

Expanding job crafting theory beyond the worker and the job

Extendiendo la creación del puesto más allá del trabajador y el puesto

Estendendo a criação do posto de trabalho além do trabalhador e do posto

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Abstract

Purpose – The purpose of the study is to deepen the understanding of job crafting and its consequences. An occupational framework is proposed as an alternative to the exclusive focus of current theory on the individual and job levels of analysis. This model extends job crafting theory by applying a multilevel framework, examining bottom-up and top-down influences of occupations, and explicates the interplay among occupation- and job-level autonomy and job crafting.

Design/methodology/approach – The authors conducted a two-study research program using multilevel modeling and moderated mediation analysis. Data were derived from two large-scale archival databases. Study 1 spanned 701 occupations and 50,729 individuals. Study 2 involved 270 occupations and 3,270 individuals.

Findings – Study 1 reveals that nearly one-third of the variability in job crafting is attributable to occupational context. Study 2 shows that occupational contexts moderate individual-level processes, whereby occupational-level crafting moderated the mediated effects between job-level autonomy, job-level crafting and individual-level outcomes.

Practical implications – Results inform interventions that can be used to facilitate job crafting. Increasing autonomy generally increases job crafting, yet this effect does not always hold. This result demonstrates the importance of attending to the occupations in which people work. Also, job crafting is related to positive outcomes for individuals (e.g. satisfaction) but is also linked to some negative consequences (e.g. burnout).

Originality/value – The research empirically demonstrates the need to expand job crafting theory beyond the individual and job levels, as well as offers a deeper and expanded understanding of job crafting and its relationship with people's occupations.

Keywords Job analysis, Workers, HRM, Job design

Paper type Research paper



Resumen

Objetivo – El objetivo del presente artículo es profundizar en la comprensión de la creación del puesto (*job crafting*) y sus consecuencias. Se propone un marco ocupacional como alternativa al foco en el individuo y el puesto de trabajo que plantea la teoría existente. Este modelo extiende la teoría de la creación del puesto aplicando un marco teórico multinivel, examinando las influencias abajo-arriba y arriba-debajo de las ocupaciones, y explica la interrelación entre ocupación, autonomía en el puesto y la creación del puesto.

Diseño/metodología/aproximación – Llevamos a cabo dos estudios utilizando modelización multinivel y análisis de mediación-moderación. Los datos se obtuvieron de dos bases de datos a gran escala. El estudio 1 considera 701 ocupaciones y 50,729 individuos. El estudio 2 considera 270 ocupaciones y 3,270 individuos.

Resultados – El estudio 1 revela que casi un tercio de la variabilidad en la creación del puesto es atribuible al propio contexto de la ocupación. El estudio 2 muestra que el contexto ocupacional modera los procesos a nivel individual mientras que la creación a nivel ocupacional modera los efectos mediadores entre la autonomía del puesto, la creación del puesto y los resultados a nivel individual.

Implicaciones prácticas – Los resultados informan acerca de las actividades que pueden favorecer la creación del puesto. Aumentar la autonomía en general aumenta la creación del puesto, aunque este efecto no se da siempre. Este resultado demuestra la importancia de atender las ocupaciones en las que trabajan los empleados. También, la creación del puesto se relaciona con resultados positivos de los empleados (e.g. satisfacción), pero también con algunas consecuencias negativas (e.g. agotamiento).

Originalidad/valor – El trabajo de investigación demuestra empíricamente la necesidad de expandir la teoría sobre la creación del puesto más allá del estudio del individuo o el trabajo, al tiempo que ofrece una comprensión mayor y más profunda sobre la creación del puesto y su relación con la ocupación de los empleados.

Palabras clave – Creación del puesto (*job crafting*), multinivel, ocupación, autonomía del puesto

Tipo de artículo – Trabajo de investigación

Resumo

Objetivo – O objetivo do presente artigo é aprofundar na compreensão da criação do posto de trabalho (*job crafting*) e suas consequências. Se propõe um marco ocupacional como alternativa ao foco no indivíduo e no posto de trabalho que a teoria existente planeia. Este modelo estende a teoria da criação do posto aplicando um marco teórico multinível, examinando as influências abaixo acima e acima abaixo das ocupações, e explica a inter-relação entre ocupação, autonomia no posto e a criação do posto de trabalho.

Design/metodologia/abordagem – Realizamos dois estudos usando modelagem multinível e análise de mediação-moderação. Os dados foram obtidos de dois bancos de dados de grande porte. O estudo 1 considera 701 ocupações e 50.729 indivíduos. O estudo 2 considera 270 ocupações e 3.270 indivíduos.

Resultados – O Estudo 1 revela que quase um terço da variabilidade na criação de empregos é atribuível ao próprio contexto de ocupação. O estudo 2 mostra que o contexto ocupacional modera os processos no nível individual, enquanto a criação no nível ocupacional modera os efeitos mediadores entre a autonomia do posto de trabalho, a criação do posto de trabalho e os resultados no nível individual.

Implicações práticas – Os resultados informam sobre as atividades que podem favorecer a criação do posto de trabalho. Aumentar a autonomia em geral aumenta a criação do posto, embora esse efeito nem sempre ocorra. Este resultado demonstra a importância de atender às ocupações em que os funcionários trabalham. Além disso, a criação do posto de trabalho está relacionada a resultados positivos dos funcionários (por exemplo, satisfação), mas também a algumas consequências negativas (por exemplo, exaustão).

Originalidade/valor – O investigação demonstra empíricamente a necessidade de expandir a teoria da criação de empregos além do estudo do indivíduo ou do trabalho, ao mesmo tempo que oferece uma compreensão mais profunda da criação do posto de trabalho e sua relação com a ocupação dos funcionários.

Palavras-chave – Criação do posto de trabalho (*job crafting*), multinível, ocupação, autonomia do posto de trabalho

Tipo de artigo – Trabalho de investigação

Role theory has long recognized that individuals holding the same work role can perform it in meaningfully different ways (Katz and Kahn, 1978). The acknowledgement of equifinality in role enactment is found across multiple domains, such as the literatures on work design

(Oldham and Hackman, 2010), work analysis (Morgeson and Dierdorff, 2011), performance effectiveness (Staw and Boettger, 1990), engagement (Bakker *et al.*, 2012), work orientation (Parker *et al.*, 1997) and proactive behavior (Crant, 2000). This kind of agentic, work-related behavior has been commonly called *job crafting* (Wrzesniewski and Dutton, 2001) and refers to proactive revisions that individuals make to the task and social aspects of their work roles.

Job crafting is important to the contemporary workplace because the nature of work in twenty-first-century-organizations is noticeably different than that of the prior century due to the rise of the internet, increased globalization and the weakening of organizational hierarchies (Cascio and Aguinis, 2019). Work roles are now enacted in a milieu characterized by high levels of uncertainty and dynamism. Job crafting is thought to represent a central way individuals respond to the need for change (Frese and Fay, 2001), and empirical evidence suggests that job crafting is positively related to engagement, satisfaction and performance (Bakker *et al.*, 2012; Petrou *et al.*, 2012; Tims *et al.*, 2013).

Despite significant theoretical and empirical inroads, extant job crafting scholarship is centered on the individual work role. The near exclusive focus on an individual level of analysis is to some extent justified because the very notion of job crafting entails idiosyncratic and agentic action on the part of individual workers. Yet, work roles are by definition nested within broader occupational contexts that are known to exert top-down influences on individual behavior, perceptions and attitudes (Johns, 2006), meaning that occupations reflect higher level contextual factors shaping relationships and processes in lower level units such as individual jobs. Occupations can also reveal bottom-up *compositional* differences that emerge to form higher-level phenomena (Kozlowski and Klein, 2000), meaning that the unique manner with which work roles are performed in a given occupation can coalesce to reflect a collective property at the occupational level (Dierdorff and Morgeson, 2013). An occupation-centric lens thus leads to several novel questions. Is crafting a phenomenon that only exists at the job level? Does crafting vary across occupations? How does occupational context shape the job crafting process?

Previous research has implied that job crafting may take different forms (Wrzesniewski and Dutton, 2001). The focus of this prior work, however, has been to identify generic proactive behaviors representing job crafting, such as starting new projects and developing personal capabilities. This approach, while valuable for general depictions of crafting, does not reveal the potential differences in job crafting across more distinct types of role activities, such as those identified by large-scale taxonomic models of work roles (Jeanneret *et al.*, 1999). Previous literature has also recognized the importance of autonomy to job crafting, but the precise role it plays has been described in disparate ways. Some purport that autonomy is a precursor of crafting and proactive behaviors (Morgeson *et al.*, 2005; Parker *et al.*, 1997). Others depict autonomy as both a predictor and moderator of job crafting (Grant and Ashford, 2008; Wrzesniewski and Dutton, 2001) or as a predictor and outcome of job crafting (Frese *et al.*, 2007). Further still, some propose that individuals create discretion in their jobs by crafting more autonomy (Tims *et al.*, 2012). Thus, examining how autonomy comes to shape and is shaped by job crafting remains an important but unanswered question.

