

RUNNING HEAD: Self-efficacy, job crafting, job performance

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Translating self-efficacy in job performance over time:

The role of job crafting

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## Translating self-efficacy in job performance over time: The role of job crafting

## Abstract

This investigation intends to uncover the mechanisms linking self-efficacy to job performance by analyzing the mediating role of job crafting. A two-wave study on 465 white-collar workers was conducted, matching participants' self-report data (i.e., self-efficacy and job crafting) with supervisory performance ratings. The structural equation model showed a positive reciprocal relationship between self-efficacy and crafting behaviors. In turn, job crafting predicted performance positively over time. More importantly, results confirmed the mediating role of crafting actions, which may represent the behavioral process underlying the positive effect of self-efficacy on individual outcomes. Practical implications for organizations, such as encouraging bottom-up job design or designing job crafting interventions, and future research directions are also offered.

*Keywords:* self-efficacy; job crafting; job performance; performance ratings

### Translating self-efficacy in job performance over time: The role of job crafting

Recent critical economic crises and on-going changes in work procedures and organizational structures are challenging modern organizations. As a result, job discretion, job complexity and greater demands for individual flexibility and proactivity have drastically increased. More than in the past, employees are required to assume an active role in designing their own job and to express agentic characteristics to handle competition and shape organizational turbulence (Chapman, 2005). In this scenario, the relatively new concept of job crafting offers a promising and emergent approach to study employees' behaviors and their consequences for individual well-being and organizational outcomes.

Job crafting captures “the physical and cognitive changes individuals make in the task or relational boundaries of their work” (Wrzesniewski & Dutton, 2001, p. 179) to creatively adjust the job to their needs, preferences, and goals, modifying its meaning and creating their own personal and professional identity (Wrzesniewski & Dutton, 2001). Recently, crafting behaviors have been operationalized within the job demands-resources (JD-R) theory (Bakker & Demerouti, 2014) and are defined as self-started proactive behaviors undertaken by employees to alter the level of job demands and job resources, adapting them to their needs and skills (Tims & Bakker, 2010; Tims, Bakker, & Derks, 2012). The JD-R framework links these proactive behaviors to individual resources and work engagement in a sort of positive, reciprocal loop (Bakker & Demerouti, 2014; Bakker, Demerouti, & Sanz-Vergel, 2014). Along with job resources, the framework recently included personal resources that are positive self-evaluations associated with resiliency and individual perceptions of control and impact upon the environment (Hobfoll, Johnson, Ennis, & Jackson, 2003).

A personal resource which has been related to crafting behaviors is self-efficacy (Kanten, 2014; Tims, Bakker, & Derks, 2014), due to its key role in promoting human agency (Bandura, 1997). Self-efficacy beliefs are the foundation of the intentional influence that individuals exercise over their own functioning and life events (Bandura, 1997). Only when people believe that they are

able to control their actions, to affect events through them and to produce the desired outcomes, will they have the incentive to modify their physical and social environment in order to adapt it to their needs and to achieve their goals. Hence, this study aims to verify the positive relationship between self-efficacy and job crafting over time. Moreover, in line with the latest theorization of the JD-R model (Bakker & Demerouti, 2014; Bakker et al., 2014), it intends to investigate whether the aforementioned relationship is reciprocal. Indeed, crafting behaviors may increase employees' resources on the job, which, in turn, have been shown to promote the development of personal resources (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007, 2009). Therefore, by crafting one's job resources, the individual may effectively improve his/her self-efficacy (i.e., a personal resource). Social cognitive theory (Bandura, 1986) further supports such an inverted relationship. In fact, by altering the various aspects of the job, an employee can effectively act upon the main sources of self-efficacy (i.e., mastery experiences, vicarious experiences, verbal persuasion; Bandura, 1986), nurturing the perceived confidence in his/her abilities. Moreover, molding the social resources on the job (e.g., more frequent feedback and coaching occasions) may promote the core properties of human agency, such as self-reflectiveness, forethought and self-reactiveness, which are the basis of efficacy beliefs (Bandura, 2001, 2006a). So far, few studies have investigated the nature of the association of efficacy beliefs with job crafting. In addition, previous studies have been mainly centered on the unidirectional relationship, relied on cross-sectional designs (Kanten, 2014) or exclusively focused on those crafting actions aimed at modifying the level of job resources (i.e., crafting variety, crafting learning opportunities; Tims et al., 2014).

