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Benefiting the organization while helping yourself: a three-wave study of reciprocal effects between job crafting and innovative work behaviour

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ABSTRACT

Most employees proactively alter their jobs to improve their functioning at work. Such self-initiated behaviours, referred to as job crafting, are primarily intended to benefit the employees themselves. This study contrasts the self-serving nature of job crafting by hypothesizing its positive, reciprocal relationship with a form of work behaviour which primarily benefits organizations – innovative work behaviour (IWB). Drawing upon Conservation of Resources theory, we test a novel perspective suggesting that job crafting and IWB can perpetuate each other by forming gain cycles. Furthermore, we examine whether participative decision making (PDM) can instigate these gain cycles by enhancing subsequent job crafting and IWB. These research hypotheses were tested using three-wave survey data collected from employees (N = 404) within the Belgian higher education sector. The results demonstrate that not only does job crafting relate to subsequent increases in IWB, but also that IWB relates to subsequent increases in job crafting over three measurements occasions. In contrast, PDM did not predict subsequent changes in either form of work behaviour. We discuss these results in light of their contributions to advancing theoretical understanding of the job crafting-IWB relationship and practices intended to promote gain cycles beneficial to employees and employers alike.

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Job crafting; innovative work behaviour; participative decision making; gain cycle

Introduction

Job crafting refers to self-initiated changes employees make to various aspects of their jobs, such as their work tasks, relationships, and physical work environment (Leana et al., 2009; Wrzesniewski & Dutton, 2001) for the purpose of increasing their own well-being, work-related attitudes and/or behaviour (Vanbelle, 2017; Vanbelle, et al., 2017). As such, it represents a bottom-up job redesign approach wherein employees themselves initiate, and are empowered by, improving the design of their jobs (Bakker & Demerouti, 2017) and complements top-down interventions by organizational managers to enhance employee well-being and performance. Importantly, unlike top-down strategies, job crafting enables employees to alter their jobs in ways that fit their unique needs, abilities, and preferences (Tims & Bakker, 2010).

As such, job crafting has been situated in the literature as a set of behaviours primarily initiated by employees with the intent to accomplish personal goals benefiting themselves (Bruning & Campion, 2018; Vanbelle, 2017; Zhang & Parker, 2019) and motivated by a desire to assert control over the work environment, enhance meaningfulness of work, and improve person-job fit (Niessen et al., 2016; Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001). While such motives and crafting behaviours may be incidentally beneficial to the organization, research suggests that the benefits for others in employees' social work context (e.g., co-workers and supervisors) are not always straightforward, nor visible (Fong et al., 2021; Tims & Parker, 2020). Indeed, the self-serving nature of crafting efforts can lead to antagonized co-workers' reactions towards a crafter (e.g., complaints, less prosocial behaviour, and more social undermining; Dong et al., 2022; Tims & Parker, 2020) and decreased supervisor support (Fong et al., 2021). These unintended negative social consequences may discourage managers from promoting job crafting among their employees (Tims & Parker, 2020). *Therefore, the purpose of the present study is to explore one highly valued, yet empirically overlooked, benefit that organizations might reap from encouraging employees' crafting efforts, namely enhanced innovative work behaviour (IWB).*

IWB captures intentional behaviours through which employees introduce and apply new and useful ideas, processes, products, and procedures within a work role, group, or organization and are intended to benefit the individual, the group, or the wider society (West & Farr, 1990). As such, individual-level IWB is considered crucial for organizational competitive advantage in today's dynamic and unpredictable economic environments. However, despite its high value for organizational progress and success (Anderson et al., 2014), surprisingly few studies (e.g., Afsar et al., 2019; Bindl et al., 2019; Khan et al., 2020) have examined IWB in relation to job crafting (cf. Lee & Lee, 2018). Furthermore, the few extant studies unequivocally conceptualized this relationship as strictly unidirectional, implying that IWB only occurs as an

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outcome of job crafting, and methodologically tested this proposition using predominantly cross-sectional research designs. Drawing upon Conservation of Resources (COR) theory (Hobfoll et al., 2018), we instead argue that job crafting and IWB perpetuate each other by forming gain cycles that develop over time through the accumulation of employee resources and test this proposition using a three-wave full panel research design.

Furthermore, to increase the practical utility of our study, we additionally examine a potential organizational antecedent that can jumpstart this proposed beneficial gain cycle. Using COR theory, we posit that participative decision making (PDM; i.e., the extent to which employees are encouraged to engage in organizational decisions; Evans & Fischer, 1992) represents an organizational resource that can prompt employees to engage in both job crafting and IWB. Accordingly, we propose and test a longitudinal research model in which (a) job crafting and IWB relate positively and reciprocally to each other over time and (b) PDM is an antecedent of both forms of employee behaviour (see Figure 1). In addition to the proposed direct effects, the model also proposes two indirect effects linking PDM to job crafting through IWB and linking PDM to IWB through job crafting.

In all, the present study aims to contribute to the literature in two ways. First, by focusing on IWB – an organizationally crucial, yet rarely studied outcome of job crafting – it strengthens the evidence on the valuable benefits organizations can reap from encouraging employees to change their jobs in idiosyncratic ways. In doing so, the study, for the first time, examines the dynamic relationship between job crafting and IWB conceptualized in the form of the gain cycles that ensue over time benefiting employees and organizations alike. Second, by examining PDM as an antecedent of both job crafting and IWB, our intention is to identify one practical way that organizations might initiate these beneficial gain cycles.

Job crafting and employee performance

In this paper, we subscribe to Vanbelle's (2017) broad conceptualization of job crafting defined as "self-initiated changes employees make to their job in order to optimize their functioning in terms of well-being, attitudes or behaviour (p. 35)." Such an approach is simultaneously more comprehensive than the role-based approach offered by Wrzesniewski and Dutton (2001), which only focuses on specific task, relational and cognitive means of crafting one's job, yet less narrowly defined than the resource-based approach utilized by Tims et al. (2012) which requires the assessment of specific changes to structural job resources (e.g., developmental opportunities), social job resources (e.g., support from colleagues), challenging job demands (e.g., involvement in complex project) and/or hindering job demands (e.g., emotional demands). In contrast, the broader overarching conceptualization (and accompanying job crafting scale) derived from Vanbelle (2017) accounts for a wide range of plausible changes employees make to their jobs and enables us to focus on the explicitly stated pro-self-focused (i.e., self-serving) purpose of job crafting, i.e., the optimization of one's work-related functioning in terms of well-being, attitudes, and behaviour. We deemed this approach more appropriate so as not to limit our conceptualization (and operationalization) to a set of *a priori* defined specific job crafting dimensions given the still scarce knowledge on the job crafting-IWB relationship. Furthermore, the Vanbelle (2017) operationalization incorporates the self-serving aspect of job crafting which comports with the aim of our study.

Extant longitudinal research testing the relationship between job crafting and employee performance has mainly focused on in-role performance (i.e., work behaviour derived from employees' job description directly supporting organizational functioning) and to some less extent, extra-role performance often referred to as organizational citizenship behaviour (OCB; i.e., work behaviour that is not part of employees' formal job requirements, but that indirectly supports organizational effectiveness, such as helping a co-worker) (Williams & Anderson, 1991). For example, Tims et al. (2015) found that increasing structural and social resources and challenging job demands (operationalized as one latent factor) positively related to subsequent in-role performance (via work engagement), whereas decreasing hindering job demands negatively related to in-role performance over time. Dubbelt et al. (2019) demonstrated that an increase in seeking resources was related to higher subsequent levels of in-role performance. In contrast, an increase in decreasing hindering demands was related to lower levels of in-role performance whereas changes in seeking challenging demands were unrelated to subsequent

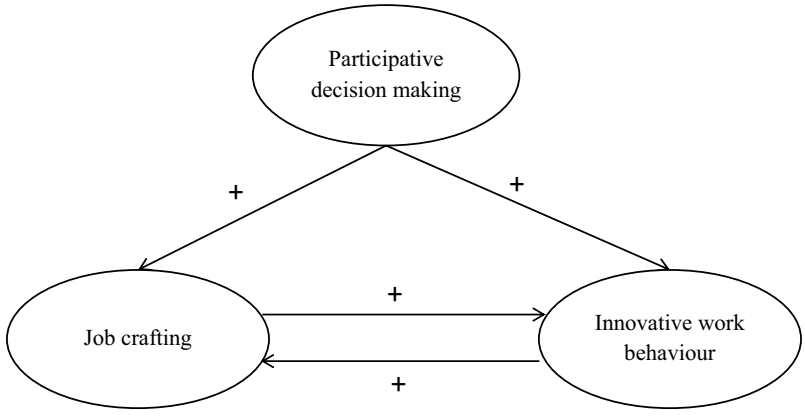

Figure 1. The hypothesized reciprocal causation model.

performance. Miraglia et al. (2017) showed that job crafting (operationalized as increasing structural and social resource and increasing challenging job demands) predicted higher levels of supervisor-rated in-role performance over time. Finally, Petrou et al. (2015) demonstrated that seeking resources associated with higher in-role performance over time during organizational change. The remaining two examined job crafting dimensions (i.e., seeking challenges and reducing demands) were unrelated to performance.