The overall goal of this article is to deepen our understanding of job crafting and its consequences. To do so, we sought to extend job crafting theory by applying a multilevel framework that examines bottom-up and top-down influences of occupations on job crafting and explicates the interplay among occupation- and job-level autonomy and job crafting. Requisite to the complexity of job crafting, we conducted two studies using an expansive set of occupations, measures, analytical approaches and outcomes of job crafting. This allowed us to engage in a process of inductive and deductive theory building (Fisher and Aguinis,

2017), whereby we used insights from prior scholarship to pose research questions for Study 1 and subsequently used these results to inform additional research questions for Study 2. Examining occupation-level influences on job crafting necessitates data that span the full spectrum of occupations. Thus, we used two large-scale archival data sets to address our research questions. While archival data do create limitations around how measures are operationalized, we believe that such limitations are outweighed by the capacity to feasibly investigate occupational influences.

Study 1: job crafting and occupational context

The primary goal of our first study was to gather empirical evidence regarding the extent to which expanding the conceptualization of job crafting up to the occupation level of analysis is tenable and, if yes, begin to understand the reasons for occupational variance in job crafting. Previous theory purports that crafting can occur in any job or occupation and also postulates that environmental features may constrain or facilitate crafting (Leana *et al.*, 2009). For example, Wrzesniewski and Dutton (2001, p. 180) noted that “crafting is a situated activity, in the sense that different contexts enable or disable different levels and forms of crafting.” This is consistent with role theory that posits jobs are shaped by both incumbents and the context in which jobs are enacted (Katz and Kahn, 1978). In addition, qualitative research has provided evidence that agentic behavior, such as crafting, is a contextually embedded phenomenon (Cohen, 2013).

Occupations reflect situational constraints and opportunities (Morgeson and Dierdorff, 2011) and are therefore valuable for delineating contextual effects (Johns, 2006). An occupation is defined as a collection of jobs that share similar goals and role requirements and the application of specialized skills or knowledge required to fulfill these goals and requirements (Dierdorff *et al.*, 2009). Occupations occur across organizations, which means that individual jobs are localized lower-level manifestations of the broader higher-level occupation. Thus, occupations represent important contexts or “subcultures” that hold influences at least as strong as organizational contexts (Trice, 1993). This is one reason that occupations “cluster” across organizations and even industries (Wolman and Hincapie, 2015). Occupations shape a variety of individual-level factors such as role expectations (Lievens *et al.*, 2010), emotional exhaustion (Grandey *et al.*, 2007), emotional labor (Bhave and Glomb, 2016), job strain (Liu *et al.*, 2005) and work design (Dierdorff and Morgeson, 2013). Occupations also vary in the types of behavior and needs that are reinforced by their respective environments (Dawis and Lofquist, 1984), which in turn constrain or enable the manner with which people enact their jobs and the outcomes of such enactments (Morgeson *et al.*, 2010). For example, Dierdorff and Ellington (2008) found the levels of interdependence and accountability in occupational contexts shaped the extent to which individuals experienced work–family conflict in their respective jobs. Finally, occupations differ in situational strength, which are cues about how to behave (Mischel, 1973), and this is thought to affect the crafting techniques used by workers (Berg *et al.*, 2010). These preceding points suggest that the extent to which people craft their jobs is likely due to the occupation in which they work, even though crafting is expected to occur no matter the occupation. Therefore, overall levels of job crafting are meaningful descriptive properties of occupations, where the amount of crafting across the jobs subsumed by a given occupation reflects a compositional property of that occupation. Thus, systematic variability in job crafting across occupations should exist compared to variability of crafting within occupations:

RQ1. Does job crafting vary systematically by occupation?

Occupations also vary in the relative importance of different activities needed for performance. This fact raises the question as to whether the answer to *RQ1* is further reflected in more specific crafting differences attributable to particular types of activities. Such differences are likely because role activities are often the target of crafting at the job level of analysis (Wrzesniewski and Dutton, 2001). Studies have additionally suggested that job crafting can occur on different kinds of role activities, such as those that are task or relational in nature (Lyons, 2008). Thus, it is likely that certain role activities are the targets of more or less job crafting when systematically examined across a wide variety of occupations.

One way to conceptualize different role activities is to integrate the literature on work analysis, where a thorough understanding of such requirements has been reached from decades of empirical study (Morgeson and Dierdorff, 2011). For example, no matter the occupation, general categories of role requirements have been found to encompass activities related to data, people and things (Fine and Cronshaw, 1999) or, more specifically, to information input, mental processes, interaction with others and work output (Jeanneret *et al.*, 1999). For the most part, these delineations are also consistent with the notion of task-oriented and relational changes described in the job crafting theory.

Although previous theory and evidence suggest that job crafting occurs on different types of role activities, the evidence is less clear as to which type is most or least often the target of crafting. For instance, Lyons (2008) found some frequency differences in a sample of salespersons; yet, relative differences were not necessarily substantial (e.g. roughly 50 per cent of job crafting was task-focused and 32 per cent relational). Some related evidence also suggests possible differences across activity types. Research on managerial roles by Dierdorff *et al.* (2009) found occupational differences in the importance of conceptual, technical and interpersonal requirements, with the greatest variability observed for technical requirements. At the center of crafting theory, however, is the notion that individuals find myriad ways to shape their jobs and exert personal control, which are navigated against prescribed requirements and job boundaries (Wrzesniewski and Dutton, 2001). Therefore, though it appears likely that job crafting manifests in varying degrees across different types of role activities, the following question remains unanswered:

RQ2. Does occupation-level crafting vary systematically across different kinds of role activities?

If occupations differ in their overall levels of job crafting, then the question arises with regard to what factors account for this variability. One potentially important factor is that of autonomy because occupations differ in the overall level of autonomy they provide (Strong *et al.*, 1999). Variance in autonomy or discretion has also been linked to individual-level role definitions (Dierdorff and Morgeson, 2007; Morgeson *et al.*, 2005). In the job crafting literature, autonomy is thought to be a primary force that encourages individuals to alter their job boundaries (Staw and Boettger, 1990). The influence of autonomy on crafting is believed to result from greater flexibility in how the job is performed, increased feelings of ownership on the part of individuals and an expansion of what is seen as requisite for performance (Parker *et al.*, 1997). Supportive evidence by Petrou *et al.* (2012) revealed that higher levels of autonomy were linked to increases in individuals' daily job crafting. Dierdorff and Jensen (2018) also found that autonomy was positively related to job crafting. These results suggest that overall levels of autonomy present in an occupation may create more or less opportunities for individuals to engage in job crafting:

RQ3. Is occupation-level autonomy positively related to occupation-level job crafting?

Work is in part a social construction where individuals are thought to seek self-determination. This assumption of human agency underlies much of job crafting theory and suggests that autonomy will not only promote opportunities to craft as discussed above but also could be the focus of crafting itself. That is, individuals might engage in crafting to increase their discretion at work (Parker and Ohly, 2008). This notion is consistent with the idea that crafting is proactive behavior, which can be directed at changes in oneself and changes in one's work situation (Parker *et al.*, 2010). Such crafting of discretion or autonomy, which we label "autonomy-crafting," has been recognized in job crafting theory as well where it is seen as a means for individuals to expand personal resources, which in turn facilitate performance (Tims *et al.*, 2012). Thus, autonomy-crafting is more general proactive behavior done to increase overall discretion in how work is performed, whereas job crafting is specific proactive behavior directed at changing particular role activities. Though the extent that people engage in autonomy-crafting has yet to be empirically explicated, the aforementioned theory implies that individuals will engage in discretion-increasing forms of crafting. The implication is that autonomy-crafting may be associated with more job crafting because such discretion-increasing behavior can lead to broader role definitions and an expanded sense of responsibility for performing different job duties (Dierdorff and Jensen, 2018):

RQ4. Is occupation-level autonomy-crafting (i.e. crafting of autonomy) positively related to occupation-level job crafting of role activities?

Study 1: Method

Participants and measures

Our sample was from the US Department of Labor's O*NET database, which is an online system designed to replace the *Dictionary of Occupational Titles* (Peterson *et al.*, 2001). O*NET is populated with nationally representative data for the entirety of the US workforce and provides a common language for describing occupational requirements – a prerequisite for comparing cross-occupation differences in levels of crafting. Our sample included 701 occupations and 50,729 individuals.

We assessed role activities using 41 generalized work activities captured in the O*NET database (Jeanneret *et al.*, 1999). These activities are organized by four conceptual categories:

- (1) *information input*, measured by 5 activities;
- (2) *mental processes*, measured by 10 activities;
- (3) *work output*, measured by 9 activities; and
- (4) *interacting with others*, measured by 17 activities.

Examples of specific activities include "getting information," "selling or influencing others" and "documenting or recording information." A total of 24,889 individuals rated these activities across the 701 occupations by using a five-point importance scale (1 = not important [to your job], 2 = somewhat important, 3 = important, 4 = very important, and 5 = extremely important). Research supports acceptable reliability (mean ICC[1,30] = 0.92) for these measures (Childs *et al.*, 1999).

Following the same procedures used in other studies (Dierdorff *et al.*, 2009; Lievens *et al.*, 2010), we assessed autonomy with two O*NET questions that asked respondents ($n = 25,840$) "How much freedom do you have to determine tasks, priorities or goals?" and "How much freedom do you have to make decisions without supervision?". These items reflect the essential aspects of autonomy, which are the freedom to determine work methods and to

make decisions. Individuals rated these items on a five-point scale (1 = no freedom, 3 = little freedom, 5 = a lot of freedom). Note that during O*NET data collection, individuals who rate role activities are not the same who rate autonomy. This random assignment creates independent samples, which is advantageous because it reduces potential interdependencies that could bias results.

