NS fit perception based on twelve more specific work-related needs in terms of employment quality. Such a result has already been advanced by Seong and Kristof-Brown (2012) regarding the multidimensionality of person-group (PG) fit. According to these authors, PG fit is a superordinate construct composed of three main dimensions (i.e. value-based fit, personality-based fit and ability-based fit) in which each dimension is a reflective indicator of a latent construct. Even if "the idea of a superordinate fit concept is relatively new" (Seong & Kristof-Brown, 2012, p.549), our results about NS fit seem to go in the same direction. NS fit may be a superordinate construct composed of twelve dimensions of work-related needs.

Our second and third hypotheses (H2): "There is a double mediation of Specific Needs-Supplies fit and Global Needs-Supplies between job crafting and burnout" and (H3): "There is a double mediation of Specific Needs-Supplies fit and Global Needs-Supplies between job crafting and work engagement", are partially supported. These results suggest two main trends. First, by showing a direct link between job crafting and the outcomes (i.e. burnout and work engagement), our results suggest that, as a proactive behaviour through which employees are motivated to alter the meanings of their job, job crafting is associated positively with work engagement and negatively with burnout. These results are in line with previous research (e.g. Tims & Bakker, 2010; Tims, Bakker, & Derks, 2013) advancing that when individuals are able to proactively increase their resources and challenging demands and decrease their hindering demands, (in other words, when they are able to craft their job) they are more likely to be engaged in their job and are less likely to be exhausted by it.

Second, by testing the double mediating role of S-NS and G-NS fit perception, and subsequently, job crafting as an antecedent of NS fit, the present research answers the call of Kristof-Brown and Billsberry (2013) for more studies on fit antecedents. According to these authors, it has become important to undertake additional research to better understand how individuals make sense of fit. In this vein, and in line with Yu's PE fit model (2009), our findings suggest that individuals who can themselves change the task or relational boundaries

of their job will create a better place to work, depending on their needs. In other words, workers' ability to craft their job to match with their needs is associated with a better fit perception between their specific work-related needs and their job characteristics. This specific fit perception is then positively related to a global impression of fit with the job in general which, in turn, is associated with a higher level of work engagement and a lower level of burnout. Thus, our study provides empirical evidence of the underlying mechanisms between job crafting and individual outcomes, but also of the role of job crafting behaviours in proactively modifying the nature of the job in order to match with workers' needs and desires. Moreover, while the SDT proposes that individuals perceiving their general psychological needs as fulfilled will function optimally (Deci & Ryan, 2000), the present study suggests that in a work context, work-related needs in terms of employment quality may help to add more specific information to better help predict burnout and work engagement. Such a result has already been found in a previous study (Authors, 2015) in which work-related needs add more specific information to help predict performance.

Practical Implications

Considering that contemporary organisations need employees who are engaged with their work (Bakker, Albrecht, & Leiter, 2011) and because it is ever more important to prevent burnout in order to avoid negative consequences such as health problems (e.g. Schaufeli & Bakker, 2004), our results highlight the importance of job crafting and work-related needs fulfilment to explain well-being. Indeed, knowing that in Belgium, absenteeism due to mental illness such as burnout and stress increased by about 13% between 2005 and 2013 (Securex, 2014) and that its related cost represents 3,4% of GDP (OCDE, 2013), it is an important concern for managers and business leaders. Moreover, from an academic perspective, several authors have also shown the negative consequences of burnout on job performance (e.g., Bakker, Demerouti, & Verbeke, 2004) and the positive effect of work engagement on job performance (Rich, Lepine, & Crawford, 2010) and on reduced turnover intention (Schaufeli & Bakker, 2004).

In this way, our results suggest that, as a consequence of a fit between individuals' needs and their job characteristics, "crafter" workers will be more engaged in their job and less impacted by burnout. It thus seems important, first, to encourage job crafting behaviours in order to increase work engagement and decrease burnout. We thus encourage managers to inform their employees about the positive consequences of job crafting and to create a

favourable work environment in which crafting behaviours are possible. Managers should, for example, ensure more job autonomy and increase interactions. In this way, employees may be able to modify their job demands and their job resources to match with their own needs and abilities, in order to increase their well-being at work. Moreover, because job crafting is also positively related to in-role performance (Tims, Bakker, & Derks, 2012), organizations may also benefit from the positive consequences of job crafting.

Second, concerning NS fit, our results are also important for practicing managers. Indeed, need-supply fit has been shown to be related to individual outcomes such as burnout and engagement but also to more organisational outcomes such as organisational commitment, job performance or intention to stay (e.g., Kristof-Brown et al., 2005). These results suggest that managers should also focus on work-related needs fulfilment and not only on demands-abilities fit in order to foster job performance and well-being at work. From an individual perspective, it is thus important that managers know their team and the team's specific needs in order to motivate team members and avoid burnout syndrome. From an organisational perspective, it is important to fulfil workers' needs in order to increase their overall job performance.. The "work-related needs diagnosis" may take place during the annual performance assessment in which managers should evaluate whether workers' specific needs are taken into account in their current job situation. It may also be feasible to create or develop career paths within the organization and, more specifically, to redirect workers towards jobs that better meet their specific needs.