In contrast to the abundance of studies addressing in-role performance, we are aware of only a few studies (e.g., Afsar et al., 2019; Bindl et al., 2019; Khan et al., 2020; Uen et al., 2021) that have specifically examined IWB as a performance-related outcome of job crafting. Moreover, these studies predominantly used cross-sectional design (e.g., Afsar et al., 2019; Khan et al., 2020), whereas only two studies, to our knowledge, have investigated temporally lagged relationships with IWB (Bindl et al., 2019; Uen et al., 2021). Using a sample of UK workers, Bindl et al. (2019) showed that job crafting at baseline was positively related to IWB 3 weeks later. Uen et al. (2021), using data collected among employees from Taiwan and a 1-week interval, reported the positive association between team-level job crafting and individual IWB. Although these studies indicate a temporally lagged positive association between job crafting and IWB, they did not control for prior levels of IWB, omitting the examination of across-time change in this variable. In contrast, the present study employs a full panel three-wave research design which enables us to establish not only whether an across-time change in IWB is predicted by job crafting, but also whether the relationship between job crafting and IWB unfolds reciprocally over time, as outlined by the COR theory. Specifically, we propose that employees who change, shape, and mould their jobs may more easily come into the possession of resource surpluses (e.g., high levels of job autonomy and self-efficacy) that are crucial for the enactment of IWB. Moreover, engaging in IWB may lead to further resource acquisition (e.g., increased psychological empowerment and recognition from supervisors). Such resources may prompt further job crafting (Zhang & Parker, 2019), thereby continuing the gain cycle.

Job crafting and IWB: forming a gain cycle

The effect of job crafting on IWB

COR theory is one of the most influential motivational theories that has also been extensively used in job crafting research (Harju et al., 2016; Vogt et al., 2016). According to COR theory, human behaviour is guided by the innate need to possess resources – objects (e.g., house, tools for work), conditions (e.g., employment, tenure), personal resources (e.g., self-efficacy, social support), and energies (e.g., time, knowledge) that people centrally value as such or that serve as means to obtain those valued entities (Hobfoll, 2002). For that reason, people behave in ways that enable them to accumulate, foster and protect their resources (Hobfoll et al., 2018). In other words, people are driven by pro-self-targeted needs and tend to behave in self-serving ways that increase their chances of survival and welfare (Hobfoll et al., 2018). Applying this basic tenet of COR theory, we comport with previous studies adopting a resource perspective on job crafting to suggest that individuals assess the available resources and craft their jobs in the best way to invest them in building further resources (Harju et al., 2016).[1] As a result, job crafters' self-serving efforts to build and enrich their resource reservoirs enable them to optimize their functioning at work.

For example, to optimize their work-related well-being and behaviour, employees may proactively set challenge goals and seek areas to improve (Afsar et al., 2019; Tims & Bakker, 2010), as well as change the quality or boundaries of workplace interactions to build broader and deeper social connections with their colleagues (Wrzesniewski et al., 2013). Research shows that such self-serving endeavours are associated with increased levels of employee resources, for example high levels of job autonomy and support from colleagues and supervisor (Tims et al., 2013), vigour (Tims et al., 2013), flourishing (Bakker et al., 2012; Demerouti et al., 2015; Tims et al., 2015), and work enjoyment (Tims et al., 2013, 2014). Resource surpluses make employees less vulnerable to resource loss and more capable of further resource investments (Hobfoll et al., 2018). Therefore, we suggest that job crafters have a richer resource reservoir needed for going the extra mile in the form of IWB.

Empirical evidence supports this contention. For example, Tims et al. (2013) demonstrated that crafting structural and social job resources was associated with increased levels of corresponding resources (e.g., job autonomy and variety, and social support from colleagues and leader-member exchange (LMX), respectively). Harju et al. (2021) found that employees who crafted their jobs by increasing its positive aspects (e.g., striving for interesting tasks) perceived increased job complexity[2] over time. Similarly, Wang et al. (2016b) found that changes in job crafting positively related to subsequent LMX and task complexity among a sample of newcomer employees. Other research has demonstrated that job crafting can increase job self-efficacy (Miraglia et al., 2017), psychological capital (Cenciotti et al., 2017; Vogt et al., 2016), and psychological empowerment (Matsuo, 2019). Notably, these same resources have been identified as powerful antecedents of employee IWB. For example, using nationally representative data from the European Working Conditions Survey, Dediu et al. (2018) demonstrated that job autonomy and complexity, and supervisor and colleague support positively predicted IWB. In a seminal meta-analysis on antecedents of IWB, Hammond et al. (2011) found positive associations between IWB and job autonomy, job complexity, colleague support, and LMX.

Increases in these resources stemming from pro-self-targeted efforts can lead to greater IWB for several reasons. For example, autonomy grants employees the freedom to generate new and useful ideas. When in control over their jobs, employees feel being capable, trusted, and responsible for their work outcomes (Dediu et al., 2018). In comparison to monotonous and repetitive tasks, complex jobs are generally more enjoyable and rewarding, feelings that induce intrinsic work motivation considered essential for IWB (Waples & Friedrich, 2011). Employees experiencing a high-quality relationship with their leader (i.e., high LMX) feel appreciated and acknowledged which gives them more confidence to experience with new ideas, procedures and solutions (Hammond et al., 2011).

Similarly, supportive collegial relationships encourage knowledge sharing which facilitates IWB (Dediu et al., 2018). Furthermore, increased personal resources (i.e., psychological capital and empowerment, job-related self-efficacy) positively relate to IWB, as such employees have higher confidence in their abilities to engage in IWB, are more resilient to failures and setbacks accompanying IWB, and generally feel more in control and actively oriented towards their job which enhances their motivation for IWB (Hammond et al., 2011; Luthans et al., 2011; Miraglia et al., 2017; Schermuly et al., 2013).

Thus, based on COR theory, studies indicating that self-serving crafting efforts are associated with increased resources, a key to the enactment of IWB over time, and available research examining the job crafting-IWB relationship, we hypothesize that:

Hypothesis 1: Job crafting will be positively related to subsequent changes in IWB.

The effect of IWB on job crafting

Despite the longstanding scholarly interest in employee innovative performance (Anderson et al., 2014), only recently have researchers started adopting a dynamic perspective on this form of employee work behaviour. Instead of conceptualizing it as an endpoint of individual efforts, they argued that IWB should be empirically treated as a self-sustaining process that develops over time through gain cycles (e.g., through fostering intrinsic motivation; Devloo et al., 2015). In a similar fashion, we acknowledge that innovation process does not necessarily end with employees' IWB. Rather, applying the assumptions of COR theory, we propose that engaging in IWB enables employees to accumulate various resources needed to fuel employee self-serving proactive behaviours. To the best of our knowledge, this is the first study that focuses on job crafting as an outcome of IWB.

Accordingly, we also postulate a reverse causal path from IWB to job crafting (i.e., a reciprocal relationship between the two). COR theory posits that resources travel in "packs" or "caravans" as ecological conditions in which individuals are belonged to foster and nurture resource creation (Hobfoll et al., 2018). Individuals who can craft their jobs are likely to be in the work environments where supporting, fostering, and enriching resources are facilitated, enabling resource gain cycles. In other words, job crafters mobilize and gain resources to engage in IWB, further accumulate other resources (e.g., psychological empowerment and supervisor's favourable appraisals) from IWB, and use these accumulated resources to support future job crafting. Thereby, the gain cycle continues.