Procedure

Following a work analytic approach, we operationalized occupation-level job crafting using rating variance scores. In the past, work analysis scholars have traditionally seen variance in ratings of the same activities for people in the same occupation as random error (Harvey, 1991). Such variance is now recognized to not be completely random, but instead to contain systematic components that reflect “true” differences in the way individuals perform their jobs (Lievens *et al.*, 2010). In a statistical sense, when rating variance scores exhibit significant differences across meaningful classes (occupations) or show significant correlations with other variables, they are by definition “non-random.” These systematic components of rating variance therefore reflect levels of crafting among people in the same occupation (Sanchez and Levine, 2012). [1] Congruent with this approach, we used standard deviations of ratings (squared to represent variance) reported in the O*NET database for each of the 41 activities to reflect job crafting. To answer our questions, these data were organized into three groupings. The first comprised the average variance across all 41 activities for each of the 701 occupations. The second comprised the average variance across activities categorized into three clusters (data, people and things) based on factor-analytic work with O*NET data (Natali *et al.*, 2012). The third comprised the average variance across activities in four O*NET conceptual categories (information input, mental processes, interacting with others and work output).

With regard to autonomy, we used two occupation-level scores. The first were mean scores for autonomy on each occupation used to test the association between occupation-level autonomy and occupation-level job crafting (*RQ3*). The second were variance scores for autonomy on each occupation used to test the association between autonomy-crafting and occupation-level job crafting of activities (*RQ4*). Although the two O*NET items measure autonomy somewhat passively by asking respondents “how much” discretion they have in their jobs, scholarship on crafting and other proactive behaviors explicitly note that individuals have agency in creating such discretion (i.e. it is not merely affected in a top-down manner by management) (Parker *et al.*, 2010; Tims *et al.*, 2012).

Data on role activities were nested in occupations and mean levels of autonomy and levels of autonomy-crafting were at the occupational level of analysis. We therefore used random coefficient modeling as implemented with HLM 6 software to account for this hierarchical structure. In our first stage of models, we partitioned variance in crafting scores on role activities into within- and between-occupation components. Regarding *RQ1*, the presence of between-occupation variance would indicate that job crafting varied across occupations. In this same stage of models, the presence of differential degrees of between-occupation variance across the three activity groupings described earlier would provide an answer for *RQ2*. Our second stage introduced Level 2 predictors (mean autonomy scores and autonomy-crafting scores) in intercepts-as-outcomes models. This stage of models addressed our questions about the influence of occupation-level autonomy on occupation-level crafting (*RQ3*) and occupation-level crafting of autonomy on occupation-level crafting of activities (*RQ4*).

Study 1: results and discussion

Table I includes occupation-level means, standard deviations and correlations for Study 1 variables. Table II shows results of the first-stage models decomposing total variance in job crafting into within-occupation (σ^2) and between-occupation (ICC[1]) components. Note that the intraclass correlation coefficient ICC(1) reflects the proportion of variance between occupations.

Table II provides evidence that a substantial amount of job crafting variance is due to occupations. In fact, for overall crafting, which is based on the 41 O*NET activity composite, 26 per cent of variance is attributable to occupations (95 per cent CI = 0.24-0.29). Answering *RQ1*, results provide empirical evidence that there are significant differences in crafting due to the occupations in which individuals work. Moreover, the fact that the variance scores systematically differed across occupations provides direct empirical

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. Overall crafting	2.65	1.22									
2. Data crafting	2.46	1.33	0.84**								
3. People crafting	2.75	1.32	0.96**	0.73**							
4. Things crafting	2.57	1.43	0.84**	0.61**	0.71**						
5. Information input crafting	2.38	1.56	0.76**	0.73**	0.66**	0.69**					
6. Mental processes crafting	2.60	1.41	0.87**	0.84**	0.84**	0.64**	0.67**				
7. Interacting with others crafting	2.80	1.34	0.93**	0.70**	0.97**	0.69**	0.63**	0.72**			
8. Work output crafting	2.56	1.46	0.80**	0.63**	0.67**	0.92**	0.48**	0.59**	0.65**		
9. Occupation-level autonomy	4.01	0.46	-0.24**	-0.28**	-0.21**	-0.19**	-0.17**	-0.28**	-0.18**	-0.21**	
10. Occupation-level autonomy-crafting	1.23	0.61	0.32**	0.34**	0.29**	0.25**	0.24**	0.33**	0.27**	0.26**	-0.56**

Notes: $n = 701$ occupations and $n = 50,729$ individuals. Overall crafting is a composite score comprised of all 41 O*NET activities, Variables 2-4 activity categories are based on factor-analytic results from Natali *et al.* (2012) and Variables 5-8 activity categories are based on O*NET's four conceptual categories; ** $p < 0.01$

Table I.
Means, standard deviations and correlations for Study 1 variables

Variable	T	σ^2	ICC(1)	95% CI
1. Overall crafting	1.39	3.89	0.26**	0.24-0.29
2. Data crafting	1.41	3.19	0.31**	0.28-0.33
3. People crafting	1.57	3.65	0.30**	0.28-0.33
4. Things crafting	1.62	4.31	0.27**	0.25-0.30
5. Information input crafting	1.83	3.08	0.37**	0.34-0.41
6. Mental process crafting	1.71	2.81	0.38**	0.35-0.41
7. Interaction with others crafting	1.58	3.73	0.30**	0.27-0.32
8. Work output crafting	1.63	4.52	0.26**	0.24-0.29

Notes: $n = 701$ occupations and $n = 50,729$ individuals; ** $p < 0.01$

Table II.
Decomposition of job crafting variability into within-occupation (σ^2) and between-occupation (ICC[1]) components

evidence that this variance is not simply due to random or idiosyncratic error in ratings (Sanchez and Levine, 2012).

Table II also shows the variance components and ICC(1) estimates for the two groupings of activities (i.e. data, people and things and the four O*NET conceptual categories). The proportions of variance in crafting that resided between occupations across the data, people and things categories were similar in magnitude (31, 30 and 27 per cent, respectively). Magnitude differences for the four O*NET categories were more pronounced, with the lowest proportion of between-occupation variance for crafting of work output activities (26 per cent) and the largest for mental process activities (38 per cent) with non-overlapping 95 per cent confidence intervals corroborating these differences. Regarding RQ2, the findings provide evidence of some differences in job crafting across types of activities, yet the differences were not large in magnitude. These findings further show that job crafting occurs across the full range of activities.

RQ3 asked whether occupation-level autonomy is positively related to occupation-level job crafting. Table III includes results from the second-stage models addressing this question. Across all 41 role activities (i.e. overall crafting), mean level of autonomy was significantly related to occupational differences in job crafting ($p < 0.05$); however, the relationship was negative ($\gamma = -0.25$), suggesting that higher levels of occupation-level autonomy are associated with a decrease in occupation-level crafting. Results also showed variability across the different categories of activities. Occupation-level autonomy predicted crafting of data-related activities ($\gamma = -0.36$, $p < 0.01$), but again, the effect was negative. For the four O*NET categories, occupation level predicted mental processes and work output activities ($\gamma = -0.43$ and -0.30 , $p < 0.05$, respectively) but not crafting regarding the information input and interacting with others categories ($p > 0.05$). Collectively, these results provide empirical evidence that for activities related to acquiring and working with information, occupational autonomy is actually accompanied by a reduction in job crafting. Finally, the fact that the crafting scores showed significant correlations with other variables provides direct evidence that operationalizing crafting with variance scores reflects non-

Dependent Variable	Predictor	γ	SE	% of var. explained
1. Overall crafting	Occupation-level autonomy	-0.25*	0.106	
	Occupation-level autonomy-crafting	0.54**	0.089	0.11
2. Data crafting	Occupation-level autonomy	-0.36**	0.121	
	Occupation-level autonomy-crafting	0.59**	0.093	0.15
3. People crafting	Occupation-level autonomy	-0.21	0.118	
	Occupation-level autonomy-crafting	0.55**	0.099	0.10
4. Things crafting	Occupation-level autonomy	-0.22	0.118	
	Occupation-level autonomy-crafting	0.49**	0.112	0.08
5. Information input crafting	Occupation-level autonomy	-0.18	0.151	
	Occupation-level autonomy-crafting	0.54**	0.129	0.07
6. Mental process crafting	Occupation-level autonomy	-0.43**	0.134	
	Occupation-level autonomy-crafting	0.58**	0.112	0.14
7. Interaction with others crafting	Occupation-level autonomy	-0.13	0.119	
	Occupation-level autonomy-crafting	0.54**	0.099	0.08
8. Work output crafting	Occupation-level autonomy	-0.30*	0.131	
	Occupation-level autonomy-crafting	0.51**	0.110	0.10

Table III.
Effects of occupation-level autonomy and autonomy-crafting on job crafting across role activities

Notes: $n = 701$ occupations and $n = 50,729$ individuals; γ = unstandardized random coefficient model coefficient; SE = standard error; * $p < 0.05$, ** $p < 0.01$

random, systematic differences, especially considering that the autonomy variables were rated by an independent sample of occupation incumbents.