Limitations and recommendations

This study is not without limitations. First, we used self-reported data, which may lead to common method bias. Nevertheless, this bias was partially addressed with the results of our confirmatory factor analyses that indicate that a single-factor model showed a poor fit to the data (i.e. Harman's single-factor test; Podsakoff, MacKenzie, & Podsakoff, 2012). Second, our research design was cross-sectional, which precludes making inferences of causality among the variables. Moreover, a longitudinal design would should help us to be sure about the direction of our relationships and about the process underlying the general NS fit perceptions. Then, to be sure that a specific NS fit perception is an antecedent (and not a consequence) of global NS fit perception, it is important to test the direction of this relationship with a longitudinal design. In terms of additional study, it also seems important to better understand the role of coping strategies as moderators in the relationship between NS

fit and individual outcomes. Finally, regarding to job crafting, even if several studies (e.g., Tims, Bakker, & Derks, 2012) show that it is more common to consider the four dimensions of the concept separately, the present study suggests examining job crafting as a proactive behaviour and considering it as a whole (see Bakker, Tims, & Derks, 2012). Indeed, the main aim of the present research was to better understand whether crafting possibilities lead to an increase of NS fit perception without taking into account the concept's sub-dimensions.

Grant

The research was funded through the ARC grant for Concerted Research Actions, financed by the French Community of Belgium (Wallonia-Brussels Federation)

Publishing Ethics

This manuscript is an original work that has not been submitted to nor published anywhere else.

All authors have read and approved the paper and have met the criteria for authorship listed above.

Acknowledgments: None

Conflict of Interest: None

Author information removed to ensure a blind peer review

REFERENCES

Ahola, K., Honkonen, T., Virtanen, M., Aromaa, A., & Lönnqvist, J. (2008). Burnout in relation to age in the adult working population. *Journal of Occupational Health, 50*(4), 362-365. doi: http://doi.org/10.1539/joh.M8002

Anderson, N. H. (1962). Application of an Additive Model to Impression Formation. *Science, 138*(3542), 817–818.doi: http://dx.doi.org/10.1126/science.138.3542.817

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modelling in practice: A review and recommended two-step approach. *Psychological bulletin, 103*(3), 411-423. doi: http://dx.doi.org/10.1037/0033-2909.103.3.411

Bakker, A.B., Albrecht, S.L., & Leiter, M.P. (2011). Key questions regarding work engagement. *European Journal of Work and Organizational Psychology, 20*(1), 4-28. doi: http://dx.doi.org/10.1080/1359432X.2010.485352.

Bakker, A. B., Demerouti, E., & Verbeke, W. (2004). Using the job demands-resources model to predict burnout and performance. *Human resource management, 43*(1), 83-104. doi: http://dx.doi.org/10.1002/hrm.20004

Bakker, A. B., Tims, M., & Derks, D. (2012). Proactive personality and job performance: The role of job crafting and work engagement. *human relations, 65*(10), 1359-1378. doi: http://dx.doi.org/10.1177/0018726712453471

Berg, J.M., Wrzesniewski, A., & Dutton, J.E. (2010). Perceiving and responding to challenges in job crafting at different ranks : when proactivity requires adaptivity. *Journal of Organizational Behavior, 31*(2-3), 158-186. doi: http://dx.doi.org/ 10.1002/job.645

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological bulletin, 107*(2), 238-246. doi: http://dx.doi.org/10.1037/0033-2909.107.2.238

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological bulletin, 88*(3), 588-606. doi: http://dx.doi.org/10.1037/0033-2909.88.3.588

Black, J.S., & Ashford, S.J. (1995). Fitting in or making jobs fit: factors affecting mode of adjustment for new hires. *Human Relations, 48*(4), 421-437. doi: http://dx.doi.org/10.1177/001872679504800407

Brown, A., Charlwood, A., Forde, C., & Spencer, D. (2007). Job quality and the economics of new labour: a critical appraisal using subjective survey data. *Cambridge Journal of Economics, 31*(6), 941-971. doi: http://dx.doi.org/10.1093/cje/bem028

Burchell, B., Sehnbruch, K., Piasna, A., & Agloni, N. (2013). The quality of employment and decent work: definitions, methodologies, and ongoing debates. *Cambridge Journal of Economics, 38*(2), 459-477. doi: http://dx.doi.org/10.1093/cje/bet067

Cable, D.M., & De Rue, D.S. (2002). The convergent and discriminant validity of subjective fit perceptions. *Journal of Applied Psychology, 87*(5), 875-887. doi: http://dx.doi.org/10.1037//0021-9010.87.5.875

Cumming, T.G., & Cooper, C.L. (1979). A cybernetic framework for studying occupational stress. *Human Relations, 32*(5), 395-418. doi: http://dx.doi.org/ 10.1177/001872677903200504

Deci, E.L., & Ryan, R.M. (2000). The "what" and "why" of goal pursuits: human needs and the self-determination of behaviour. *Psychological Inquiry, 1*(4), 227-268. doi: http://dx.doi.org/10.1207/S15327965PLI1104_01.