Empirical support for this theoretical reasoning is relatively scarce in comparison to the process linking job crafting to IWB. However, available empirical findings do hint at the reciprocal nature of the relationship between IWB (or other forms of employee performance) and resources relevant for instigating self-serving crafting efforts. Devloo et al. (2015) demonstrated that the satisfaction of basic psychological needs predicts subsequent IWB through intrinsic motivation. They also found that IWB predicts subsequent basic need satisfaction. Based on these findings, the authors argued that engaging in IWB fuels a motivation chain by facilitating basic need satisfaction, which further fosters intrinsic motivation (Devloo et al., 2015). Furthermore, Lindsley et al. (1995) efficacy-performance spiral theory suggests that self-efficacy and performance relate reciprocally over time. Extant research supports this proposition by demonstrating that not only self-efficacy (Elias & MacDonald, 2007), but also related constructs such as psychological empowerment (Maynard et al., 2014), both precede and result from high levels of performance. Indeed, repeated performance successes (i.e., enactive mastery) have been framed as one of the most powerful sources of efficacy beliefs (Bandura, 1997). Applying these theoretical propositions and empirical findings to fine-tune COR theory, we propose that engagement in IWB, as another form of employee performance, may be a relevant source of employees' efficacy beliefs and psychological empowerment. Finally, emerging research suggests that supervisors are aware of employees' innovative efforts, and these perceptions affect their ratings of employee performance (Schuh et al., 2018). Since high performers earn positive supervisors' expectations for their abilities and efforts (Reb & Greguras, 2010), they also tend to have high quality relationships with their supervisor and be offered resources by them (e.g., delegation, Bauer & Green, 1996).

Extant research shows that the resources resulting from employee engagement in IWB predict higher levels of job crafting. In particular, Berdicchia et al. (2022) found that intrinsic motivation predicts subsequent job crafting. This finding can be understood along the premise that individuals who obtain psychological fulfilment are more likely to engage in activities that can facilitate further psychological fulfilment (Deci & Ryan, 2000), such as job crafting. In a previously mentioned study, Miraglia et al. (2017) showed that self-efficacy predicts subsequent increase in job crafting. Kooij et al. (2021) demonstrated that increase in job crafting is predicted by increase in psychological empowerment. The results of these studies indicate that employees with higher levels of personal resources feel more in control, more capable and more motivated to change their job in self-serving ways so that it fits their needs, abilities and preferences. Finally, Wang et al. (2016b) showed that LMX was positively associated with a change in job crafting. These results indicate that employees more readily engage in job crafting when they receive more emotional support and acknowledgement from their supervisor. Thus, comporting with COR theory and available empirical studies demonstrating that IWB can foster the accumulation of resources that have been shown to predict job crafting, we hypothesize that:

Hypothesis 2: IWB will be positively related to subsequent changes in job crafting.

PDM: an organizational resource prompting job crafting and IWB

Participative decision making (PDM) is the practice of encouraging and utilizing input from employees and has been used as a way to identify organizational challenges and solutions that

may not be immediately apparent from an executive perspective (Spector, 1986). Research indicates employees offered opportunities for PDM feel that they have a greater voice and are supported in the workplace (Evans & Fischer, 1992; Krishnan & Mary, 2012). In line with COR theory and efficacy-performance spiral theory, PDM may also allow employees to gain self-efficacy via repeated opportunities to shape key decisions within organizations.

As noted earlier, COR theory posits that gains in employee resources (via PDM and subsequent perceptions of control and organizational support, increased self-efficacy, recognition for contributions in the workplace, and strong employee-supervisor relationships) will result in a continued investment of resources, such as time and effort, in an attempt to obtain more resources (Hobfoll et al., 2018). Thus, we argue that PDM acts as an organizational resource providing employees with optimal conditions for resource investment, such as engaging in job crafting or IWB, and continued gain cycles.

The effect of PDM on job crafting

To our knowledge, this study is the first to examine the longitudinal direct effect of PDM on job crafting. However, available studies examining relationships between job crafting and constructs distinct, but close to PDM indicate that a relationship between the two might exist. For example, research demonstrates that job autonomy represents one of the foremost contextual precursors to job crafting (Rudolph et al., 2017; Vanbelle et al., 2017). Employees who have more autonomy, perceive more control over what they do, how and when they perform their jobs and more freedom to engage in self-governed changes of their job. In a similar manner, PDM opportunities can also induce discretion in employees' task execution, which may encourage their actual job crafting endeavours. However, the effects of PDM may surpass those of autonomy because PDM incorporates employees' discretion over higher-level organizational decisions, whereas job autonomy includes only lower-level discretion limited to employees' task assignments (Evans & Fischer, 1992). For that reason, PDM opportunities may enable employees to better understand, and in some cases, even influence strategic organizational decisions (Probst, 2005), both of which can provide employees with more confidence and opportunities to craft their jobs. Another stream of research relates to perceived support and managers' openness to ideas. For example, Kim et al. (2018) found that employees in the service industry who perceived that their organization was supportive (a conceptual outcome of PDM as noted above) were more likely to engage in job crafting behaviours. Further, scholars have suggested that employees may be more apt to engage in job crafting behaviours when leaders signal that they are open to new ideas and are willing to address employee needs (Parker et al., 2006; Wang et al., 2016a). We suggest that such signalling may occur when leadership utilizes PDM tactics in the workplace. In all, accounting for propositions of COR theory and presented empirical studies, we hypothesize that:

Hypothesis 3: PDM will be positively related to subsequent changes in job crafting.

The effect of PDM on IWB

As noted above, by participating in higher-level decisions, employees may feel more in control over their own job (Probst, 2005). As a result, they may feel more confident to engage in IWB. As PDM implies sharing influence with hierarchical superiors (Mitchell, 1973), employees may also feel more responsible for work outcomes and therefore, more motivated to improve current organizational practices, procedures, and products. PDM may also foster IWB through employees' direct influence on their superiors. Engaging in IWB sometimes implies taking risks and confronting obstacles and setbacks because such work behaviour, by definition, departs from well-established routinized activities (Dediu et al., 2018). For that reason, being empowered by opportunities to influence one's supervisor can be of paramount importance for experimenting with new ideas. On a related note, having PDM opportunities facilitates the flow of information between employees and their hierarchical superiors (Probst, 2005), which can be valuable for understanding ways in which the current state of organization can be improved.

The suggested positive longitudinal direct effect of PDM on IWB has been supported by recent studies demonstrating the positive relationship between the two constructs (e.g., AlMazrouei et al., 2022). Indirect empirical support is also found in studies demonstrating positive relationships between IWB and constructs similar to, but distinct from PDM, including autonomy (Dediu et al., 2018; Hammond et al., 2011) and participative leadership style (i.e., whereby supervisors seek out and utilize employee input on organizational decision making; De Jong & Den Hartog, 2010). Thus, based on the principles of COR theory and available empirical evidence, we hypothesize that:

Hypothesis 4: PDM will be positively related to subsequent changes in IWB.

Gain cycles initiated by PDM

Given the hypothesized positive effects of PDM on both job crafting and IWB, we propose that PDM initiates two separate but mutually beneficial gain cycles – the first one leading to increased IWB through job crafting and the second one leading to increased job crafting through IWB. While no prior research has examined these proposed mediating effects, there is some evidence to suggest that employee proactivity (an antecedent of job crafting) mediates the relationship between LMX and IWB. For example, Park and Jo (2018) found that employees who were more likely to engage in IWB were those who worked with their supervisor to accomplish mutually beneficial goals in the organization. This effect was fully mediated by employees' proactivity. Taken together, we hypothesize that:

Hypothesis 5: PDM will be positively related to subsequent changes in IWB via job crafting.

Hypothesis 6: PDM will be positively related to subsequent changes in job crafting via IWB.

Method

Participants and procedure

Our hypotheses were tested using anonymous online survey data collected within three higher education institutions located in Belgium. Approval for the study was obtained by the SMEC counsel (file number: G-2017 12 1039) and the board of the institutions, who additionally explained the purpose of the study to all employees. Data were collected during 2018 at three measurement occasions with a time-lag of 1 month: February: Time 1 (T1), March: Time 2 (T2), and April: Time 3 (T3). Online questionnaires were distributed to all employees either through a web survey service or via email from the HR department of the higher education institution. At the beginning of the survey, participants were informed about the general purpose of the study and explained that their participation was anonymous and voluntary and that they could withdraw from the study at any point. Informed consent was obtained from all participants involved in the study. To increase the longitudinal response rate, 10 vouchers of €50 (ca. $59) were raffled among the employees who participated three times in the study. Upon providing their informed consent to participate, participants created unique codes to not only preserve anonymity but also link the data across measurement occasions.