RQ4 asked if occupation-level autonomy-crafting is positively associated with levels of job crafting. As shown in [Table III](#), autonomy-crafting was significantly and positively related to the overall job crafting composite of 41 activities ($\gamma = 0.54, p < 0.01$). Results were also highly consistent, showing positive relationships between autonomy-crafting and crafting of activities across the data, people and things categories and the four O*NET categories (mean $\gamma = 0.54$). These results provide evidence that crafting of discretion in occupations is related to increases in crafting of role activities.

Summary

The goal of Study 1 was to examine the tenability of expanding our current conceptualization of job crafting up to the occupational level of analysis. Results provided empirical evidence in favor of this supposition, showing that simply knowing the occupations in which individuals work accounts for between 27 and 38 per cent of the variability in job crafting across a variety of activities. We further found that although occupational differences in autonomy were not consistently or positively related to job crafting, levels of crafting directed at discretion itself (autonomy-crafting) were related to increased job crafting. However, Study 1 was limited in that top-down effects of occupations on individual-level job crafting could not be examined, as well as the consequences of job crafting. Accordingly, we conducted Study 2 to answer questions about potential cross-level relationships between occupation-level job crafting and autonomy-crafting and between individual-level job autonomy, job crafting and work attitudes.

Study 2: individual job crafting and autonomy within occupational contexts

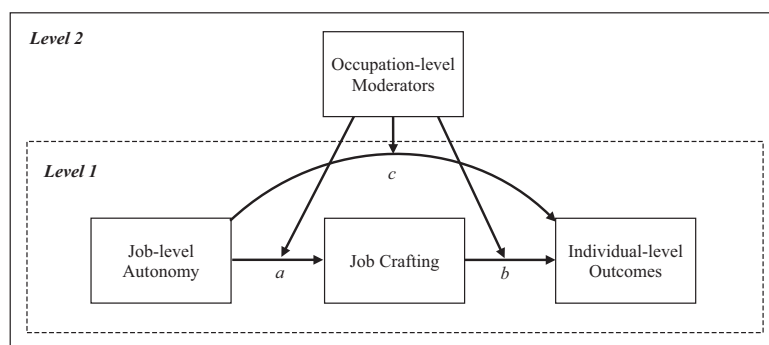
The overall goal of Study 2 was to assess if occupation-level job crafting and autonomy-crafting serve as top-down moderators of individual-level processes involving job-level autonomy, job crafting and several outcomes (job satisfaction, burnout, turnover intentions and pay fairness). As discussed earlier, autonomy has been treated in numerous ways by previous job crafting researchers, including as an antecedent, moderator and outcome of crafting. In Study 1, we examined autonomy for its role as a moderator of job crafting levels in occupations and as an outcome of job crafting (i.e. autonomy-crafting). In Study 2, we combine these occupational treatments of autonomy with an examination of how job-level autonomy serves as an antecedent to job crafting. In this way, we sought to clarify the many ways that autonomy has been proposed to influence job crafting in prior scholarship and to build a better understanding of how autonomy affects job crafting and its job-level outcomes, [Figure 1](#) shows the multilevel moderated-mediation model, summarizing the research questions we describe next.

Autonomy is a construct that manifests at both the job and occupation levels. Job crafting theory has posited job-level autonomy as a key factor that both promotes perceived opportunities to craft and facilitates the manner with which crafting takes place ([Wrzesniewski and Dutton, 2001](#)). Occupational theory also purports that occupations create higher-level contexts that systematically differ in the amount of discretion afforded to individuals in their jobs ([Dawis and Lofquist, 1984](#)). Empirical evidence confirms this multilevel phenomenology. For example, job-level autonomy has been associated with a host of outcomes such as job satisfaction, job performance, citizenship behavior, commitment and (negatively) absenteeism ([Dierdorff et al., 2012](#); [Humphrey et al., 2007](#)). Although much less studied, occupation-level autonomy has also been linked to individual-level outcomes such as job satisfaction and absenteeism ([Dierdorff and Morgeson, 2013](#); [Liu et al., 2005](#)).

Job-level autonomy is believed to play a fundamental part in job crafting because it encourages flexibility in how individuals enact their jobs and expands what is viewed as relevant to job performance (Staw and Boettger, 1990). Job-level autonomy and job crafting are also thought to increase the sense of ownership and agency people have in relation to their work (Berg *et al.*, 2010; Parker *et al.*, 1997). Research supports these notions with both job-level autonomy and job crafting associated with greater feelings of responsibility for one's work, increases in job and pay satisfaction and decreases in burnout and turnover intentions (Humphrey *et al.*, 2007; Tims *et al.*, 2013). As an act of personal volition, job crafting reflects the behavioral enactment of discretion in one's work. Job crafting is therefore a vehicle through which people use or apply job-level autonomy to individually alter the boundaries of these jobs. This suggests that job crafting is a key underlying mechanism through which job-level autonomy ultimately affects individual-level outcomes. Evidence from Morgeson *et al.* (2005) supports this conjecture where the positive effects of autonomy on job performance were conveyed by the extent to which individuals proactively expanded the breadth of tasks they incorporated into their jobs. Study 1 results showing that occupation-level autonomy did not exert consistent effects on occupation-level crafting provides further clarification about autonomy in general and its role as an antecedent or "precondition" to job crafting; namely, that its influence likely manifests more proximally at the job level, not the occupation level:

RQ5. Does job crafting mediate the positive effect of job-level autonomy on individual-level attitudinal outcomes including job satisfaction, burnout, turnover intentions and pay fairness?

Although it is likely that job crafting mediates the effects of autonomy on individual-level outcomes, it is important to recognize that this process does not occur in isolation but instead is nested within the occupational contexts in which people work. As Johns (2006, p. 393) noted, "knowing someone's occupation permits reasonable inferences about his or her task, social, and physical environment at work, which, in turn, can be used to predict behavior and attitudes." Congruent with this postulation, Study 1 results indicated that occupations accounted for about 25 per cent of variance in overall job crafting. This suggests that occupations create an omnibus context (Dierdorff and



Notes: Occupation-level moderators = occupation-level job crafting and occupation-level autonomy-crafting. Individual-level outcomes = job satisfaction, burnout, turnover intentions and pay fairness

Figure 1. Conceptual model assessing the top-down moderating effect of occupation-level factors on individual-level processes

Morgeson, 2007) where individual job crafting is either amplified or attenuated depending on the occupation. Occupations where job crafting prevalently occurs thus reflect a context in which such individual behavior is facilitated, whereas occupations with low levels of overall crafting reflect a context in which individual job crafting is constrained. Because occupations are the backdrop against which individual role enactment occurs (Dierdorff *et al.*, 2009), they influence the range of actions viewed as relevant to workers (Peters and O'Connor, 1980). Job crafting theory recognizes that crafting is a socially embedded activity which can be viewed as desired behavior or as deviant behavior (Berg *et al.*, 2010), that is, facilitated or constrained at the job level. Occupations where job crafting is prevalent then are likely to foster more real or perceived opportunities to engage in individual job crafting:

RQ6. Does occupation-level crafting amplify the positive indirect effects of job-level autonomy through job crafting on individual-level attitudinal outcomes including job satisfaction, burnout, turnover intentions and pay fairness?

In addition to occupational differences in crafting, Study 1 provided evidence of occupation-level differences in crafting of discretion (i.e. autonomy-crafting). This again points to occupations as an important omnibus context that systematically impacts individual job crafting. Occupations where autonomy-crafting is prevalent reflect contexts where people are striving to create more discretion in their roles. These occupational contexts could attenuate individual-level crafting of one's job boundaries because they may indicate that such behavior is constrained to such an extent that individuals focus their change efforts toward increasing discretion in general, rather than crafting specific role activities. The negative relationship between mean levels of occupational autonomy and autonomy-crafting uncovered in Study 1 is consistent with this speculation in that occupations with fewer constraints on individual volition are also those with less crafting directed at creating autonomy. This is also congruent with job crafting research that shows that individuals proactively change their job tasks when faced with situations seen as constraining (Berg *et al.*, 2010). Therefore, the effects of job-level autonomy on job crafting and its outcomes may be diminished in more constrained occupational contexts as indicated by high levels of autonomy-crafting.

RQ7. Does occupation-level autonomy-crafting attenuate the positive indirect effects of job-level autonomy through job crafting on individual-level attitudinal outcomes including job satisfaction, burnout, turnover intentions and pay fairness?

Study 2: method

Participants and procedures

We used the General Social Survey (GSS) database, which is a nationally representative survey administered by the National Opinion Research Center at the University of Chicago. The GSS was conducted annually from 1972 to 1994 and biennially thereafter. Participants are sampled using a national full-probability approach and surveyed using a structured interview lasting about 90 min. Response rates have ranged from 70 to 82 per cent since 1975. We used the 2002 and 2006 *Quality of Working Life* module developed by the National Institute for Occupational Safety and Health. The GSS classifies respondents using US Census Bureau occupation codes. We used these codes to cross-reference GSS and O*NET to create a database linking occupation-level data in O*NET with the job-level data in the GSS. Note that several GSS measures are single-item, which could negatively impact reliability. We believe that these measures are valuable because GSS data are nationally representative,

examining the effects of occupations necessitates data that span numerous occupations so as to reveal systematic effects (Dierdorff and Ellington, 2008), and criticisms of single-item indicators may be overstated (Wanous and Hudy, 2001). Poor reliability has the effect of producing statistically non-significant results. As we describe later, this was not the case, which reduces concerns about the measures. Study 2 included 3,270 individuals from 270 occupations.