A further goal of this study is to verify the nature of the relationship of job crafting on job performance over time. Crafting behaviors have been shown to positively relate to both an individual's self-reported (Petrou, Demerouti, & Schaufeli, 2015; Tims et al., 2014; Tims, Bakker, & Derks, 2015) and peer-rated job performances (Tims et al., 2012). Yet, there exists a general lack of evidence regarding the longitudinal link between job crafting and performance, as rated by supervisors.

Finally, the present study brings together JD-R theory (Bakker & Demerouti, 2014) and social cognitive theory (Bandura, 1986) with the aim of explaining the positive relationship between self-efficacy beliefs and job performance through the mediating role of job crafting. Self-efficacy is one of the strongest predictors of work success (Stajkovic & Luthans, 1998). Self-efficacious employees achieve higher job performance through specific cognitive, motivational, affective, and decision making processes (Bandura, 1997). Briefly, highly self-efficacious people appraise challenges as opportunities for development, show higher resilience, effort and motivation, and are more able to successfully cope with stress and its associated negative emotions (Bandura, 1997). Since self-efficacy beliefs are expected to trigger crafting actions, the construct of job crafting can be identified as the mediator of the positive relationship between self-efficacy and job performance. In fact, on the one hand, there is accumulating evidence of the beneficial effects of crafting behaviors on employees' motivation and performance (Petrou et al., 2015; Tims et al., 2014, 2015). On the other hand, drawing upon social cognitive theory (Bandura, 1986), job crafting can be conceptualized as the proactive behavioral expression of human agency. Thus, we propose that job crafting represents the agentic behavioral means that translates the individual's beliefs in his/her capabilities into successful outcomes, via the increase of job resources and challenging demands.

To sum up, this study intends to contribute to the existing literature by a) shedding light on the reciprocal relationship between self-efficacy and job crafting; b) corroborating the association between crafting behaviors and performance, as rated by supervisors; and c) conceptualizing job crafting as the agentic behavioral mechanism that mediates the link between efficacy beliefs and superior performance on the job. To address our goals, we conducted a two-wave study on a relatively large sample of white-collar workers from an Italian service organization, using supervisory performance evaluations in relation to job crafting and self-efficacy.

### **The Antecedents of Job Crafting: The Promising Role of Self-Efficacy**

The line of research conducted by Tims and colleagues (e.g., Tims & Bakker, 2010; Tims et al., 2012) inscribes job crafting within JD-R theory (Bakker & Demerouti, 2007, 2014; Demerouti,

Bakker, Nachreiner, & Schaufeli, 2001), conceptualizing work conditions in terms of job demands and job resources. Job demands capture the organizational, social, or physical aspects of the job which require physiological and psychological effort and costs for the employee. Job resources, instead, refer to all those work characteristics able to reduce demands, facilitate goal achievement, or stimulate personal development. However, not all demands are appraised by the individual as stressful. Some (e.g., high level of responsibility or innovation, time pressure) can be positively valued and perceived as opportunities to promote future gain and personal growth. Thus, these demands may turn into challenges and stimulate engagement and motivation (Crawford, LePine, & Rich, 2010; LePine, Podsakoff, & LePine, 2005).

Within JD-R theory, the construct of job crafting is expected to tap the ensemble of those spontaneous “changes that employees may make to balance their job demands and job resources with their personal abilities and needs” (Tims et al., 2012, p. 174). Job crafters are expected to actively change their tasks, activities and interactions at work by expanding the level of job resources, either structural (e.g., job autonomy, knowledge) or social (e.g., supervisory and collegial support and advice), and increase the level of challenging job demands (Bakker, Tims, & Derks, 2012).

To understand why employees modify their job, both situational and personal antecedents have been explored, mainly drawing upon the literature on proactive behavior (Demerouti, 2014). Among the personal factors, it is not surprising that job crafters usually hold proactive personality traits (Bakker et al., 2012; Tims & Bakker, 2010) and a promotion regulatory focus (Petrou & Demerouti, 2015), which makes them highly oriented toward learning, growth, positivity, and openness to change. Moreover, motivation for job crafting stems from three basic individual needs for personal control, connection to others, and preserving a positive self-image (Niessen, Weseler, & Kostova, 2016; Wrzesniewski & Dutton, 2001). Of special interest is the need for control, described as an intrinsic life necessity (Adler, 1930), that may lead individuals to strive to modify

aspects of the job, in order to gain control of work activity and the overall work context (Wrzesniewski & Dutton, 2001).