Demerouti, E., & Bakker, A. B. (2008). The Oldenburg Burnout Inventory: A good alternative to measure burnout and engagement. Handbook of stress and burnout in health care. Hauppauge, NY: Nova Science. Retrieved from: http://www.researchgate.net/profile/Arnold_Bakker/publication/46704152_The_Oldenburg_Burnout_Inventory_A_good_alternative_to_measure_burnout_and_engagement/links/53f36c060cf2dd48950cbd38.pdf

Demerouti, E., Bakker, A., Nachreiner, F., & Schaufeli, W.B. (2001). The Job Demands-Resources Model of Burnout. *Journal of Applied Psychology, 86*(3), 499-512. doi: http://dx.doi.org/ 10.1037//0021-9010.86.3.499.

Demerouti, E., Bakker, A.B., Vardakou, I., & Kantas, A. (2003). The convergent validity of two burnout instruments: A multitrait-multimethod analysis. *European Journal of Psychological Assessment, 19*(1), 12-23. doi: http://dx.doi.org/10.1027//1015-5759.19.1.12

Demerouti, E., Mostert, K., & Bakker, A. B. (2010). Burnout and work engagement: a thorough investigation of the independency of both constructs. *Journal of*

occupational health psychology, *15*(3), 209-222. doi: http://dx.doi.org/0.1037/a0019408

Edwards, J.R., & Shipp, A.J. (2007). The relationship between person-environment fit and outcomes: an integrative theoretical framework. In: Ostroff, C., Judge, T.A. (Eds.), Perspectives on Organizational Fit. Jossey-Bass, San Francisco, pp. 209-258. Retrieved from: http://public.kenan-flagler.unc.edu/faculty/edwardsj/EdwardsShipp2007.pdf

Edwards, J.R., & Van Harrison, R.V. (1993). Job demands and worker health: Three-dimensional re-examination of the relationship between person-environment fit and strain. *Journal of Applied Psychology*, *78*(4), 628-648. http://dx.doi.org/10.1037/0021-9010.78.4.628

Edwards, J.R., Caplan, R.D., & Harrison, R.V. (1998). Person-Environment fit theory: conceptual foundations, empirical evidence, and directions for future research. In C.L. Cooper (Ed.), *Theories of organizational stress* (pp. 28-67). Oxford, England: Oxford University Press.

Gonzalez, R. & Griffin, D. (2001). A statistical framework for modeling homogeneity and interdependence in groups. Blackwell Handbook of Social Psychology, Vol 2: Interpersonal Processes, M. Clark and G. Fletcher (Eds), p. 505-534.

Grant, A.M., & Ashford, S.J. (2008). The dynamics of proactivity at work. *Research in Organizational Behavior*, *28*, 3-34. doi: http://dx.doi.org/10.1016/j.riob.2008.04.002

Greguras, G.J., & Diefendorff, J.M. (2009). Different Fits Satisfy Different Needs: Linking Person-Environment Fit to Employee Commitment and Performance Using Self-Determination Theory. *Journal of Applied Psychology*, *94*(2), 485-477. doi: http://dx.doi.org/10.1037/a0014068.

Hayes, A.F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, *76*(4), 408-420. doi: http://dx.doi.org/10.1080/03637750903310360

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling:*

a multidisciplinary journal, *6*(1), 1-55. doi: http://dx.doi.org/10.1080/10705519909540118

Kämpfe, N., & Mitte, K. (2009). What you wish is what you get? The meaning of individual variability in desired affect and affective discrepancy. *Journal of Research in Personality*, *43*(3), 409-418. doi: http://dx.doi.org/10.1016/j.jrp.2009.01.007

Kline, R. (2011). *Principles and practice of structural equation modeling* (3th ed). New York: Guilford Press.

Körner, T., Puch, K., & Wingerter, C. (2009). Quality of employment, Wiesbaden, Federal Statistical Office of Germany.

Kristof-Brown, A.L., & Billsbery, J (Eds.). (2013). *Organizational fit: key issues and new directions*. Malden, MA: Wiley-Blackwell.