In total, 405 participants completed the questionnaire at T1 (a precise response rate cannot be obtained due to the unknown number of active email addresses). All of these participants were invited to take part in the survey again at T2 and T3. At T2, 260 participants complied with the invitation (longitudinal response rate of 64.20%, relative to T1), whereas 195 participants filled out the questionnaire at T3 (longitudinal response rate of 48.2%, relative to T1). After deleting one duplicate case, the effective longitudinal sample included 404 participants who participated at least at T1, yielding the following longitudinal sample composition: 128 (31.7%) employees participated at T1 only, 81 (20.0%) participated at T1 and T2, 16 (0.04%) participated at T1 and T3 and 179 (44.3%) completed the questionnaire at all three measurement occasions.

At T1, the average age of participants was 37.23 years (SD = 10.83) with a mean organizational tenure of 9.46 years (SD = 9.35). The sample was predominantly female (76.0%), and the vast majority were highly educated – 98% had tertiary education with 15.9% holding a bachelor's degree, 54.3% a master's degree and 27.8% a doctoral degree or equivalent. The junior research staff (e.g., doctoral students and postdocs) represented the largest staff category (48.6%), whereas the permanent academic staff (27.0%) and support and administrative staff (24.3%) were approximately equally represented in the sample. Finally, approximately half of the sample (53.7%) was permanently employed, whereas 46.3% held a temporary contract.

We conducted a binary logistic regression analysis to examine the occurrence of systematic sample attrition. Participation at all three measurement occasions versus drop-out at T2 and/or T3 was regressed on demographic and work-related variables (gender, age, staff category; Step 1)[3] and the initial levels of focal study variables (PDM, job crafting, and IWB measured at T1; Step 2). Step 1 of the analysis was significant ($\chi^2(4) = 41.66$, $p < .001$). Drop-out was higher among older participants (OR = 1.04, $p < .01$), as well as among permanent research staff as compared to the support/administrative staff ($OR = 0.35$, $p < .01$) and junior research staff ($OR = 0.40$, $p < .01$). In contrast, step 2 of the analysis was not significant ($\chi^2(3) = 5.88$, $p > .05$), showing that none of the focal study variables was predictive of employee dropout from the study at any point. Although the results of the logistic regression analysis did not reveal a severe case of systematic sample attrition, we used full information maximum likelihood (FIML; e.g., see Enders & Bandalos, 2001) to abate the bias in obtained parameters. A second advantage of FIML is that it produces more accurate standard errors of parameter estimates due to greater statistical power. In doing so, it enables a more accurate test of the study hypotheses, particularly in comparison to listwise deletion (Newman, 2014).

Measures

Job crafting and IWB were assessed at each measurement occasion, whereas PDM was only measured at T1 due to space limitations in the survey. The measure of job crafting was constructed and validated in Dutch and the other measures were subjected to a translation and back-translation procedure.

Job crafting

Job crafting was measured with the four-item Overarching Job Crafting Scale (OJCS) (Vanbelle, 2017). Previous studies using this scale demonstrated that OJCS is a valid and reliable measure of job crafting (Griep et al., 2022; Hu et al., 2019; Urbanaviciute et al., 2020; Vanbelle et al., 2017). The OJCS operationalizes job crafting as an intentionally pro-self-focused behaviour, initiated with the intent of changing one's job for the purpose of optimizing one's own work-related attitudes, well-being, and behaviour (e.g., "I change my job so it better fits with who I am.", "I change my job so it would better fit with what I think is important"). Responses were provided on a Likert scale ranging from 1 (never) to 7 (daily). Cronbach's alpha coefficients were .95 (T1), .95 (T2) and .95 (T3).

IWB

To measure IWB, we used four items from De Jong and Den Hartog's (2010) scale. Respondents indicated how often in their job they engage in various forms of behaviours tapping into idea exploration (e.g., "In your job, how often do you wonder how things can be improved?") and generation (e.g., "In your job, how often do you generate original solutions for problems?"). We chose to focus on these dimensions because they are considered crucial for employee IWB, i.e., a cornerstone for further idea championing and implementation (Anderson et al., 2014). Respondents provided their responses on a Likert scale ranging from 1 (never) to 5 (daily). Cronbach's alpha coefficients were .81 (T1), .83 (T2) and .83 (T3).

PDM

PDM was measured using a 6-item scale developed by Probst (2005), tapping into employees' perceived opportunities to participate in decision making process in their organization (e.g., "Workers are often given a chance to voice their opinions about work-related issues."). Respondents rated each item on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha coefficient at T1 was .85.

Control variables

Because prior research indicates job crafting and IWB can depend on employee gender, age, and hierarchical level (e.g., Afsar et al., 2019; Bindl et al., 2019; Uen et al., 2021), we controlled for the effects of these covariates using staff category as a proxy of hierarchical rank. The variable staff category was dummy coded in "support and administrative staff" and "junior research staff" with permanent academic staff as a reference group. Using two dummy coded variables, we also controlled for the respondent's higher education institution.

Analytical procedure

In the first step of our analyses, we tested the hypothesized measurement model using confirmatory factor analysis (CFA). To do so, we specified a six-factor model comprised of job crafting and IWB measured at T1, T2, and T3, where each factor was allowed to correlate with each other. We also allowed item residuals to correlate with their corresponding item residuals across time to account for the temporal stability of the indicator-specific variance (Brown, 2015). The hypothesized six-factor model was tested against an alternative three-factor model in which indicators intended to measure job crafting and IWB loaded on one factor at three measurement occasions. Lastly, we also tested a hypothesized seven-factor that included T1 PDM.

Next, we examined the longitudinal measurement invariance of the hypothesized six-factor model to ascertain that any changes observed in job crafting and IWB over time reflect real changes in these constructs and not changed meaning in the items (Little, 2013). To do so, we compared three nested models, each with an increasing degree of longitudinal invariance imposed on model parameters: (a) a configural invariance model with a factor structure constrained equal across time (M1); (b) a metric invariance model additionally constraining factor loadings across time (M2); and (c) scalar invariance model additionally constraining item intercepts across time (M3). If a specific set of model parameters is longitudinally invariant, a model holding these parameters fixed to equivalence should fit the data equally well as the model in which parameters are allowed to vary across time. Because differences in chi-squares are sensitive to large sample sizes, we used a 0.01 difference in CFI (ΔCFI) between the more and the less constrained models (Chen, 2007) in order to evaluate each assessment of longitudinal measurement invariance.

Finally, we tested our study hypotheses by first specifying a stability model (S1) in which factor structure, factor loadings and item intercepts were constrained equal across time to the degree allowed by the longitudinal measurement invariance test. In that model, job crafting and IWB predicted the same constructs at the subsequent measurement occasion forming autoregressive paths. To probe the hypothesized directionality between job crafting and IWB, we compared the stability model with the three models that in addition to autoregressive paths included (a) cross-lagged paths from job crafting at T1 and T2 to IWB at T2 and T3, respectively (S2); (b) cross-lagged paths from IWB at T1 and T2 to job crafting at T2 and T3, respectively (S3); and (c) all cross-lagged paths from S2 and S3 (a model corresponding to the suggested reciprocal causation; S4). In the final model (S5), we additionally included PDM into the above structural model identified as most correctly delineating the relationship between job crafting and IWB. S5 was used to evaluate all study hypotheses, including direct (i.e., H_1, H_2, H_3 and H_4), and indirect effects (i.e., H_5 and H_6). Note that this model also included direct cross-lagged paths from PDM at T1 to IWB and job crafting at T3 because controlling for the direct effect between the independent and dependent variable is necessary when testing the indirect effects (Hayes, 2009). Control variables were also added to each structural model.

Preliminary screening of item distributions revealed that none approached 3.0 in skewness and 10.0 in kurtosis indicating univariate normality (Brown, 2015). Therefore, all measurement and structural models were tested using maximum likelihood estimation in the Mplus 8.5 statistical software (Muthén & Muthén, 1998–2017). To evaluate the overall goodness-of-model fit, we applied the well-established cut-off criteria (i.e., CFI and TLI > .90; RMSEA and SRMR < .08; Bentler, 1990; Hu & Bentler, 1999; Little, 2013). The statistical significance of the indirect effects was assessed using bootstrap analysis and the resulting 95% confidence intervals (CIs) estimated with 10,000 resamples.