Measures

Similar to Study 1 we operationalized overall *occupation-level crafting* using mean variance scores across the 41 O*NET activities and *occupation-level autonomy-crafting* using variance scores across the autonomy items in O*NET. *Job-level crafting* was operationalized with the GSS item: "I get to do a number of different things on my job." This item reflects a global judgment of the breadth of elements seen as part of one's role, which scholars have viewed as indicative of job crafting (Morgeson *et al.*, 2005). This item was rated using a four-point scale (strongly agree, agree, disagree and strongly disagree), and higher scores indicated more crafting. *Job-level autonomy* was assessed with two GSS items: "I am given a lot of freedom to decide how to do my own work" and "I have a lot of say about what happens on my job." The first item was rated on a four-point scale (very true, somewhat true, not too true and not at all true), and the second item was rated using a four-point scale (strongly agree, agree, disagree and strongly disagree). Scores were averaged and higher scores indicate more autonomy. *Job satisfaction* was measured with a GSS item asking, "How satisfied are you in your job?" and was rated on a four-point scale (very satisfied, somewhat satisfied, not too satisfied and not at all satisfied); higher scores indicate more satisfaction. *Burnout* was measured with the GSS item: "How often during the past month have you felt used up at the end of the day?" This item was rated on a five-point scale (very often, often, sometimes, rarely and never); higher scores indicate more burnout. *Turnover intentions* was measured with the GSS item asking, "Taking everything into consideration, how likely is it you will make a genuine effort to find a new job with another employer within the next year?" and was rated on a three-point scale (very likely, somewhat likely and not at all likely); higher scores indicate higher turnover intentions. Finally, *pay fairness* was measured with the GSS item: "How fair is what you earn on your job in comparison to others doing the same type of work you do?" This item was rated on a five-point scale (much less than you deserve, somewhat less than you deserve, about as much as you deserve, somewhat more than you deserve and much more than you deserve), with higher scores indicating higher fairness.

Data analytic approach

Study 2 data were multilevel in nature, requiring analyses to account for hierarchical dependencies that violate independence assumptions and produce biased estimates in linear regression and single-level path analysis (Aguinis *et al.*, 2013). Accordingly, we conducted random coefficient modeling implemented with HLM 6 to investigate within and between-group variance in the criteria. Our questions addressed a single-level mediation (RQ5) and moderated mediation in a multilevel context (RQ6 and RQ7). We followed a procedure by Bauer, Preacher and Gil (2006) for simultaneously testing multilevel mediation models with random effects across Level 2 units. This multilevel mediation is a "1-1-1 model," where mediation is with lower-level variables that are hierarchically nested. As in Figure 1, lower-level variables were job-level autonomy, job crafting and attitudinal outcomes. With regard to moderation by occupation-level variables, we tested a $2 \times (1-1-1)$ model, indicating that a higher-level factor may moderate lower-level indirect effects. To avoid the confounds

associated with estimating 1-1-1 models, we followed the procedure by Zhang *et al.* (2009), where level-1 variables are group-mean centered and group means are reintroduced as Level 2 variables.

Study 2: results and discussion

Table IV includes means, standard deviations and correlations for Study 2 variables. Table V includes parameter estimates used to answer the question about the possible mediating effect of job crafting in the relationship between job-level autonomy and individual-level attitudinal outcomes (i.e. RQ5). Table V shows that all *a* paths, estimating the direct relationship between job-level autonomy and job crafting, were statistically significant for the four models. Table V also shows that all *b* paths, estimating the direct relationship between job crafting and individual-level outcomes, were also statistically significant. The results show that more job crafting is associated with more job satisfaction (parameter estimate = 0.10) and decreased turnover intentions (parameter estimate = -0.13). Interestingly, more job crafting is associated with increased burnout (parameter estimate = 0.14) and decreased pay fairness (parameter estimate = -0.06), pointing to potential trade-offs of crafting. Comparing variance components across models for each outcome indicated that job-level autonomy and job crafting combined accounted for 23 per cent of the variability across individuals within occupations in levels of job satisfaction, 17 per cent of turnover intentions, 18 per cent of burnout and 22 per cent of pay fairness. Because the effects of job-level autonomy remained statistically significant when controlling for job crafting (i.e. *c* paths), results in Table V indicate that crafting partially mediates the effects of autonomy on each of the outcomes. On average, 8 per cent of the total effect of job-level autonomy on job satisfaction was indirect (i.e. mediated by job crafting), 29 per cent on burnout was indirect, 8 per cent on turnover intentions was indirect and 12 per cent on pay fairness was indirect. Taken together, these results offer strong evidence regarding RQ5, showing that job crafting mediates the positive effect of job-level autonomy on individual-level attitudes. Note that results also showed that, though job crafting increased burnout and decreased pay fairness (indicated by the *b* paths and average indirect effects in Table V), the total effect of job-level autonomy on burnout and pay fairness (direct and indirect) reduced burnout and increased pay fairness perceptions.

Results from the multilevel simple mediation models also provided answers for RQ6 and RQ7. Statistically significant random effects for the relationship (slopes) between either the predictor and mediator (*a* path) or the mediator and the criterion (*b* path) are required to test

Table IV.
Means, standard deviations and correlations for Study 2 variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Job autonomy	1.84	0.71							
2. Job crafting	1.71	0.70	0.34**						
3. Occupation-level crafting	2.95	1.82	0.09**	0.08**					
4. Occupation-level autonomy-crafting	1.29	0.50	0.07**	0.06**	0.28**				
5. Job satisfaction	1.67	0.74	0.37**	0.21**	0.05**	0.04*			
6. Burnout	2.69	1.16	-0.09**	0.05**	0.01	0.01	-0.21**		
7. Pay fairness	2.56	0.87	0.13**	0.01	-0.02	0.02	0.26**	0.11**	
8. Turnover intentions	2.88	0.83	-0.28**	-0.19**	0.08**	0.08**	-0.25**	0.05**	-0.10**

Notes: *n* = 270 occupations and *n* = 3,270 individuals, occupation-level crafting and occupation-level autonomy-crafting are Level 2 variables, and thus, correlations are based on disaggregated data; **p* < 0.05; ***p* < 0.01

Model	Estimate	SE	95% CI		$\Delta\chi^2$	$\tau(\chi^2)$
<i>1. Outcome = job satisfaction</i>						
<i>a</i> -path	0.31**	0.019				0.009* (214.04)
<i>b</i> -path	0.10**	0.021				0.010 (187.02)
<i>c</i> -path	0.35**	0.021				0.016 (198.41)
Average random indirect effect	0.03		0.013	0.044		
Average random total effect	0.38		0.334	0.416		
Homogenous vs heterogeneous σ^2					11.46**	
<i>2. Outcome = burnout</i>						
<i>a</i> -path	0.31**	0.018				0.007* (213.32)
<i>b</i> -path	0.14**	0.033				0.005* (211.91)
<i>c</i> -path	-0.18**	0.030				0.023 (198.22)
Average random indirect effect	0.04		0.016	0.066		
Average random total effect	-0.14		-0.202	-0.082		
Homogenous vs heterogeneous σ^2					965.28**	
<i>3. Outcome = turnover intentions</i>						
<i>a</i> -path	0.31**	0.019				0.009* (211.95)
<i>b</i> -path	-0.13**	0.021				0.006* (215.62)
<i>c</i> -path	-0.28**	0.021				0.005 (178.36)
Average random indirect effect	-0.04		-0.022	-0.056		
Average random total effect	-0.32		-0.277	-0.363		
Homogenous vs heterogeneous σ^2					120.86**	
<i>4. Outcome = pay fairness</i>						
<i>a</i> -path	0.30**	0.019				0.010* (212.28)
<i>b</i> -path	-0.06**	0.025				0.011* (210.43)
<i>c</i> -path	0.18**	0.021				0.007 (166.48)
Average random indirect effect	-0.01		-0.001	-0.026		
Average random total effect	0.17		0.214	0.128		
Homogenous vs heterogeneous σ^2					257.28**	

Notes: $n = 270$ occupations and $n = 3,270$ individuals. From Figure 1, *a*-paths estimate the relationship between job autonomy and job crafting, *b*-paths are between job crafting and each attitudinal outcome and *c*-paths are between job autonomy and each outcome controlling for job crafting. σ^2 refers to residual variance assessing for random effects across occupations; and τ refers to variance components for each parameter estimate assessing for variability across occupations; * $p < 0.05$; ** $p < 0.01$

Table V.
Mediation by job
crafting in
relationships
between job-level
autonomy and
individual-level
outcomes

for potential moderators (Kenny *et al.*, 2003). In Table V, results from models comparing heterogeneous and homogeneous residual variance show that heterogeneous models fit the data better for each outcome (indicated by improvements in χ^2). Significant variability was evident in the relationship between job-level autonomy and job crafting (*a* paths) in each model (see τ values in Table V). Significant variability was also found for relationships between job crafting and burnout, turnover intentions and pay fairness. Overall, these results indicate the presence of random effects in lower-level mediation across Level 2 units, a necessary condition for examining occupation-level variables as higher-level moderators (Aguinis and Culpepper, 2015).