Kristof-Brown, A.L., Zimmerman, R.D. & Johnson, E.D. (2005). Consequences of individuals' fit at work: a meta-analysis of person–job, person–organization, person–group, and person–supervisor fit. *Personnel Psychology*, *58*(2), 281-342. doi: http://dx.doi.org/10.1111/j.1744-6570.2005.00672.x

Krumm, S., Grube, A., & Hertel, G. (2013). No time for compromises: Age as a moderator of the relation between needs-supply fit and job satisfaction. *European Journal of Work and Organizational Psychology*, *22*(5), doi: http://dx.doi.org/10.1080/1359432X.2012.676248

Landis, R.S., Beal, D.J., & Tesluk, P.E. (2000). A comparison of approaches to forming composite measures in structural equation models. *Organizational Research Methods*, *3*(2), 186-207. doi: http://doi.org/10.1539/joh.M800210.1177/109442810032003

Langelaan, S., Bakker, A.B., Van Doorne, L.J.P., & Schaufeli, W.B. (2006). Burnout and work engagement: do individual differences make a difference? *Personality and Individual Differences*, *40*(3), 521-532. doi: http://doi.org/ 10.1016/j.paid.2005.07.009.

Lind, E.A. (2001). Fairness heuristic theory: Justice Judgments as pivotal cognitions in organizational relations. In J. Greenberg & R. Cropanzano (Eds.), *Advances in organizational justice* (pp. 56-88). Stanford, CA: Stanford University Press.

Little, T.D. (2013). Specifying and interpreting a longitudinal panel model. In T. Little & N. Card (Eds.), *Longitudinal structural equation modelling* (chap. 6, pp. 180-208). New York, NY: Guilford.

Little, T.D., Cunningham, W.A., Shahar, G., & Widaman, K.F. (2002). To parcel or not to parcel; exploring the question, weighing the merits. *Structural Equation Modeling: A Multidisciplinary Journal, 9*(2), 151-173. doi: http://dx.doi.org/10.1207/S15328007SEM0902_1

Little, T.D., Rhemtulla, M., Gibson, K., & Schoemann, A.M. (2013). Why the items versus parcels controversy needn't be one. *Psychological Methods, 18*(3), 285-300. doi: http://dx.doi.org/10.1037/a0033266

Lu, C-Q., Wang, H-J., Lu, J-J., Du, D-Y., & Bakker, A.B. (2014). Does work engagement increase person-job fit? The role of job crafting and job insecurity. *Journal of Vocational Behavior, 84*(2), doi: http://dx.doi.org/10.1016/j.jvb.2013.12.004

Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). Maslach burnout inventory manual (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.

Muñoz de Bustillo, R., Fernandez-Macias, E., Anton, J.I. & Esteve, F. (2009). Indicators of job quality in the European Union. European Parliament's Committee of Employment and Social Affairs. Retrieved from http://www.europarl.europa.eu/activities/committes/studies.do?language=EN.

Muthén, L. K., & Muthén, B. O. (1998-2014). *Mplus User's Guide*. Seventh Edition. Los Angeles, CA: Muthén & Muthén.

Podsakoff, P.M., MacKenzie, S.B., & Podsakoff, N.P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology, 65*, 539-569. doi:10.1146/annurev-psych-120710-100452.

Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effects on job performance. *Academy of management journal, 53*(3), 617-635. doi: http://dx.doi.org/10.5465/AMJ.2010.51468988

Schaufeli, W.B., & Bakker, A.B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior, 25*(3), 293-315. doi: http://dx.doi.org/10.1002/job.248

149 Schaufeli, W.B., Bakker, A.B., & Salanova, M. (2006). The measurement of Work
150 Engagement With a Short Questionnaire: A Cross-National Study. *Educational and*
151 *Psychological Measurement, 66*(4), 701-716. doi:
152 http://dx.doi.org/10.1177/0013164405282471

153 Seong, J.Y., & Kristof-Brown, A.L. (2012). Testing multidimensional models of person-
154 group fit. *Journal of Managerial Psychology, 27*(6), 536-556. doi:
155 http://dx.doi.org/10.1108/02683941211252419

156 Steiger, J. H., & Lind, J. C. (1980, May). Statistically based tests for the number of common
157 factors. In annual meeting of the Psychometric Society, Iowa City, IA

158 Tims, M., & Bakker, A.B. (2010). Job crafting: toward a new model of individual job
159 redesign. *SA journal of Industrial Psychology, 36*(2), 1-9. Retrieved from:
160 http://www.sajip.co.za

161 Tims, M., Bakker, A.B., & Derks, D. (2012). Development and validation of the job crafting
162 scale. *Journal of Vocational Behavior, 80*(1), 173-186. doi: http://dx.doi.org/
163 10.1016/j.jvb.2011.05.009

164 Tims, M., Bakker, A.B., & Derks, D. (2013). The impact of job crafting on job demands, job
165 resources and well-being. *Journal of Occupational Health Psychology, 18*(2), 230-
166 240. doi: http://dx.doi.org/10.1037/a0032141

167 Tims, M., Bakker, A.B., Derks, D., & Van Rhenen, W. (2013). Job crafting at the team and
168 individual level: implications for work engagement and performance. *Group &*
169 *Organization Management, 38*(4), 427-454. doi: http://dx.doi.org/
170 10.1177/1059601113492421

171 Authors. (2015, November). Needs-supplies fit and behavioural outcomes: the mediating role
172 of organizational identification. Paper presented at the International Research
173 Symposium on 'Sustainable HRM and Employee Well-being', November 2015,
174 Sydney, Australia.