Related to the need for control, a very promising antecedent of job crafting is self-efficacy (Kanten, 2014; Tims & Bakker, 2010; Tims et al., 2014). A cornerstone of social-cognitive theory (Bandura, 1986), self-efficacy entails the “beliefs in one’s own capabilities to organize and execute the courses of action required to produce certain achievements or results” (Bandura, 1997, p. 3). It is, thus, concerned with personal beliefs about having control over one’s own life and one’s ability to shape events, situations, and relationships (Bandura, 1997). In empirical studies, self-efficacy beliefs have been associated with proactive behaviors such as personal initiative (Speier & Frese, 1997) or proactive coping (Salanova, Grau, & Martínez, 2006). Similarly, self-efficacy beliefs may stimulate crafting behaviors. When people believe themselves to be able to successfully master the multiple aspects of their job and work environment, they are more likely to redefine and remold work tasks, activities and social relationships, by mobilizing their job demands and resources.

Within the JD-R model, self-efficacy has been regarded as a personal resource (Schaufeli & Taris, 2014; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007, 2009). The latest conceptualizations of the JD-R model (Bakker & Demerouti, 2014; Bakker et al., 2014) suggest a positive reciprocal relationship between job and personal resources that, in turn, may promote crafting behaviors via work engagement. Some initial support for this association has been provided by Xanthopoulou and colleagues (2009), who demonstrated positive reciprocal links among personal resources (including self-efficacy), job resources and work engagement. More specifically, self-efficacious employees may create a resourceful work environment able to increase their engagement with work activities (Xanthopoulou et al., 2009). We attempt to contribute to this line of research by showing that individuals higher in self-efficacy – a personal resource – engage in crafting behaviors intentionally and proactively in order to modify the level of job resources. Personal resources are, in fact, supposed to enhance goal achievement and stimulate personal development via the accumulation of additional job resources. Thus, self-efficacy is expected to

influence the level of resources and challenges on the job by affecting individual actions. More specifically, employees with high self-efficacy beliefs actively seek opportunities to prove their abilities and to confront mastery experiences in order to facilitate their personal and professional growth (Bandura, 1997). For this reason, they are more prone to increase their structural job resources to gain greater degrees of autonomy, knowledge and skills. Likewise, they seek higher levels of social job resources to secure more feedback, advice and support from peers and supervisors. As a consequence, personal and professional development is ensured. Moreover, personal resources determine the way people perceive and react to the environment (Xanthopoulou et al., 2009). Specifically, self-efficacy impacts cognitive processes, shaping the perceptions of contextual elements and the meaning ascribed to them (Bandura, 2000; Consiglio, Borgogni, Alessandri, & Schaufeli, 2013). Highly self-efficacious individuals set more difficult standards and goals for themselves, put in more effort and persistence, explore the surrounding environment to a greater extent, and emphasize situational opportunities for development rather than threats (Mohammed & Billings, 2002). Hence, they are more likely to build greater resources to face demanding situations and achieve their goals (Xanthopoulou et al., 2009). They are also more prone to take on extra work tasks and to engage in innovative projects and stimulating activities; in other words, to increase their challenging job demands.

So far, very few studies have documented the positive association between self-efficacy beliefs and crafting behaviors, using cross-sectional or diary designs (Kanten, 2014; Tims et al., 2014). A recent study supported a moderating role of self-efficacy in the association between need for relationship and relational crafting, but it failed to demonstrate the hypothesized direct effect of self-efficacy beliefs on job crafting, calling for further research on the link between the two constructs over time (Niessen et al., 2016).

In conclusion, we expect that the more employees are confident to gain successful work outcomes, the more they will be inclined over time to seek new opportunities for development by



increasing challenging demands and structural and social resources, and, thus, to change and align the job to their own characteristics.

Hence, we predicted the following:

*Hypothesis 1:* Self-efficacy positively predicts job crafting over time.