Results

Descriptive statistics

Table 1 presents mean values, standard deviations, Cronbach's alpha coefficients and Pearson correlations for all study variables. Bivariate correlations reveal that job crafting and IWB correlated positively within and across the three measurement occasions. Furthermore, PDM was positively related to job crafting both cross-sectionally and across time. In contrast, the relationship between PDM and IWB was not statistically significant neither within, nor across measurement occasions.

Measurement models and longitudinal measurement invariance

The hypothesized six-factor measurement model (M1) fit the data well ($\chi^2 = 395.701$, $df = 213$, $p < .001$, CFI = .971, TLI = .963, RMSEA = .046, SRMR = .046) and significantly better than the competing three-factor model ($\Delta\chi^2 = 781.854$, $\Delta df = 12$, $p < .001$, CFI = .851, TLI = .817, RMSEA = .102, SRMR = .163). Standardized factor loadings ranged from $\lambda = .48$ to .96 indicating that all items measuring job crafting and IWB were strongly related to their respective factor. Furthermore, correlations between job crafting and IWB ranged from $\phi = .54$ to .69 demonstrating that job crafting and IWB represent two related, yet clearly distinct constructs (Brown, 2015). After adding PDM

Table 1. Descriptive statistics, Pearson correlations and Cronbach's alpha coefficients (in parentheses) for the observed study variables.

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Gender	-	-	-												
2. Age			−.19***	-											
3. Staff1	-	-	.05	.19***	-										
4. Staff2	-	-	.17**	−.58***	−.55***	-									
5. Inst1	-	-	−.12*	.32***	.12*	−.53***	-								
6. Inst2	-	-	−.06	.08	−.06	.16**	−.20***	-							
7. Job crafting T1	3.44	1.38	−.04	−.02	−.21***	.11*	−.07	−.03	.95						
8. Job crafting T2	3.44	1.28	.04	−.03	−.18**	.11	−.04	−.13*	.73***	.96					
9. Job crafting T3	3.47	1.28	−.09	−.02	−.23**	.11	−.04	−.01	.70***	.70***	.95				
10. IWB T1	3.26	0.72	−.07	.05	−.07	−.03	.08	−.15**	.48***	.47***	.50***	.81			
11. IWB T2	3.14	0.69	−.05	−.01	−.10	.02	.05	−.12	.49***	.58***	.59***	.71***	.83		
12. IWB T3	3.19	0.71	−.10	−.08	−.15*	.08	−.03	−.14*	.56***	.60***	.59***	.70***	.78***	.83	
13. PDM	3.60	0.70	.002	−.06	−.11*	.13**	−.22***	−.13*	.21***	.20**	.19**	.07	.07	.06	.85

Gender (0 = female, 1 = male), Staff1 = support and administrative staff (the reference group is permanent academic staff), Staff2 = junior research staff (the reference group is permanent academic staff), Inst1–2 = dummy recoded membership to one of the three institutions, IWB = Innovative work behaviour, PDM = Participative decision making. *$p < .05$; **$p < .01$, and ***$p < .001$.

to the six-factor model, the hypothesized seven-factor measurement model demonstrated a good fit to the data ($\chi^2 = 606.756$, $df = 359$, $p < .001$, CFI = .967, TLI = .960, RMSEA = .041, SRMR = .052)[4] with standardized factor loadings ranging from $\lambda = .48$ to .96.

Because the six-factor measurement model consisting of job crafting and IWB across three measurement occasions fit the data well, we were able to demonstrate longitudinal invariance of the factor structures (i.e., configural longitudinal invariance; M1). Therefore, we proceeded with the step-by-step fixing of model parameters equal across time. The results of these analyses demonstrated that neither fixing factor loadings in a metric invariance model (M2; $\chi^2 = 409.987$, $df = 225$, $p < .001$, CFI = .971, TLI = .965, RMSEA = .045, SRMR = .046, ΔCFI = 0), nor fixing item intercepts in a scalar invariance model (M3; $\chi^2 = 421.144$, $df = 237$, $p < .001$, CFI = .971, TLI = .966, RMSEA = .044, SRMR = .046, ΔCFI = 0) produced a significant deterioration of model fit (see Table 2). Therefore, our results supported the full metric and scalar longitudinal measurement invariance, a requirement that enabled us to proceed with a valid test of the cross-lagged paths in the following step.

Structural models

Table 3 presents the statistical comparisons of our competing structural models. As evidenced by the significant differences in model fits, each model with added cross-lagged paths outperformed the stability model: S2 including the cross-lagged paths from job crafting to IWB ($\Delta\chi^2 = 24.420$, $\Delta df = 2$, $p < .001$), S3 including the cross-lagged paths from IWB to job crafting ($\Delta\chi^2 = 31.866$, $\Delta df = 2$, $p < .001$) and S4 including reciprocal cross-lagged paths between job crafting and IWB ($\Delta\chi^2 = 52.092$, $\Delta df = 4$, $p < .001$). Moreover, S4 fit the data better than either of the two models with unidirectional cross-lagged paths (i.e., S2, $\Delta\chi^2 = 27.672$, $\Delta df = 2$, $p < .001$, and S3, $\Delta\chi^2 = 20.226$, $\Delta df = 2$, $p < .001$). The obtained unstandardized cross-lagged coefficients demonstrated that job crafting predicted subsequent change in IWB across time ($B_{T1\rightarrow T2} = 0.08$, $p < .01$ and $B_{T2\rightarrow T3} = 0.07$, $p < .05$); additionally, IWB predicted subsequent change in job crafting across time ($B_{T1\rightarrow T2} = 0.48$, $p < .01$ and $B_{T2\rightarrow T3} = 0.81$, $p < .001$).

Therefore, when specifying the structural model that additionally included PDM (S5), we retained all reciprocal cross-lagged paths between job crafting and IWB. This model provided a good fit to the data ($\chi^2 = 879.886$, $df = 523$, $p < .001$, CFI = .953, TLI = .945, RMSEA = .041, SRMR = .059). In the final step, we additionally constrained all autoregressive and cross-lagged paths equal across time (S5a). The results demonstrated that obtained cross-lagged paths are stable across time ($\Delta\chi^2 = 3.545$, $\Delta df = 4$, $p > .05$). All unstandardized and standardized cross-lagged coefficients derived from the temporally constrained model (S5a) pertaining to the study hypotheses are presented in Table 4 and Figure 2. Supporting H_1, job crafting predicted subsequent increases in IWB across time ($\beta_{T1\rightarrow T2} = .18$, $p < .001$ and $\beta_{T2\rightarrow T3} = .17$, $p < .001$). Supporting H_2, IWB predicted subsequent increases in job crafting across time ($\beta_{T1\rightarrow T2} = .24$, $p < .001$ and $\beta_{T2\rightarrow T3} = .24$, $p < .001$). Accordingly, our results suggest that job crafting and IWB can indeed form a gain cycle.

We also predicted that PDM can instigate such cycles. However, neither the effect of PDM on subsequent change in job crafting ($\beta_{T1\rightarrow T2} = -.01$, $p > .05$), nor the effect of PDM on subsequent change in IWB ($\beta_{T1\rightarrow T2} = .04$, $p > .05$) were statistically significant,[5] refuting H_3 and H_4. Accordingly, our results did not support the hypothesized indirect effects from PDM to IWB through job crafting (β = −.002, 95% CI [−.02, .02]) or from PDM to job crafting through IWB (β = .01, 95% CI [−.01, .04]). Thus, H_5 and H_6 were not supported. However, we did find that PDM predicted an increase in job crafting at T3 (β = .13, $p < .05$), whereas the direct cross-lagged effect of PDM on IWB at T3 was non-significant (β = −.02, $p > .05$).

Table 2. Results of the longitudinal measurement invariance test.

Model	Model description	χ^2	*df*	CFI	ΔCFI	TLI	RMSEA	SRMR	Δ Model
M1	Configural invariance model	395.701***	213	.971	–	.963	.046	.046	–
M2	Metric invariance model	409.987***	225	.971	0	.965	.045	.046	M2 – M1
M3	Scalar invariance model	421.144***	237	.971	0	.966	.044	.046	M3 – M2

$N = 404$ (missing data were treated using the FIML estimation). CFI = Comparative Fit Index, TLI = Tucker-Lewis Index, RMSEA = Root mean squared error of approximation, SRMR = Standardized root mean squared residual. ***$p < .001$.

Table 3. Model fit indices and results of the comparison of competing structural models.