175 Authors (in press). Construction d'une méthodologie exploratoire concernant les besoins des
176 travailleurs: l'exemple des besoins de flexibilité au travail et de sécurité d'emploi des
177 travailleurs à contrat permament. *Revue Internationale de Psychosociologie et de*
178 *Gestion des Comportements Organisationnels.*

Van Zyl, L.E., Deacon, E., & Rothmann, S. (2010). Towards happiness: experiences of work-role fit, meaningfulness and work engagement of industrial/organisational psychologists in South Africa. *SA Journal of Industrial Psychology, 36*(1), 1-10. Retrieved from http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S2071-07632010000100014&lng=en&tlng=en.

Warr, P., & Inceoglu, I. (2012). Job engagement, job satisfaction, and contrasting associations with person-job fit. *Journal of occupational health psychology,17*(2), 129-138. doi: http://dx.doi.org/ 10.1037/a0026859

Wrzesniewski, A., & Dutton, J.E. (2001). Crafting a job: revisioning employees as active crafters of their work. *Academy of Management Review, 26*(2), 179-201. doi: http://dx.doi.org/ 10.5465/AMR.2001.4378011

Yu, K. Y. T. (2009). Affective influences in person–environment fit theory: Exploring the role of affect as both cause and outcome of PE fit. *Journal of Applied Psychology, 94*(5), 1210. doi: http://dx.doi.org/10.1037/a0016403

Yu, K.Y.T. (2013). A motivational model of person-environment fit. In A.L., Kristof-Brown and J. Billsbery (Eds.). *Organizational fit: key issues and new directions,* (pp. 99-123). Malden, MA: Wiley-Blackwell.

197 Table 1. Synthesis of the employment quality indicators

N°	Employment quality's indicators
1	Job content
2	Work home balance
3	Working time
4	Working space
5	Wages
6	Training
7	Employability
8	Contract stability
9	Social protection
10	Work place security

198

199

201

202

Table 2. Item examples for each specific Needs-Supplies fit dimension

N°	Individual needs	Item examples
1	Challenging job	Do a stimulating job, be autonomous
2	Work-family balance	Balance my private and professional life, give priority to my private life
3	Clear time schedule	Have predictable work schedule, choose my working hours
4	Work flexibility	Work from home, distance working
5	Additional rewards	Receive an individual performance bonus, extras benefits
6	Regular financial rewards	Receive a fixed monthly income, enough income to cover needs
7	Personal development opportunities	Follow training to extend my skills, to progress in my career
8	Employability	Work in a successful company, broaden my chances of getting another job
9	Job security	Have a stable work contract, enjoy stable employment
10	Social protection	Be supported by trade-union, know my social rights
11	Comfortable work environment	Have a good working equipment, acceptable physical conditions
12	Fairness and recognition from supervisor	Be recognized by superiors, work in a positive atmosphere, be treated honestly and with respect

Note. Answer format: "Ideally, I would like to…"

Table 3: Confirmatory factor analysis fit indices for measurement model

Model	χ^2	*df*	$\Delta\chi^2$ (Δdf)	CFI	SRMR	RMSEA
N= 1500						
Five-factor model	336.83	80	---	.98	.04	.05
Four-factor model (S-NS, G-NS= 1 factor)	817.29	84	480.46(4)***	.94	.06	.08
Four-factor model (BO, WE= 1 factor)	553.65	84	216.82(4)***	.96	.05	.06
Four-factor model (JC, BO= 1 factor)	1429.96	84	1093.13(4)***	.89	.15	.10
Four-factor model (JC, WE= 1 factor)	2500.84	84	2164.01(4)***	.80	.09	.14
Three-factor model (JC, BO, WE= 1 factor)	2739.07	87	2402.24(7)***	.78	.10	.14
Two-factor model (G-NS, JC, BO, WE= 1 factor)	4617.56	89	4280.73(9)***	.62	.13	.18
One-factor model	5020.09	90	4683.26(10)***	.59	.13	.19

Note. *p < .05. **p < .01. ***p < .001.

S-NS, Specific Needs-Supplies fit; G-NS, Global Needs-Supplies Fit; JC, Job Crafting; BO= Burnout; WE= Work Engagement; χ^2= Chi-square; df= degree of freedom; CFI= comparative fit index; SRMR= standardized root mean square residual; RMSEA= root mean square error of approximation.

Table 4: Descriptive statistics and inter-correlations among variables.