In support of the reciprocal relationships of job crafting with either personal and job resources (Bakker & Demerouti, 2014; Bakker et al., 2014), Tims, Bakker and Derks (2013) demonstrated the influence of crafting behaviors on job resources. Employees from a chemical plant who crafted their job resources were found to have gained higher structural and social resources in the subsequent two months. In order to contribute to the JD-R framework, we are interested in investigating whether job crafting can foster personal resources, namely self-efficacy. Indeed, we assume that the relationship between self-efficacy and job crafting might be reciprocal, meaning that, in addition to the positive association of efficacy beliefs with crafting behaviors, a reverse relationship is equally probable.

To explain this, first off, we draw upon the mutual relationship between job and personal resources. When employees work in a resourceful environment they feel more competent and valued; thus, their self-efficacy may be boosted (Xanthopoulou et al., 2009). When employees actively contribute to building such a resourceful and meaningful environment via crafting actions, they may develop their self-efficacy beliefs (i.e., personal resources) to an even greater extent. In other words, job crafting enables individuals to act upon their work context, consequently reinforcing their perceived confidence to control and influence it.

Second, job crafting may fuel the main sources of self-efficacy, namely mastery experiences, vicarious experiences, and social persuasion (Bandura, 1997, 2012). More numerous resources and challenges on the job result in greater resilience in the face of difficulties, social support and work successes, subsequently boosting individual's confidence in his or her own capabilities. By increasing the number and quality of structural resources and challenges, employees may confront mastery experiences and have the occasion to enlarge capabilities, skills and

knowledge and to prove them on the job. Mastery experience is considered the first source of self-efficacy. Furthermore, when employees expand their social resources, asking for collegial advice and enlarging their social interactions on the job, they may engage in social modeling, relying on success of similar peers to raise their perceived self-efficacy (i.e., vicarious experience). Finally, seeking supervisor feedback and coaching may enhance efficacy beliefs through social persuasion, the third source of self-efficacy. Moreover, by increasing the opportunities for feedback and coaching (i.e., increasing social job resources), people may promote the core properties of human agency that form the foundation of efficacy beliefs (Bandura, 2001, 2006a). Indeed, feedback from supervisors or colleagues may help the individual to reflect on his/her actions, standards and thoughts, thus increasing the agentic capability of self-reflectiveness. Feedback may also motivate the employee to pursue his/her action plans and may guide the regulation of the course of actions, consequently enhancing the agentic property of self-reactiveness. Coaching can assist individuals in setting goals, developing action plans, identifying strategies for realizing them, anticipating possible outcomes and visualizing future opportunities and obstacles. In other words, coaching may sustain the agentic properties of intentionality and forethought.

Third, a recent study showed a positive effect of a job crafting intervention on self-efficacy (van den Heuvel, Demerouti, & Peeters, 2015). The intervention employed self-managing and goal setting techniques to train employees to mold job demands and resources. The training resulted in more numerous on-the-job learning activities; reflection upon these activities explained the increase in self-efficacy beliefs.

Therefore, we set the following hypothesis:

*Hypothesis 2: Job crafting positively predicts self-efficacy over time.*

### **From Job Crafting to Job Performance**

Job crafting behaviors have been associated with important organizational outcomes, in terms of reduced turnover and, above all, higher performance (Tims & Bakker, 2010). Multiple mechanisms may explain the positive effect of job crafting on individuals' performance. First,

modifications in job characteristics create a more resourceful and challenging work environment for employees; that is, crafting the level of structural and social resources expands the amount of resources the individual can rely on (Tims et al., 2013). In turn, job resources support performance both extrinsically, since they instrumentally aid the employee in pursuing work goals (e.g., by providing higher control and feedback; Tims & Bakker, 2010), and intrinsically, through satisfaction of basic human needs such as autonomy, competence, and relatedness (Ryan & Deci, 2000).

Consistent with Hobfoll's (2001) conservation of resources theory, an accumulation of extra resources by crafting behaviors allows people to meet job demands more easily and protects them from stress, burnout and exhaustion (Nielsen & Abildgaard, 2012; Petrou et al., 2015), enabling higher performance. Moreover, when available job resources are sufficient to deal with job demands, seeking more challenging demands (e.g., attractive activities, innovative projects, stimulating extra tasks) encourages employees to use all their own skills. This promotes work motivation and goal attainment (Crawford et al., 2010; LePine et al., 2005).