RQ6 asked whether occupation-level crafting amplifies the positive indirect effects of job-level autonomy. As shown in Table VI, occupation-level crafting significantly moderated the job crafting-to-outcome relationships (*b* paths) for all four criteria. Moderation was also evident for the job autonomy-to-burnout effect, controlling for crafting (*c* path). Significant prediction of variability in either *a* or *b* paths represents moderated mediation, as the

Table VI.
Moderation by
occupation-level
crafting on the
indirect effects of job-
level autonomy on
individual-level
outcomes through
job crafting

Parameter	Job satisfaction		Burnout		Turnover intentions		Pay fairness	
	γ	SE	γ	SE	γ	SE	γ	SE
W1 * <i>a</i> -path	0.003	0.007	0.004	0.007	-0.015	0.009	-0.017	0.010
W2 * <i>a</i> -path	0.012	0.021	0.011	0.021	-0.043	0.036	-0.044	0.037
W1 * <i>b</i> -path	0.017*	0.008	-0.045*	0.023	-0.015*	0.007	-0.022*	0.010
W2 * <i>b</i> -path	0.057	0.042	0.053	0.063	-0.048	0.041	-0.103	0.049
W1 * <i>c</i> -path	0.017	0.009	0.047*	0.017	0.006	0.010	0.018	0.011
W2 * <i>c</i> -path	-0.024	0.038	0.006	0.062	0.005	0.049	-0.015	0.047
Simple Slopes W1 (<i>b</i>)	γ	Z	γ	Z	γ	Z	γ	Z
-1 SD	0.094	1.68	0.161	11.66	0.216	3.56	0.233	32.53
Mean	0.127	2.14	0.072	2.147	0.187	3.02	0.189	11.08
+1 SD	0.159	2.37	-0.016	-0.301	0.157	2.20	0.145	5.21
Simple Slopes W1 (<i>c</i>)								
-1 SD			-0.264	-7.76				
Mean			-0.172	-2.01				
+1 SD			-0.079	0.564				

Notes: $n = 270$ occupations and $n = 3,270$ individuals; W1 = occupation-level crafting; W2 = occupation-level autonomy-crafting; γ = unstandardized coefficient; simple slopes at conditional values of the moderator were computed using program developed by Preacher *et al.* (2006); * $p < 0.05$; ** $p < 0.01$

strength of the indirect effect of the level-1 predictor depends on the Level 2 moderator (Bauer *et al.*, 2006). The nature of these moderated relationships is shown by the simple slope estimates at the bottom of Table VI. Occupation-level crafting was found to amplify the positive effects of autonomy through job crafting on job satisfaction. For burnout, the negative effects of job crafting were attenuated as occupation-level crafting increased (*b* simple slopes), so too were the direct effects of autonomy (*c* simple slopes). For turnover intentions, higher levels of occupation-level crafting lessened the positive impact of autonomy through job crafting. Higher levels of occupation-level crafting buffered the negative effects of job crafting on pay fairness. In sum, results provide strong empirical support for moderated mediation by occupation-level crafting, although the form of moderated mediation was more complex than expected.

RQ7 asked if occupation-level autonomy-crafting attenuates the positive indirect effects of job-level autonomy. As shown in Table VI, none of the interaction terms between occupational autonomy-crafting and either the autonomy-to-crafting or crafting-to-outcomes were statistically significant ($p > 0.05$). These results suggest that occupational levels of autonomy-crafting do not exert top-down influences on relationships between job-level autonomy, crafting and attitudinal outcomes.

Summary

A primary goal of Study 2 was to examine the top-down effects of occupational context on individual-level job crafting and its consequences. We posited and found support for job-level autonomy as an antecedent of job crafting, and that job crafting was a key factor that conveys the positive effects of job-level autonomy on individual-level outcomes. Study 2 provides additional empirical evidence regarding the need to expand job crafting theory beyond the individual worker and job levels of analysis, in this case to the top-down effects of occupation-level job crafting on both the relationships between job-level autonomy and

job crafting and those between crafting and individual-level outcomes, including job satisfaction, burnout, turnover intentions and pay fairness.

Conclusions

The nature of work in twenty-first-century organizations is noticeably different than that of the previous century. Technological changes, increased globalization, weakened organizational hierarchies and the rise of non-standard work relationships serve as catalysts for job crafting and compel individuals to make proactive changes to their jobs. Despite the importance of job crafting in today's organizations, and about two decades of concerted study, the literature to date has focused almost exclusively on individual and job levels of analysis. This is not surprising given the much-lamented micro-macro chasm in management and related fields (Aguinis *et al.*, 2011) and that most scholarship has originated in human resource and organizational behavior domains, which are particularly interested in individual- and job-level phenomena. Nonetheless, there is ample research depicting the need to better contextualize management research. The collective evidence presented here is consistent with this concern and provides evidence for the need to integrate occupational context into job crafting theory and practice.

Implications for theory and future research

Our empirical evidence clearly indicates that an understanding of why job crafting occurs requires paying attention to the occupations in which individuals work. Study 1 showed that a significant amount of variance in crafting is systematically explained by occupations and provide evidence that overall levels of job crafting are valid descriptive properties of occupations and reflect bottom-up compositional properties. Such evidence further suggests that theoretical conceptualizations that do not explicitly address factors at the occupational level of analysis are likely to provide only a limited understanding of why and when job crafting occurs.

Beyond considering occupations from an omnibus perspective, our results provided evidence that two discrete features of occupations (autonomy and autonomy-crafting) explained job crafting variance. Regarding autonomy, Study 1 showed that the effects of occupation-level autonomy on crafting were mostly unsupported and actually negative for role activities involving data, mental processes and work output. These results, which address occupational predictors of crafting, are contrary to prior research that has focused on the job level of analysis where autonomy is a positive predictor of job crafting (Morgeson *et al.*, 2005). Such findings again show the value of applying an occupational lens to job crafting because autonomy seems to be a positive predictor of crafting when considered at the job level and a non-significant and even negative predictor of crafting when considered at the occupation level. Prior theory notes that context sometimes “flips” the direction of expected effects (Johns, 2006), which is consistent with these results. One possible reason for this effect is that autonomy at the occupation level, added to autonomy at the job level, may become “too much of a good thing” (Pierce and Aguinis, 2013). Perhaps too much autonomy in the occupational context could increase role ambiguity, which, in turn, lessens the facilitative effects of job-level autonomy on job crafting. Future multilevel research could examine this possibility and inform not only job crafting scholarship but also the literature on autonomy that has generally neglected higher-level influences.

The second occupation-level predictor in Study 1, autonomy-crafting, refers to behaviors aimed at increasing discretion at work (versus changes to specific activities). Results showed that this variable explained differences in job crafting across occupations and was highly consistent and positive across all of the role activities we examined. This evidence not only supports previous speculation that crafting can be directed at creating more

autonomy in one's job but also suggests that a reason why individual job crafting occurs is that some occupations are characterized by more collective efforts to increase discretion. This context, in turn, promotes individuals' efforts to change the task and relational boundaries of their own particular jobs. Such findings are congruent with the idea that job crafting is a form of proactive behavior which can be directed at changes in oneself and one's situation (Parker *et al.*, 2010). Future research that examines the interplay between autonomy-crafting at the occupation and job levels and the effects on job crafting of activities would allow for a more comprehensive depiction of how these proactive behaviors operate. Because crafting is thought to facilitate self-adaptation (Frese and Fay, 2001), it seems imperative to examine connections among forms of crafting behavior.

Another implication is related to the fact that occupations tend to span multiple organizations. Considering the declining duration of tenure in today's workplace, this fact opens the possibility for expanding job crafting research to other variables more stable to an individual's career. People are very likely to work for multiple organizations but less likely to work in various occupations. The effects we found further reinforce the utility of occupation-level variables for future research. For example, occupational values (independence, altruism, etc.) could be candidates, as work design research has shown that these values exert top-down effects on the emergence of work characteristics and moderate individual-level effects of work designs on outcomes such as job satisfaction (Dierdorff and Morgeson, 2013). Because occupational values reflect patterns of reinforced behavior, they seem likely to shape the prevalence and outcomes of job crafting.

Results from Study 2 indicate that job crafting is an important mediating mechanism between job-level autonomy and individual-level outcomes including job satisfaction, burnout, turnover intentions and pay fairness. Perhaps, more importantly, results from Study 2 expand the conceptual landscape for job crafting by showing that the mediating effect of job crafting is amplified in certain contexts. The positive effect of job-level autonomy on individual-level outcomes through job crafting becomes stronger in occupations that facilitate such behavior (i.e. those characterized by high levels of collective job crafting). This top-down moderating effect of occupations on individual-level processes suggests, once again, that ignoring occupation-level crafting precludes a complete understanding of when job crafting is a weaker or stronger mechanism conveying the effects of job-level autonomy on important individual outcomes.