	Variables	*Min.*	*Max.*	*M*	*SD*	1	2	3	4	5	6	7	8	9
N=1500														
1	LANGUAGE	---	---	---	---	---								
2	GENDER	---	---	---	---	-.03	---							
3	AGE	19	64	44.2	8.52	.02	-.07	---						
4	STATUS	---	---	---	---	-.01	-.03	-.17***	---					
5	S-NS Fit	0	3	2.1	.70	.04	.06	.09**	.09**	(.93)				
6	G-NS Fit	1	5	3.4	.88	-.01	.06	.09**	.03	.50***	(.92)			
7	JC	1	5	4.0	.65	-.04	.02	-.09**	.10**	.02	.17***	(.75)		
8	WE	1	4	4.9	1.14	.11**	-.02	.11**	-.01	.28***	.58***	.39***	(.88)	
9	BO	1	7	2.2	.51	.03	.02	-.07*	.03	-.44***	-.56***	-.25***	-.60***	(.91)

Note. Cronbach's alphas are provided on the diagonal. LANGUAGE: language (Dutch coded 0, French coded 1); GENDER= gender (men coded 0; women coded 1); AGE= age; STATUS= status, S-NS, Specific Needs-Supplies fit; G-NS, Global Needs-Supplies Fit; JC, Job Crafting; WE= Work Engagement; BO= Burnout *$p < .05$. **$p < .01$. ***$p < .001$.

Table 5: Fit indices for structural models

Model	χ^2	*df*	$\Delta\chi^2$ (Δdf)	CFI	SRMR	RMSEA	*Model comparison*
N= 1500							
Hypothesized	729.59	133	---	.93	.08	.06	---
Alternative 1	686.38	132	43.21(1)***	.94	.06	.06	Alternative 1 vs Hypothesized
Alternative 2	651.40	131	34.98(1)***	.95	.06	.06	Alternative 2 vs Alternative 1
Alternative 3	650.74	130	.66(1)NS	.95	.06	.06	Alternative 3 vs Alternative 2
Alternative 4	550.30	130	101.10(1)***	.95	.05	.05	Alternative 4 vs Alternative 2
Alternative 5	*495.93*	*129*	*155.47(1)****	*.96*	*.04*	*.05*	*Alternative 5 vs Alternative 4*

Note. *p < .05. **p < .01. ***p < .001.

S-NS, Specific Needs-Supplies fit; G-NS, Global Needs-Supplies Fit; JC, Job Crafting; BO= Burnout; WE= Work Engagement χ^2= Chi-square; df= degree of freedom; CFI= comparative fit index; SRMR= standardized root mean square residual; RMSEA= root mean square error of approximation.

Alternative 1: direct path between G-NS and JC; Alternative 2: direct path between S-NS and BO; Alternative 3: direct path between S-NS and WE; Alternative 4: direct path between JC and WE; Alternative 5: direct path between JC and BO.

Table 6: Mediation of the Effects of Job Crafting on Burnout and Work Engagement through S-NS fit and G-NS fit

			Percentile 99% CI	
		SE	Lower	Upper
Job Crafting	Burnout	-.03	-.06	-.007
Job Crafting	Work Engagement	.04*	.002	.07

Note. SE = standard error; CI = confidence interval; 1000 bootstrap samples ; *Percentile 95% CI

Model	χ^2	*df*	$\Delta\chi^2$ (Δdf)	RMSEA	CFI	SRMR
12 Factors	1994,81	563	---	.04	.95	.03
11 Factors: TDT-ATF= 1factor	2189,28	574	194,47(11)***	.04	.94	.04
11 Factors: CDT-CARR= 1factor	2563,07	574	568,26(11)***	.05	.93	.04
11 Factors: TDT-CDT= 1factor	2738,31	574	743,5(11)***	.05	.92	.05
11 Factors: REVA-REVR= 1factor	2468,46	574	473,65(11)***	.05	.93	.05
11 Factors: DDC-DPS= 1factor	2386,82	574	392,01(11)***	.05	.93	.05
10 Factors: CDT-ATF-TDT= 1factor	3134,54	584	1139,73(21)***	.05	.9	.06
10 Factors: FORM-CDT-CARR= 1factor	3878,02	584	1883,21(21)***	.06	.88	.06
9 Factors: CDT-ATF-FORM-CARR= 1factor	5965,39	593	3970,58(30)***	.08	.8	.07
8 Factors: CDT-ATF-FORM-CARR-TDT= 1factor	6441,27	601	4446,46(38)***	.08	.79	.07
7 Factors: CDT-ATF-FORM-CARR-TDT= 1factor	7307,14	608	5375,33(45)***	.09	.75	.07
6 Factors: CDT-ATF-FORM-CARR-TDT-DDC= 1factor	8711,8	614	6716,99(51)***	.09	.7	.08
5 Factors: CDT-ATF-FORM-CARR-TDT-DDC-ESP= 1factor	9866,5	619	7871,69(56)***	.1	.66	.08
4 Factors: 5 factors model + CRP= 1factor	11140,91	623	9146,1(60)***	.11	.61	.08
3 Factors: 4 factors model + CLIM= 1factor	12815,34	626	10820,53(63)***	.11	.55	.09
2 Factors: CDT-ATF-ESP-REVA-TDT= 1factor; DDC-DPS-CARR-REVR-CRP-CLIM-FORM= 1factor	12007,91	628	10013,1(65)***	.11	.58	.09
1 Factor: All= 1factor	15067,92	632	13073,11(69)***	.12	.47	.14