Also, by aligning job design to one's needs and goals, job crafting improves person-organization (P-O) fit (Chen, Yei, & Tsai, 2014), reinforces work identity and work meaningfulness (Wrzesniewski & Dutton, 2001), and positively impacts attitudes toward the job (e.g., Bakker et al., 2012; Demerouti, Bakker, & Halbesleben, 2015b; Leana, Appelbaum, & Shevchuk, 2009). These reflect factors able to sustain performance at work.

Empirical evidence has confirmed the positive association between job crafting and individuals' productivity outcomes. Job crafting has been found to be positively related to colleagues' ratings of job performance both directly (Tims et al., 2012) and indirectly, via the mediating role of work engagement (Bakker et al., 2012). The latter indirect link was also obtained with self-reported performance, measured one month later (Tims et al., 2015), and in relation to contextual performance, assessed by supervisors (Demerouti, Bakker, & Gevers, 2015a). Moreover, seeking resources appears to be the most impactful crafting dimension for job performance. Indeed,

it has been found to predict self-reported task performance one year later (Petrou et al., 2015) and the everyday changes in this dimension favored daily self-rated performance through daily enhanced work enjoyment (Tims et al., 2014), work engagement or autonomy (Demerouti et al., 2015b).

Our study intends to verify that crafting behaviors predict job performance, using supervisory appraisals of employees' performance collected in the subsequent year to the job crafting measurement. Hence, we set the following hypothesis:

*Hypothesis 3: Job crafting positively predicts job performance over time.*

### **From Self-efficacy to Job Performance: The Mediating Role of Job Crafting**

Within social cognitive theory (Bandura, 1986), self-efficacy represents the most powerful predictor of job performance (Brown, Lent, Telandera, & Tramayne, 2011; Judge & Bono, 2001; Stajkovic & Luthans, 1998). As anticipated, highly self-efficacious employees focus on opportunities and challenges rather than impediments; they generally think in a more optimistic, self-enhancing way. Also, they set higher goals for themselves, sustain their own motivation, and are less vulnerable to stress and depression. As a result, the likelihood of achieving successful results increases (Bandura, 1997).

Additionally, self-efficacy beliefs determine to what extent people intentionally act on their own functioning and life circumstances (Bandura, 1989). Highly self-efficacious individuals exercise their control on the surrounding context, make causal contributions to it through their actions and initiate changes; in one expression, they exert their human agency (Bandura, 1989, 1997). In this respect, since job crafting is defined as self-initiated bottom-up modifications to job design in accordance to one's preferences and skills, it may be regarded as the expression of agentic behaviors undertaken by highly self-efficacious employees to act transformatively on their work environment, to adapt it to their needs and pursue their goals.

Therefore, the more people are persuaded to be able to effectively manage work circumstances, the more they will initiate intentional actions and re-create their work environment

in a proactive way, through the deployment of diverse structural and social job resources and the exploration of challenging job demands. As a result, they may establish more adequate conditions for effective performance (Bakker et al., 2012; Tims et al., 2014, 2015), supporting their job attitudes and work motivation. Therefore, we propose that job crafting represents the mechanism through which self-efficacy manifests itself in behaviors, linking perceived control over one's environment to positive individual outcomes, such as high job performance. Accordingly, we expected the following:

*Hypothesis 4:* Job crafting mediates the longitudinal positive relationship between self-efficacy and job performance over time.

## **Method**

### **Sample**

The study was conducted in one of the largest service organizations in Italy, which provides a range of services in multiple business areas, such as finance, insurance, and digital communication. Two decades ago, the company started a complex process of reorganization to increase and ensure its competitive advantage. The main changes regarded the technology system and the range of products and services offered to clients. At the same time, the company initiated a deep transformation of its organizational culture, promoting new business values such as innovation, customer orientation and effective energy. This was mainly accomplished through a new system of human resource management and development, aimed at increasing the responsibility, engagement and proactivity of each employee in the change process, the achievement of business objectives, and his/her daily work activities.

The sample consisted of 465 white-collar employees who participated in both waves of the research project. All participants were professionals, working in line functions in the headquarters of the company located in Rome. Within the company, professional roles refer to highly skilled positions characterized by elevated professional know-how, a high level of autonomy and a direct link to organizational goals. They represent the so-called “knowledge workers”, undertaking

activities such as study, consulting, support, analysis, planning and organizing, research and development and the application of innovative methodologies. They are mostly nested within organizational functions such as administration and control, information technology and private markets.