Although we examined the effects that occupations hold for job crafting, the fact that we find higher-level influences on individual job crafting suggests that future research should investigate other supra-individual factors. For example, formal authority can affect the reasons for engaging in crafting (Berg *et al.*, 2010), and socially supportive environments might bolster proactive behavior (Parker *et al.*, 2010). This implies that future research should investigate organizational factors, such as climate or structure, for effects on job crafting. Decentralized structures with fewer layers of formal authority are likely to foster discretion, and job crafting might be one way such discretion manifests. The technical systems of organizations reflect processes by which inputs are transformed into outputs and thus could amplify or constrain occurrences of job crafting. For instance, if changes in jobs are not aligned with organizational processes, then job crafting could be problematic (Lyons, 2008). Finally, some argue that recent workplace changes decrease the clarity around what behavior is valued by the organization, and this lack of consensus, while perhaps beneficial for individual creativity such as job crafting, could have higher-level deleterious effects by undermining how crafting is translated into team- or unit-level innovations (Bartel and Wiesenfeld, 2013). Future studies are needed to examine the multilevel mechanisms that shape the value, outcomes and occurrence of crafting.

Implications for practice

Job crafting is an unavoidable and pervasive phenomenon in the contemporary workplace. Thus, it is not surprising that there is substantial interest in job crafting on the part of practitioners attempting to enhance individual and team performance. Our results suggest several implications for practice. First, our results imply the value of interventions directed at increasing crafting behavior. One such intervention is designing work to increase autonomy because our results suggest increases in job autonomy are associated with more job crafting. Yet, a second implication for practice is that job autonomy does not always lead to more job crafting. Occupations play an important role in this process. Although it is likely that job crafting occurs as autonomy increases, our findings suggest that there will be ceiling effects for crafting-inducing interventions that ignore the broader occupation in which the jobs are embedded.

Job crafting is indeed linked to a host of positive outcomes for individuals. Yet, we found that it does not always hold beneficial consequences. For example, our results show that job crafting is associated with increased burnout. Thus, it is important to recognize such job crafting trade-offs and perhaps include interventions that help to ameliorate them, especially considering the increased blurring of work-life boundaries in the contemporary world of work that serve to exacerbate stress, strain and burnout. For instance, efforts to reduce “hindrance demands,” such as role ambiguity and role conflict, and those to increase job resources, such as positive social climate and opportunities for development, have been shown to decrease burnout in previous meta-analytic work (Crawford *et al.*, 2010). Moreover, the “when” of job crafting could also hold implications for burnout, as there is some evidence that early crafting efforts that increase job resources can lead to subsequent reductions in burnout (Tims *et al.*, 2013).

Concluding comments

Job crafting is about how people choose to enact their jobs, but our understanding of this phenomenon is incomplete without a consideration of factors that go beyond individuals. Reasons why job crafting occurs are rooted in individual-level factors, and the effects of job crafting are clearly observed at the individual level of analysis. An expanded view of job crafting that includes, but also goes beyond, the individual offers great promise for a deeper understanding of the crafting phenomenon. Our research reinforces the potential of an occupational lens as a meaningful way forward. Put simply, much is to be gained by placing and studying job crafting within occupational contexts.

Notes

1. Systematic effects can also include idiosyncratic variance and variance due to external factors such as employing organizations. We are confident to attribute variance to job crafting because O*NET uses a data collection protocol designed to eliminate organizational effects. This is accomplished through stratified random sampling, whereby incumbents for a given occupation are representatively sampled from different kinds of organizations that proportionally employ the occupation in the US economy (DOLETA, 2018). This procedure minimizes the likelihood that non-random variance in a given occupation is due to organizations in which people work.
2. Examining occupational effects necessitated the use of archival data, which limited the operationalization of job-level crafting. Job-level crafting is a complex phenomenon that has been measured using different multi-item scales. Work design scholarship has noted that scope of activities performed by an individual are not simply dictated by management, but rather are

shaped by incumbents themselves (Parker *et al.*, 2016). Thus, a valuable way to view job-level crafting is through the enactment of a variety of activities as part of one's job. This notion is directly reflected in the item we used to represent job-level crafting.

References

- Aguinis, H. and Culpepper, S.A. (2015), "An expanded decision making procedure for examining cross-level interaction effects with multilevel modeling", *Organizational Research Methods*, Vol. 18 No. 2, pp. 155-176.
- Aguinis, H., Gottfredson, R.K. and Culpepper, S.A. (2013), "Best-practice recommendations for estimating cross-level interaction effects using multilevel modeling", *Journal of Management*, Vol. 39 No. 6, pp. 1490-1528.
- Aguinis, H., Boyd, B.K., Pierce, C.A. and Short, J.C. (2011), "Walking new avenues in management research methods and theories: bridging micro and macro domains", *Journal of Management*, Vol. 37, pp. 395-403.
- Bakker, A.B., Tims, M. and Derks, D. (2012), "Proactive personality and job performance: the role of job crafting and work engagement", *Human Relations*, Vol. 65 No. 10, pp. 1359-1378.
- Bartel, C.A. and Wiesenfeld, B.M. (2013), "The social negotiation of group prototype ambiguity in dynamic organizational contexts", *Academy of Management Review*, Vol. 38 No. 4, pp. 503-524.
- Bauer, D.J., Preacher, K.J. and Gil, K.M. (2006), "Conceptualizing and testing random indirect effects and moderated mediation in multilevel models: new procedures and recommendations", *Psychological Methods*, Vol. 11 No. 2, pp. 142-163.
- Berg, J.M., Grant, A.M. and Johnson, V. (2010), "When callings are calling: crafting work and leisure in pursuit of unanswered occupational callings", *Organization Science*, Vol. 21 No. 5, pp. 973-994.
- Berg, J.M., Wrzesniewski, A. and Dutton, J.E. (2010), "Perceiving and responding to challenges in job crafting at different ranks: when proactivity requires adaptivity", *Journal of Organizational Behavior*, Vol. 31 Nos 2/3, pp. 158-186.
- Bhave, D.P. and Glomb, T.M. (2016), "The role of occupational emotional labor requirements on the surface acting–job satisfaction relationship", *Journal of Management*, Vol. 42 No. 3, pp. 722-741.
- Cascio, W.F. and Aguinis, H. (2019), *Applied Psychology in Talent Management*, 8th ed., Sage, Thousand Oaks, CA.
- Childs, R.A., Peterson, N.G. and Mumford, M.D. (1999), "Occupational descriptor covariates: potential sources of variance in O*NET ratings", in Peterson, N., Mumford, M., Borman, W., Jeanneret, R. and Fleishman E. (Eds), *An Occupational Information System for the 21st Century: The Development of O*NET*, APA, Washington, DC, pp. 237-246.
- Cohen, L.E. (2013), "Assembling jobs: a model of how tasks are bundled into and across jobs", *Organization Science*, Vol. 24 No. 2, pp. 432-454.
- Crant, J.M. (2000), "Proactive behavior in organizations", *Journal of Management*, Vol. 26 No. 3, pp. 435-462.
- Crawford, E.R., LePine, J.A. and Rich, B.L. (2010), "Linking job demands and resources to employee engagement and burnout: a theoretical extension and Meta-analytic test", *Journal of Applied Psychology*, Vol. 95 No. 5, pp. 834-848.
- Dawis, R.V. and Lofquist, L.H. (1984), *A Psychological Theory of Work Adjustment: An Individual-Differences Model and its Applications*, University of Minnesota Press, Minneapolis, MN.
- Dierdorff, E.C. and Ellington, J.K. (2008), "It's the nature of the work: examining behavior-based sources of work-family conflict across occupations", *Journal of Applied Psychology*, Vol. 93 No. 4, pp. 883-892.