Model	Model description	χ^2	*df*	CFI	TLI	RMSEA	SRMR	Δ Model	$\Delta\chi^2$	Δ*df*
S1	Stability model	652.209***	353	.954	.945	.046	.100	–	–	–
S2	Job crafting → IWB	627.789***	351	.957	.949	.044	.076	S2 – S1	24.420***	2
S3	IWB → Job crafting	620.343***	351	.958	.950	.044	.068	S3 – S1	31.866***	2
S4	Job crafting → IWB and IWB → job crafting	600.117***	349	.961	.953	.042	.055	S4 – S1	52.092***	4
								S4 – S2	27.672***	2
								S4 – S3	20.226***	2
S5	Structural model including PDM	879.886***	523	.953	.945	.041	.059	–	–	–
S5a	Structural model including PDM with cross-lagged paths between job crafting and IWB constrained equal across time	883.431***	527	.953	.945	.041	.060	S5a – S5	3.545	4

N = 404 (missing data were treated using the FIML estimation). IWB = Innovative work behaviour, PDM = Participative decision making. CFI = Comparative Fit Index, TLI = Tucker-Lewis Index, RMSEA = Root mean squared error of approximation, SRMR = Standardized root mean squared residual. ***$p < .001$.

Table 4. Unstandardized and standardized path coefficients with corresponding significance levels and 95% bias-corrected confidence intervals (CIs).

Structural paths	*B*	*p*	95% CI	β	*p*	95% CI
Autoregressive paths						
Job crafting (T1) → Job crafting (T2)	0.590	<.001	[0.485, 0.687]	.622	<.001	[.509, .716]
Job crafting (T2) → Job crafting (T3)	0.590	<.001	[0.485, 0.687]	.578	<.001	[.464, .696]
IWB (T1) → IWB (T2)	0.728	<.001	[0.622, 0.830]	.712	<.001	[.610, .811]
IWB (T2) → IWB (T3)	0.728	<.001	[0.622, 0.830]	.733	<.001	[.625, .834]
Cross-lagged paths						
Job crafting (T1) → IWB (T2)	0.071	<.001	[0.034, 0.110]	.182	<.001	[.085, 277]
Job crafting (T2) → IWB (T3)	0.071	<.001	[0.034, 0.110]	.174	<.001	[.081, .264]
IWB (T1) → Job crafting (T2)	0.594	<.001	[0.364, 0.876]	.237	<.001	[.144, .338]
IWB (T2) → Job crafting (T3)	0.594	<.001	[0.364, 0.876]	.238	<.001	[.148, .336]
PDM (T1) → Job crafting (T2)	−0.015	.789	[−0.120, 0.096]	−.013	.788	[−.102, .080]
PDM (T1) → IWB (T2)	0.022	.361	[−0.025, 0.069]	.044	.357	[−.052, .138]
PDM (T1) → Job crafting (T3)	0.151	.053	[0.007, 0.314]	.125	.045	[.007, .252]
PDM (T1) → IWB (T3)	−0.011	.740	[−0.074, 0.053]	−.022	.740	[−.151, .113]
PDM (T1) → Job crafting (T2) → IWB (T3)	−0.001	.796	[−0.013, 0.005]	−.002	.796	[−.020, .015]
PDM (T1) → IWB (T2) → Job crafting (T3)	0.013	.361	[−0.017, 0.065]	.011	.356	[−.011, .035]

N = 404 (missing data were treated using the FIML estimation). IWB = Innovative work behaviour, PDM = Participative decision making.

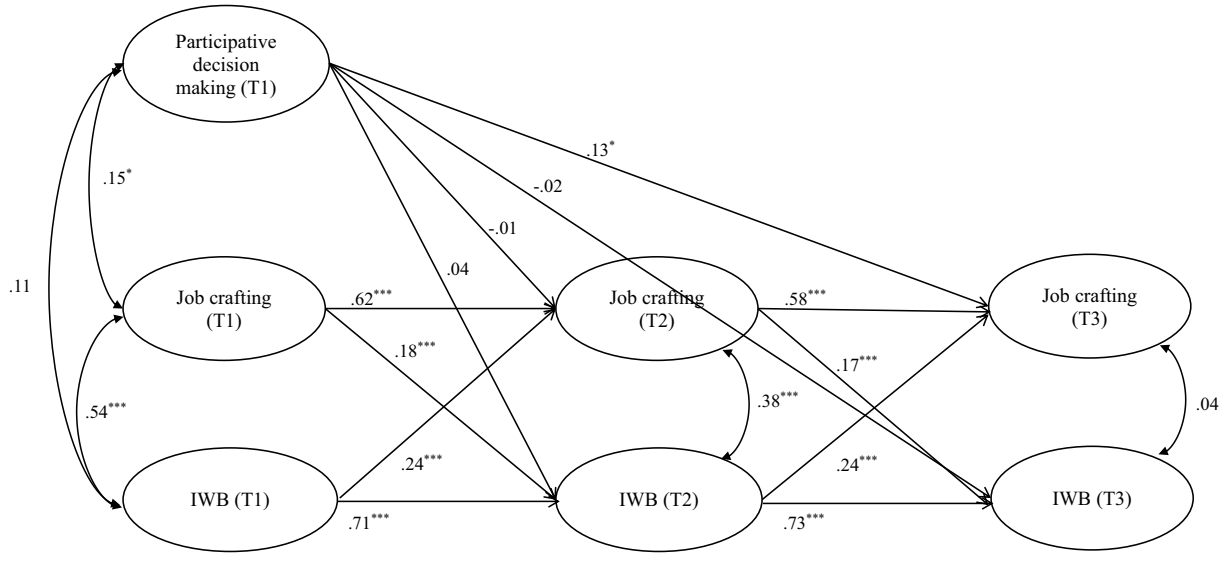

Figure 2. Final structural model with standardized path coefficients. *N* = 404 (missing data were treated using the FIML estimation). IWB = Innovative work behaviour. *$p < .05$; **$p < .01$, and ***$p < .001$. Control variables, factor indicators, and residual variances are not presented due to figure clarity

Discussion

After two decades of research on job crafting, a consensus among scholars has emerged that the various self-initiated changes occurring during the job crafting process are primarily intended to benefit the individual employees themselves (Bruning & Campion, 2018; Vanbelle, 2017; Zhang and Parker, 2019). Accordingly, despite the numerous positive effects of job crafting, this pro-self-focused purpose of job crafting (Vanbelle, 2017) might discourage supervisors and human resource practitioners from supporting employees' crafting efforts and goal achievement (Fong et al., 2021). Building on the gain cycle

propositions of COR theory, our study aimed to dispel these doubts by proposing that job crafting may prompt employees to voluntarily engage in work behaviours crucial for organizational competitive advantage, namely, IWB. Adding to the scant research on this topic, our results demonstrate that job crafting relates positively to subsequent changes in IWB across all measurement occasions. Furthermore, the results also demonstrate that IWB relates positively to job crafting across time, thereby documenting gain cycles beneficial to employees and employers alike.

An additional secondary aim of this study was to explore whether organizations can instigate gain cycles by providing employees opportunities to participate in decision making. Contrary to expectations, our results did not support the hypothesis that PDM predicts subsequent changes in job crafting or IWB, thereby initiating the observed gain cycles. Rather, the only statistically significant (positive) cross-lagged effect was found between PDM and T3 job crafting indicating that more time may be needed for PDM to exert a beneficial effect on this outcome and subsequent IWB.

Below we discuss in greater depth the theoretical and practical implications of these findings and consider the unique contributions of our study. Finally, we identify the limitations of the current study and suggest avenues for future research.

Theoretical implications

Scholars have typically modelled job crafting as an antecedent of employee performance (see Zhang & Parker, 2019 for a recent review). However, our findings indicate that job crafting can also operate in conjunction with IWB to create gain cycles such that crafting can spur greater innovative performance, but also that increases in IWB can foster subsequent job crafting. In a similar fashion, Bakker et al. (2016) found a reciprocal relationship between dyadic job crafting behaviours, where employee job crafting was positively linked with their partner's enactment of job crafting. Moreover, Lichtenthaler and Fischbach's (2019) meta-analysis demonstrated reciprocal relationships between job crafting and work engagement and burnout. Comporting with these findings, our results provide further support for the reciprocal nature of the relationships between job crafting and important work outcomes such as IWB.