Note: * p<,05; **p<,01; ***p<,001; CDT= challenging job; ATF= work-family balance; TDT= a clear time schedule; ESP= work flexibility; REVA= additional rewards; REVR= regular financial rewards; FORM= peronal development opportunities; CARR= employability; DDC= job security; DPS= social protection; CRP= a comfortable work environment; CLIM= fairness and recognition from the supervisor

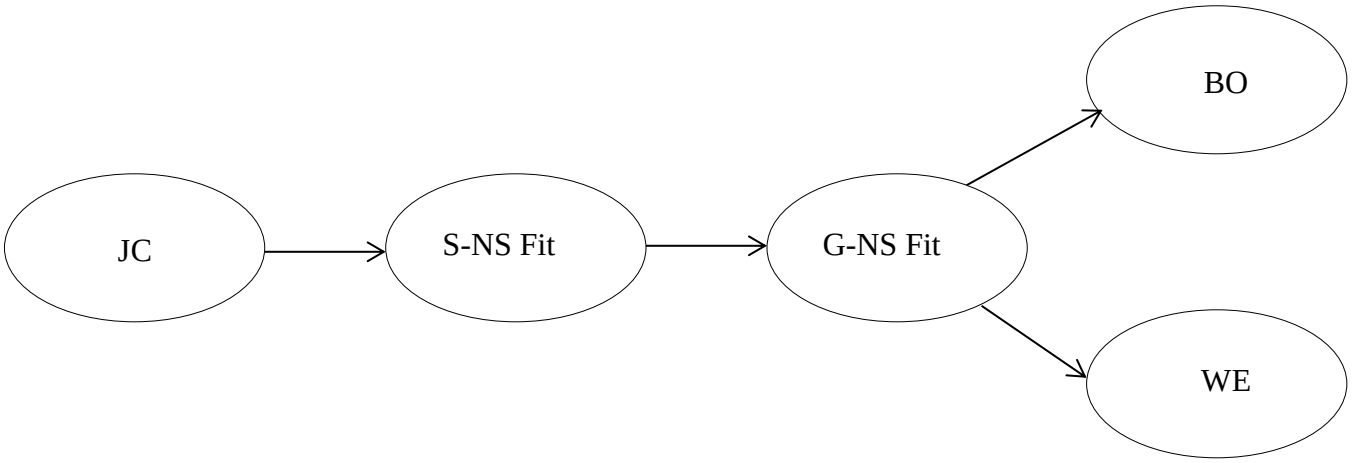

Figure 1: Hypothesized model.

Note: JC= job crafting; S-NS Fit= specific needs-supplies fit; G-NS Fit= global needs-supplies fit; BO= Burnout; WE= work engagement.