- Dierdorff, E.C. and Jensen, J.M. (2018), "Crafting in context: exploring when job crafting is dysfunctional for performance effectiveness", *Journal of Applied Psychology*, Vol. 103, pp. 463-477.
- Dierdorff, E.C. and Morgeson, F.P. (2007), "Consensus in work role requirements: the influence of discrete occupational context on role expectations", *The Journal of Applied Psychology*, Vol. 92 No. 5, pp. 1228-1241.
- Dierdorff, E.C. and Morgeson, F.P. (2013), "Getting what the occupation gives: exploring multilevel links between work design and occupational values", *Personnel Psychology*, Vol. 66 No. 3, pp. 687-721.
- Dierdorff, E.C., Rubin, R.S. and Bachrach, D.G. (2012), "Role expectations as antecedents of citizenship and the moderating effects of work context", *Journal of Management*, Vol. 38 No. 2, pp. 573-598.
- Dierdorff, E.C., Rubin, R.S. and Morgeson, F.P. (2009), "The milieu of managerial work: an integrative framework linking work context to role requirements", *Journal of Applied Psychology*, Vol. 94 No. 4, pp. 972-988.
- Fine, S.A. and Cronshaw, S.F. (1999), *Functional Job Analysis: A Foundation for Human Resources Management*, Lawrence Erlbaum Associates Publishers, Mahwah, NJ.
- Fisher, G. and Aguinis, H. (2017), "Using theory elaboration to make theoretical advancements", *Organizational Research Methods*, Vol. 20 No. 3, pp. 438-464.
- Frese, M. and Fay, D. (2001), "Personal initiative: an active performance concept for work in the 21st century", *Research in Organizational Behavior*, Vol. 23, pp. 133-187.
- Frese, M., Garst, H. and Fay, D. (2007), "Making things happen: reciprocal relationships between work characteristics and personal initiative in a four-wave longitudinal structural equation model", *Journal of Applied Psychology*, Vol. 92 No. 4, pp. 1084-1102.
- Grandey, A.A., Kern, J.H. and Frone, M.R. (2007), "Verbal abuse from outsiders versus insiders: comparing frequency, impact on emotional exhaustion and the role of emotional labor", *Journal of Occupational Health Psychology*, Vol. 12 No. 1, pp. 63-79.
- Grant, A.M. and Ashford, S.J. (2008), "The dynamics of proactivity at work", *Research in Organizational Behavior*, Vol. 28, pp. 3-34.
- Harvey, R.J. (1991), "Job analysis", in Hough L. (Ed.), *Handbook of Industrial and Organizational Psychology*, Consulting Psychologists Press, Palo Alto, CA, Vol. 2, pp. 71-163.
- Humphrey, S.E., Nahrgang, J.D. and Morgeson, F.P. (2007), "Integrating motivational, social and contextual work design features: a meta-analytic summary and theoretical extension of the work design literature", *Journal of Applied Psychology*, Vol. 92 No. 5, pp. 1332-1356.
- Jeanneret, P.R., Borman, W.C., Kubisiak, U.C. and Hanson, M.A. (1999), "Generalized work activities", in Peterson, N., Mumford, M., Borman, W., Jeanneret, R. and Fleishman E. (Eds), *An Occupational Information System for the 21st Century: The Development of O*NET*, APA, Washington, DC, pp. 105-125.
- Johns, G. (2006), "The essential impact of context on organizational behavior", *Academy of Management Review*, Vol. 31 No. 2, pp. 386-408.
- Katz, D. and Kahn, R.L. (1978), *The Social Psychology of Organizing*, Wiley, New York, NY.
- Kenny, D.A., Korchmaros, J.D. and Bolger, N. (2003), "Lower level mediation in multilevel models", *Psychological Methods*, Vol. 8 No. 2, pp. 115-128.
- Kozlowski, S.W. and Klein, K.J. (2000), "A multilevel approach to theory and research in organizations: contextual, temporal, and emergent processes", in Klein, K. and Kozlowski, S. (Eds), *Multilevel Theory, Research and Methods in Organizations: Foundations, Extensions and New Directions*, Jossey-Bass, San Francisco, CA, pp. 3-90.
- Leana, C., Appelbaum, E. and Shevchuk, I. (2009), "Work process and quality of care in early childhood education: the role of job crafting", *Academy of Management Journal*, Vol. 52 No. 6, pp. 1169-1192.

- Lievens, F., Sanchez, J.I., Bartram, D. and Brown, A. (2010), "Lack of consensus among competency ratings of the same occupation: noise or substance?", *Journal of Applied Psychology*, Vol. 95 No. 3, pp. 562-571.
- Liu, C., Spector, P. and Jex, S. (2005), "The relation of job control with job strains: a comparison of multiple data sources", *Journal of Occupational and Organizational Psychology*, Vol. 78 No. 3, pp. 325-336.
- Lyons, P. (2008), "The crafting of jobs and individual differences", *Journal of Business and Psychology*, Vol. 23 Nos 1/2, pp. 25-36.
- Mischel, W. (1973), "Toward a cognitive social learning reconceptualization of personality", *Psychological Review*, Vol. 80 No. 4, pp. 252-283.
- Morgeson, F.P. and Dierdorff, E.C. (2011), "Job and work analysis: from technique to theory", in Zedeck, S. (Ed.), *APA Handbook of Industrial and Organizational Psychology*, APA, Washington, DC, pp. 3-41.
- Morgeson, F.P., Dierdorff, E.C. and Hmurovic, J.L. (2010), "Work design in situ: understanding the role of occupational and organizational context", *Journal of Organizational Behavior*, Vol. 31 Nos 2/3, pp. 351-360.
- Morgeson, F.P., Delaney-Klinger, K. and Hemingway, M.A. (2005), "The importance of job autonomy, cognitive ability, and job-related skill for predicting role breadth and job performance", *Journal of Applied Psychology*, Vol. 90 No. 2, pp. 399-406.
- Natali, M.W., Walmsley, P.T. and Campbell, J.P. (2012), "Latent structure of O*NET: nothing but data-people-things?", paper presented at the Annual Conference of the Society for Industrial and Organizational Psychology, San Diego, CA.
- Oldham, G.R. and Hackman, J.R. (2010), "Not what it was and not what it will be: the future of job design research", *Journal of Organizational Behavior*, Vol. 31 Nos 2/3, pp. 463-479.
- Parker, S.K. and Ohly, S. (2008), "Designing motivating jobs: an expanded framework for linking work characteristics and motivation", in Kanfer, R., Chen G. and Pritchard, R.D. (Eds), *Work Motivation: Past, Present and Future*, LEA/Psychology Press, New York, NY, pp. 233-284.
- Parker, S., Van den Broeck, A. and Holman, D. (2016), "Work design influences: a synthesis of multi-level factors that affect the design of work", *Academy of Management Annals*, Vol. 11 No. 1, pp. 267-308.
- Parker, S.K., Bindl, U.K. and Strauss, K. (2010), "Making things happen: a model of proactive motivation", *Journal of Management*, Vol. 36 No. 4, pp. 827-856.
- Parker, S.K., Wall, T.D. and Jackson, P.R. (1997), "That's not my job": developing flexible employee work orientations", *Academy of Management Journal*, Vol. 40 No. 4, pp. 899-929.
- Peters, L.H. and O'Connor, E.J. (1980), "Situational constraints and work outcomes: the influences of a frequently overlooked construct", *Academy of Management Review*, Vol. 5 No. 3, pp. 391-397.
- Peterson, N.G., Mumford, M.D., Borman, W.C., Jeanneret, P.R., Fleishman, E.A., Levin, K., Campion, M.A., Mayfield, M.S., Morgeson, F.P., Pearlman, K., Gowing, M.K., Lancaster, A. R., Silver, M.B. and Dye, D.M. (2001), "Understanding work using the occupational information network (O*NET): implications for practice and research", *Personnel Psychology*, Vol. 54 No. 2, pp. 451-492.
- Petrou, P., Demerouti, E., Peeters, M.C., Schaufeli, W.B. and Hetland, J. (2012), "Crafting a job on a daily basis: contextual correlates and the link to work engagement", *Journal of Organizational Behavior*, Vol. 33 No. 8, pp. 1120-1141.
- Pierce, J.R. and Aguinis, H. (2013), "The too-much-of-a-good-thing effect in management", *Journal of Management*, Vol. 39 No. 2, pp. 313-338.
- Preacher, K.J., Curran, P.J. and Bauer, D.J. (2006), "Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis", *Journal of Educational and Behavioral Statistics*, Vol. 31 No. 4, pp. 437-448.

- Sanchez, J.I. and Levine, E.L. (2012), "The rise and fall of job analysis and the future of work analysis", *Annual Review of Psychology*, Vol. 63, pp. 397-425.
- Staw, B.M. and Boettger, R.D. (1990), "Task revision: a neglected form of work performance", *Academy of Management Journal*, Vol. 33 No. 3, pp. 534-559.
- Strong, M.H., Jeanneret, P.R., McPhail, S.M., Blakey, B.R. and D'Egidio, E.L. (1999), "Work context: taxonomy and measurement of the work environment", in Peterson, N.G., Mumford, M.D., Borman, W.C., Jeanneret, P.R. and Fleishman, E.A. (Eds), *An Occupational Information System for the 21st Century: The Development of ONET*, American Psychological Association, Washington, DC, pp. 127-146.
- Tims, M., Bakker, A.B. and Derks, D. (2012), "Development and validation of the job crafting scale", *Journal of Vocational Behavior*, Vol. 80 No. 1, pp. 173-186.
- Tims, M., Bakker, A.B. and Derks, D. (2013), "The impact of job crafting on job demands, job resources, and well-being", *Journal of Occupational Health Psychology*, Vol. 18 No. 2, pp. 230-240.
- Trice, H.M. (1993), *Occupational Subcultures in the Workplace*, ILR Press, Ithaca, NY, Cornell University.
- US Department of Labor Employment and Training Administration (2018), "O*NET data collection program office of management and budget clearance package supporting statement part B: Statistical methods", Washington, DC.
- Wanous, J.P. and Hudy, M.J. (2001), "Single-item reliability: a replication and extension", *Organizational Research Methods*, Vol. 4 No. 4, pp. 361-375.
- Wolman, H. and Hincapie, D. (2015), "Clusters and cluster-based development policy", *Economic Development Quarterly*, Vol. 29 No. 2, pp. 35-149.
- Wrzesniewski, A. and Dutton, J.E. (2001), "Crafting a job: revisioning employees as active crafters of their work", *Academy of Management Review*, Vol. 26 No. 2, pp. 179-201.
- Zhang, Z., Zyphur, M.J. and Preacher, K.J. (2009), "Testing multilevel mediation using hierarchical linear models problems and solutions", *Organizational Research Methods*, Vol. 12 No. 4, pp. 695-719.

Further reading

- Niessen, C., Weseler, D. and Kostova, P. (2016), "When and why do individuals craft their jobs? The role of individual motivation and work characteristics for job crafting", *Human Relations*, Vol. 69 No. 6, pp. 1287-1313.

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