While COR theory has garnered a substantive body of literature, researchers have argued gaps remain. Most notedly, Halbesleben et al. (2014) suggest although the gain and loss cycles that COR theory posits have dramatically grown in empirical interest in recent years, a question of how such cycle begins remains unanswered. The authors postulate it seems likely a (positive or negative) event " . . . could induce a large shift in resources that would turn a typical trajectory into a more dramatic cycle" (p. 1351). An organization implementing a job crafting initiative which prompts the job crafting behaviour might serve as one such "large shift in resources" needed to instigate the gain cycle. While our findings contribute to COR theory by offering preliminary evidence of a potential catalyst of a gain cycle, it is important to note scholars have found that differences in regulatory focus (i.e., the tendency to approach goals through either investment of resources or protection of resources) influence whether a change in resources becomes a loss or gain cycle (Baumeister & Vohs, 2004; Halbesleben et al., 2014). Likewise, we recognize COR theorists' admonitions and acknowledge that a combination of an event which dramatically shifts resources (e.g., job crafting behaviour) in parallel with effective self-regulation may most meaningfully answer the unanswered question noted by Halbesleben et al. (2014).

Our results – using a dynamic perspective on the job crafting-IWB relationship – also have implications for the theoretical processes outlined in COR theory. Our findings demonstrate that employees and organizations reap the benefits of gain cycles composed of job crafting and IWB. Moreover, these mutually beneficial effects appear to last for at least 2 months. Although speculative, it could be argued that gain cycles can potentially turn into loss cycles by depleting employees' personal resources over longer time spans. Both job crafting and IWB represent proactive behaviours that require employees to go the extra mile. So what could happen over longer periods of time, such as 1 year or more, after many cycles have occurred? For example, Harju et al. (2021) demonstrated that increasing structural and social resources, as well as challenging job demands can lead to both increased burnout (through increased workload) and increased work engagement (through increased job complexity) over a period of 18 months. We believe that a pessimistic scenario in which gain cycle turns into loss cycle is most likely to occur in organizations which do not provide sufficient opportunities for recovery experiences to compensate for energy losses (Sonnentag & Fritz, 2007) and/or in organizations in which investments of resources in the form of IWB are not adequately compensated by an adequate return of resources, such as promotion opportunities (Hobfoll et al., 2018).

Finally, given the non-significant effect of PDM on T2 job crafting (in conjunction with the observed positive effect of PDM on T3 crafting), our study has implications regarding the need to model job crafting as a bottom-up phenomenon, while also considering organizational strategies that might enhance it (Dash & Vohra, 2020; Demerouti, 2014). Our finding that PDM (at T1) significantly predicted job crafting behaviour at T3 suggests that (a) employees' allowance to participate in decision making might in fact serve as important job resources that help explain subsequent job crafting behaviour, but (b) that such effects may simply take time to unfold. In other words, the benefits of PDM may only occur following sustained opportunities for PDM over two or more months. On a related note, the unexpected non-significant finding of PDM on IWB might also be the result of insufficient time employees had to participate in higher-level decisions. Researchers have argued that IWB is a complex behaviour that requires substantial investment of effort (De Jong & Den Hartog, 2010). To experiment with new ideas, employees first have to be very familiar with the existing organizational processes, products and procedures and then use this knowledge to take a different angle, think out-of-the-box and generate something new. While participating in organizational decisions might be crucial for gathering needed information, a period of one or 2 months may be simply too short for this complex process to untangle. As such, future studies

might require additional waves of data collection and/or longer intervals between waves to better explicate the temporal unfolding of PDM effects on the job crafting experience and employee engagement in IWB.

Practical implications

The results of our study suggest that job crafting can serve as a valuable means by which organizations can foster innovation in the workplace. Within allowable constraints, employees should be encouraged to shape their jobs in accordance with their unique needs, preferences, and abilities (Tims & Bakker, 2010). Indeed, employees are not passive recipients of their environment, and by proactively expanding their job crafting capacities, employers realize a (reciprocal) competitive advantage. We frame such advantage as a "gain cycle," wherein organizations not only reap greater employee IWB in response to job crafting behaviour, but such IWB in return prompts job crafting behaviour (thus continuing the cycle). Research has additionally linked job crafting to positive ratings of in-role performance (Bakker et al., 2012), as well as increased work engagement, motivation, and greater perceptions of person-job fit (Lu et al., 2014). As such, job crafting, if conducted properly, appears to be a "win-win," whereby both organization and employee can benefit when such behaviours are encouraged.

Toward this end, organizations should permit, facilitate, and train their employees to craft their jobs in a way in which fits them and their organization better. As noted above, despite the fact that job crafting is largely bottom-up and individually-driven, organizations can encourage workers to demonstrate this behaviour from the top down. Organizations might (a) recognize and acknowledge the existence of job crafting among its employees; (b) communicate ways in which employees might craft their positions; and (c) model "good" (i.e., beneficial) job crafting behaviour. For example, supervisors could expand their relational work boundaries by increasing interactions with their subordinates and permit their employees more job autonomy (Demerouti, 2014). Organizations may additionally need to adjust their management ideologies, to e.g., transformational leadership (Afsar et al., 2019), known to stimulate job crafting behaviour.

While we acknowledge job crafting is "not the panacea for all organization problems" (Demerouti, 2014, p. 245), it may be particularly useful for organizations which have found traditional top-down initiatives ineffective. We, however, do not suggest that job crafting should replace traditional (top-down) attempts. Instead, bottom-up approaches initiated by jobholders themselves can be promoted and combined with organizationally-initiated interventions (Bakker et al., 2016; Demerouti, 2014). For example, given the (albeit limited) significant findings involving PDM, organizations may maximize employees' initiation of job crafting by providing them more opportunities to engage in workplace decisions. PDM can be fostered in several ways, such as offering participation awards to honour employees with noteworthy contributions, implementing virtual opinion collection surveys, and establishing joint consultative committees among employees (Wang et al., 2018). Given the fact that rapidly changing work environments evoke increased feelings of uncertainty (Lu et al., 2014), this integrated approach may be particularly helpful in COVID-19 (post)pandemic times.

Just as the uncertain job context of today prompts employees to feel compelled to re-design their jobs, the COVID-19 crisis has forced firms to be decisive and respond rapidly to a turbulent economic environment (Brem et al., 2021). The key source of organizational innovations lies in its employees (Huang et al., 2005). Recent COVID-19-era research has stressed the vital role of high-quality LMX, encouragement of employee suggestion-making and recommended modifications to standard procedures (voice behaviour), and allowance of employee job autonomy (Fiernaningsih & Herijanto, 2021; Nazir et al., 2020) in fostering employee IWB. Moreover, when leaders display honesty, trustworthiness, treat employees equally, and use their authority for the well-being of individuals (Gu et al., 2015), they avoid harmful authoritarian approaches and provide a safe environment where employees feel secure to take risks and exhibit IWB. Leadership training programs may therefore be particularly beneficial.

In all, at the crux of our findings' implications is the notion organizations and the management within must work to create an open climate where best practices of job crafting and IWB are acknowledged, individual needs can be discussed, and recognizing that the individual employee knows their job best and can realize where there is room for improvement. In turn, organizations build a work environment where not only employees feel compelled to suggest innovative ideas, but also a climate in which employees can modify their jobs to best fit their strengths, motives, and passions in conjunction with organizational goals (Demerouti, 2014; Wrzesniewski & Dutton, 2001).

Limitations and directions for future research

While our study provides novel evidence demonstrating that job crafting can function reciprocally in relation to one type of employee performance, we merely scratch the surface in understanding the bidirectional nature of this relationship. Specifically, we relied on COR theory and available empirical evidence to argue that a wide range of accumulated internal and external resources (e.g., job autonomy and complexity, self-efficacy, psychological empowerment) would play a key role in translating job crafting to IWB and vice versa. However, because we did not specifically measure these employee resources, their suggested explanatory effects are only speculative. Therefore, future research should specifically assess the extent to which IWB and job crafting result in an increase in employee objects, conditions, energy and/or personal resources to determine which resources account for the currently observed gain cycles. In a similar vein, future studies may also address the suggested mechanisms underlying the hypothesized effects of PDM on job crafting and IWB (e.g., perceived control) that were derived from COR theory, but were not specifically examined in this study.