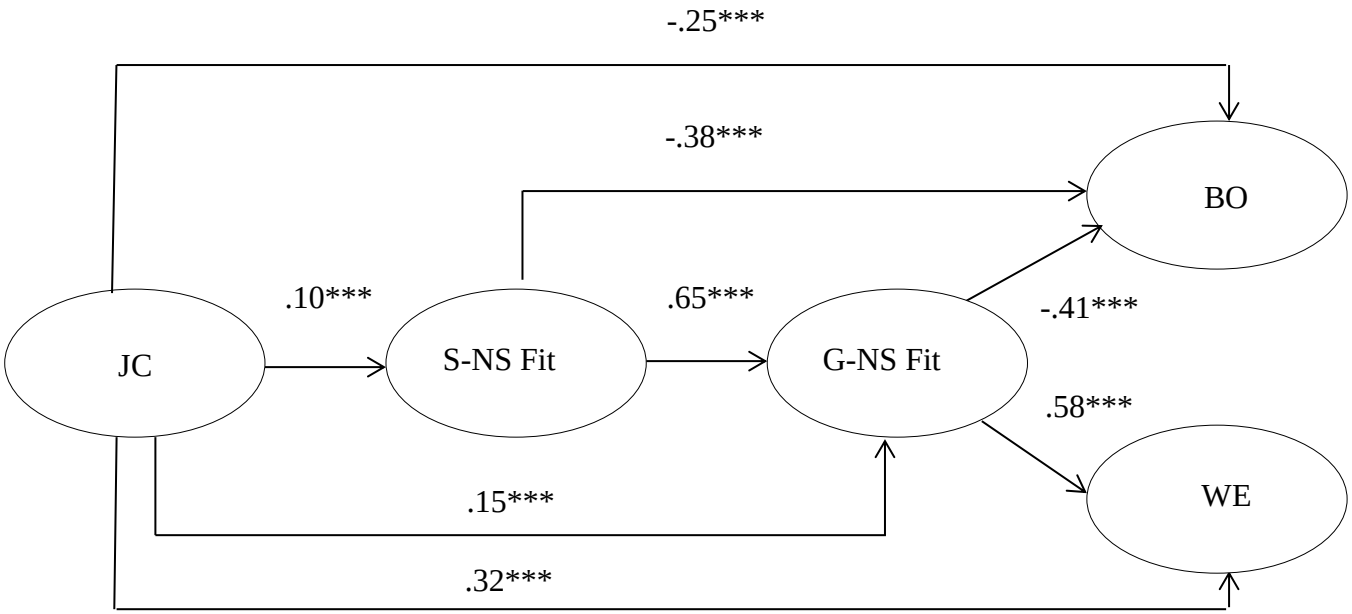

Figure 2: Alternative model 5. Completely standardized path coefficients.
[χ^2(df) = 495.93(129), p<.001, CFI= .96, SRMR= .04, RMSEA= .05]
Note: JC= job crafting; S-NS Fit= specific needs-supplies fit; G-NS Fit= global needs-supplies fit; BO= Burnout; WE= work engagement; * p< .05; **p< .01, ***p< .001

Appendix 1: S-NS Fit questionnaire

Ideally, I would like to…	**-3 Far less than now**	**-2 less than now**	**-1 a bit less than now**	**0 satisfied with my current state**	**1 a bit more than now**	**2 more than now**	**3 far more than now**
Do a stimulating job	❍	❍	❍	❍	❍	❍	❍
Be versatile	❍	❍	❍	❍	❍	❍	❍
Be autonomous	❍	❍	❍	❍	❍	❍	❍
Balance my private life and my professional life	❍	❍	❍	❍	❍	❍	❍
Give priority to my private life	❍	❍	❍	❍	❍	❍	❍
Have working hours that allow me to manage my private life	❍	❍	❍	❍	❍	❍	❍
Have a predictable work schedule	❍	❍	❍	❍	❍	❍	❍
Choose my working hours	❍	❍	❍	❍	❍	❍	❍
Have a fixed work schedule	❍	❍	❍	❍	❍	❍	❍
Work from home	❍	❍	❍	❍	❍	❍	❍
Distance working	❍	❍	❍	❍	❍	❍	❍
Access inter-site mobility	❍	❍	❍	❍	❍	❍	❍
Receive an individual performance based bonus	❍	❍	❍	❍	❍	❍	❍
Receive a group	❍	❍	❍	❍	❍	❍	❍

bonus based on the company's results							
Benefit from extras (luncheon vouchers, gift vouchers, etc)	❍	❍	❍	❍	❍	❍	❍
Receive a fixed monthly income	❍	❍	❍	❍	❍	❍	❍
Receive income at a fixed date	❍	❍	❍	❍	❍	❍	❍
Receive enough income to cover my needs	❍	❍	❍	❍	❍	❍	❍
Follow training courses to extend my skills	❍	❍	❍	❍	❍	❍	❍
Follow training courses that correspond to my expectations	❍	❍	❍	❍	❍	❍	❍
Follow training courses to progress in my career	❍	❍	❍	❍	❍	❍	❍
Work in a successful company (profitability, size, reputation)	❍	❍	❍	❍	❍	❍	❍
Broad my chances of being able to get another job	❍	❍	❍	❍	❍	❍	❍
Work in an activity sector that has potential	❍	❍	❍	❍	❍	❍	❍
Have a stable work	❍	❍	❍	❍	❍	❍	❍

contract							
Have a contract that gives me an untroubled view of the future	❍	❍	❍	❍	❍	❍	❍
Enjoy stable employment	❍	❍	❍	❍	❍	❍	❍
Have my demands supported by trade union representatives	❍	❍	❍	❍	❍	❍	❍
Be sure of a high income security in case of being fired/losing my job	❍	❍	❍	❍	❍	❍	❍
Know my social rights	❍	❍	❍	❍	❍	❍	❍
Enjoy acceptable physical working conditions	❍	❍	❍	❍	❍	❍	❍
Have a suitably organised workstation	❍	❍	❍	❍	❍	❍	❍
Have good working equipment	❍	❍	❍	❍	❍	❍	❍
Be recognized by my superiors	❍	❍	❍	❍	❍	❍	❍
Work in a positive atmosphere	❍	❍	❍	❍	❍	❍	❍
Be treated honestly and with respect	❍	❍	❍	❍	❍	❍	❍
Get on well with my superiors	❍	❍	❍	❍	❍	❍	❍