An additional limitation concerns our conceptualization and measurement of job crafting. By using a broad conceptual and operational definition of job crafting (Vanbelle, 2017), our intention was to encompass a wide range of theoretically

plausible resources that may link job crafting to IWB and vice versa. However, in doing so, we had to sacrifice information about the effects of more specific types of job crafting. In response, future studies may examine whether our findings are replicated when examining and comparing different forms of job crafting. For example, future research may explore whether approach and avoidance crafting, two forms of job crafting more recently introduced to the literature (Bruning & Campion, 2018; Zhang & Parker, 2019), have differential reciprocal cross-lagged relationships with IWB. Based on the COR theory and scant available findings (Bindl et al., 2019), we suggest that approach crafting (which implies enriching and expanding job boundaries), might be a more powerful antecedent/outcome of IWB than avoidance crafting (which implies reducing and limiting job boundaries).

A further limitation of our study concerns the self-reported measure of IWB. Given that all variables were measured using self-reports, this methodological aspect of our study might have increased common method bias. Furthermore, IWB by definition includes behaviours that improve the current-state-of the art in organizations in novel ways. For that reason, supervisor-rated IWB may be a valuable alternative for a valid assessment of IWB. Notwithstanding the advantages of supervisors' ratings, previous studies have provided compelling conceptual arguments and empirical evidence supporting the usage of self-reports to measure IWB. First, only employees performing a certain IWB can have a full access to all historical, intentional, and contextual background information surrounding that behaviour (Janssen, 2000). For that reason, employees may have a more subtle and nuanced cognitive representation of their own IWB, as compared to their supervisors (Janssen, 2000) and peers (Schuh et al., 2018). While supervisors may provide a valid assessment of the final results of IWB (e.g., the extent to which a new solution is useful for the organization), employees can have a more valid insight into the full process that led to that innovative solution. For example, employees can more validly assess their individual (versus their colleagues') contribution to the innovative solution and have a more accurate insight of the less visible stages of IWB, such as idea exploration and generation. On a related note, researchers have noted that both self-reported IWB and supervisor-reported IWB can be the subject of response bias – while self-reported IWB may be biased by social desirability, supervisor-reported IWB may be biased by employee impression management (Janssen, 2000). From the methodological point of view, research shows that: (a) other- and self- reported extra-role performance ratings show comparable pattern and magnitude of relationships with correlates (Berry et al., 2012); (b) other-reports generally account for a very small percentage of incremental variance in criterion variables as compared to self-reports (Berry et al., 2012) and (c) self-reported performance ratings are generally not inflated in comparison to objective performance (Edgar et al., 2015). Given these conceptual and empirical arguments, as well as extant results supporting construct validity of self-reported IWB (e.g., De Spiegelaere et al., 2014), we deemed it appropriate to measure IWB using employees' self-ratings. Nevertheless, we also tried to combat the social desirability in employees' responses by emphasizing the anonymity and confidentiality of employees' responses (Podsakoff et al., 2003). However, we do encourage future studies to use supervisor-rated IWB and objective indicators of IWB (e.g., innovative teaching and research output) to test the generalizability of findings reported in this study.

Similarly, another potentially interesting route for future research would include the examination of reciprocal effects between job crafting and additional types of job performance. While we focused on IWB given its importance to organizational competitiveness, additional performance-related outcomes (e.g., counterproductive work behaviour, organizational citizenship behaviour, safety performance) would be valuable to determining the generalizability of the current findings for other important performance-related outcomes.

While our study benefitted from the rigorous three-wave longitudinal data collection, we were unable to measure PDM other than at T1 due to space constraints on our survey. Although our primary interest was to examine whether PDM might prompt the hypothesized gain cycles by stimulating job crafting and IWB to increase the practical utility of our study, our research design does not allow us to test the reverse effects that are also theoretically plausible and consistent with COR theory. For example, job crafters may change their jobs by improving the quality of their relationship with their supervisor (Wrzesniewski & Dutton, 2001), which may in turn facilitate their opportunities to participate in organizational decision making. Also, employees who engage in more IWB may feel more empowered and efficacious to get involved in organizational decisions. However, we deemed these propositions less plausible in the specific context of our study. First, PDM in higher education to a large extent depends on employee's hierarchical position, which grants one relatively firmly defined opportunities to participate in organizational decisions (e.g., the position of a research assistant by definition enables one substantially fewer PDM opportunities than the position of a full professor). For that reason, changes in PDM may to a greater extent depend on changes in one's hierarchical position and as such, are more likely to occur over much lengthier timeframes than we were able to capture in this study. Second, PDM also depends on leadership. For example, as department chairs change at the university, some are more likely to offer PDM opportunities than others. However, because leadership is more constant over time and doesn't change from month to month, as our data collection progressed, a one-month time lag does not seem sensible for measuring this change. Accordingly, to empirically test the proposed revered effects, future research should be conducted in more flexible contexts where the change in hierarchical positions and leadership is more dynamic (e.g., information and communications technology sector) and/or take a longer time horizon than the one in our study.

On a related note, although innovation-driven higher education sector was deemed appropriate to test the effects between job crafting and IWB, our results may not be directly generalizable to other sectors. Therefore, future studies may test whether the demonstrated gain cycles can also be found in more heterogeneous industries and sectors with varying levels of job complexity, as well as different cultural settings.

Conclusion

This study demonstrates that the pro-self-focused changes employees make to their jobs to optimize their work-related functioning have compelling implications for organizational competitive advantage in today's turbulent and uncertain economic environments. In particular, we found not only that job crafting leads to subsequent increases in IWB, but also that IWB prompts subsequent job crafting. Such gain cycles that simultaneously benefit the employees and organizations have, to the best of our knowledge, not been examined thus far. Therefore, we hope that this study will serve to advance the theoretical understanding of the job crafting-IWB relationship, as well as to guide practitioners' efforts in promoting employees' and organizations' best interests.

Notes

1. While the job crafting literature grounded in COR theory suggests that employees can additionally change their jobs by withdrawing from negative and stressful aspects of one's job (i.e., hindering job demands) in order to conserve available resources (Harju et al., 2021), empirical findings show that the relationship between *demands* and IWB is either non-significant, or small and unclear (e.g., Dediu et al., 2018; Messmann et al., 2017). In contrast there are numerous studies conclusively pointing to the positive and prominent role of *resources* in promoting employee IWB. Therefore, in this paper we ground our conceptual analysis on this empirical foundation aligned with COR theory indicating that job crafting enables employees to accumulate various resources key to the enactment of IWB, and vice versa.
2. Within JD-R theory (Bakker & Demerouti, 2017), job complexity represents a challenging job demand (i.e., an aspect of the job that requires effort and consumes energy resources, but at the same time also enable opportunities for learning, task achievement and personal growth). Because it has a value to promote valuable outcomes for employees, previous studies utilizing COR theory have framed it as a resource (Harju et al., 2016). For the sake of consistency with previous literature of terminology of COR theory, in this paper job complexity is also considered a resource.
3. To avoid multicollinearity issues caused by the high correlation between predictor variables, organizational tenure (overlapping with age), education (overlapping with staff category) and type of contract (overlapping with staff category) were neither included in this, nor in any subsequent analysis.
4. This model included a correlation between item residuals of two items measuring participative decision making („Employees are allowed to make many of their own decisions about their work"and „Workers are given freedom to decide how to do their job.").
5. Upon reviewer suggestion, we wish to acknowledge that it is also plausible to specify a moderating effect of PDM on the reciprocal effects between job crafting and IWB. In particular, PDM opportunities may strengthen the utility of job crafting in prompting IWB, and vice versa. We tested this proposition using the latent moderated structural equations (LMS) approach (Klein & Moosbrugger, 2000). However, we did not find empirical support for the moderating effect of PDM on the effect of job crafting on IWB ($B_{T1\rightarrow T2} = -0.003$, $p > .05$ and $B_{T2\rightarrow T3} = 0.03$, $p > .05$). With regards to the reversed effects, we found that PDM moderates only the effect of IWB_{T1} on $job\ crafting_{T2}$ ($B = 0.30$, $p < .05$; $B_{-1SD} = 0.27$, $p > .05$; $B_{+1SD} = 0.86$, $p < .001$); it did not moderate the effect of IWB_{T2} on $job\ crafting_{T3}$ ($B = -0.06$, $p > .05$). Accordingly, although limited, our results do hint at the usefulness of PDM in strengthening the utility of IWB in promoting employee job crafting – a result that might be attributable to the joint effects of resources accumulated through both (e.g., recognition from supervisors accompanied with perceived control). However, the predominantly non-significant obtained effects demonstrate limited moderating role of PDM in strengthening reciprocal relationships between job crafting and IWB. This may be due to insufficient time needed for such beneficial effects to unfold.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

The data needed to evaluate the conclusions in this paper can be provided by the corresponding author upon reasonable request.

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