Participants were tracked over a two-year period. In terms of demographics, there were more males (57%) than females, with a mean age of 44.23 (SD = 8.95) years, and an average job tenure of 15.08 (SD = 10.23) years. Their years of education ranged from 8 to 18; 65% had earned a university degree, 34% had completed high school, and 1% had completed junior high school.

### **Procedure**

Performance ratings were provided at the end of each year by the human resource (HR) department, through the company's performance appraisal system. Self-report data on the study variables (i.e., self-efficacy, job crafting) were gathered via two online questionnaires in the spring of two succeeding years. In detail, the research started in February with the first questionnaire administration, and supervisors evaluated the annual performance of their employees in December of the same year. The second data collection was conducted one year later, in April, and the supervisory performance appraisal was completed in December again. Respondents completed the questionnaires in Italian.

Participation in the study was voluntary, and the research team guaranteed confidentiality to all respondents. In order to match the answers provided by each individual with his/her performance ratings at the two waves, the HR department assigned each participant a code. The code was used to log in and respond to the online questionnaires. In this way, the HR department knew the name of the employee, his/her code, and the performance ratings but did not know the answers to the questionnaires, whereas the research team knew the code, the answers to the questionnaires and the objective measures provided by the company, but not the name of the employee.

### **Measures**

**Self-efficacy.** Consistent with Bandura's (2006b) recommendations for construct specificity,

perceived work self-efficacy was measured by a customized scale that was specifically related to work domains of the sample of employees in our study. The scale was developed in Italian and it included seven statements (Cronbach's alpha = .92 at Wave 1, and .91 at Wave 2), framed as beliefs of being able to handle job responsibilities, challenging situations and coordination with colleagues (e.g., "In my work I am confident I can generate new ideas in order to deal with organizational demands"). The statements were measured on a 7-point scale ranging from 1 = *Cannot do at all* to 7 = *Highly certain can do*.

**Job crafting.** Job crafting was measured by three sub-dimensions of Tims et al.'s (2012) job crafting scale (as in Bakker et al., 2012): "increasing structural job resources" (Cronbach's alphas were .76 at Wave 1, and .79 at Wave 2), "increasing social job resources" (Cronbach's alphas were .69 at Wave 1, and .73 at Wave 2), and "increasing challenging job demands" (Cronbach's alphas were .72 at Wave 1, and .77 at Wave 2). Each sub-scale included five statements (e.g., "I try to develop myself professionally", "I ask others for feedback on my job performance", and "When an interesting project comes along, I offer myself proactively as project co-worker" respectively). The sub-scales were translated into Italian and back-translated into English to ascertain equivalency. Items were answered using a 7-point frequency scale (from 1 = *Never* to 7 = *Always*).

**Job performance.** Supervisors rated employee performance through the company's established performance appraisal system. The system aims to measure performance outcomes on the basis of the firm's distinctive core competencies that include customer focus, communication, network management, problem solving and change management. Data on job performance were in the form of single indicators, reflecting the supervisory global evaluation of the performance of each individual. In other words, supervisors assessed each employee via a single item measuring the overall performance of the employee across the five abovementioned domains. Evaluations were offered by using a 10-point scale (labels: 1 = *Inadequate*; 2–3 = *Improvable*; 4–6 = *Average*; 7–9 = *Elevated*; 10 = *Beyond expectations*).

**Control variables.** Given the significant role played by demographic variables in performance evaluations (Sturman, 2003), gender, organizational tenure and age were included in the study design as control variables. Gender was coded 1 for male and 2 for female, while organizational tenure and age were measured in years. Demographic information was provided by the HR department along with participants' performance ratings.

### **Modeling Strategies**

Following the suggestions of Cole and Maxwell (2003; Maxwell & Cole, 2007), we tested our theoretical model using a two-wave mediational design. Two-wave mediational models are superior to cross-sectional designs in that they (1) allow one to better investigate the likely direction of causal influence among variables, (2) lessen biases in testing mediation and (3) allow for more stringent testing of alternative models (Cole & Maxwell, 2003; Maxwell & Cole, 2007). Under the assumption that the structure of the relationships among study variables is the same across the two time points (i.e., stationarity), mediational processes may be investigated with two waves of data (Cole & Maxwell, 2003, p. 561), as is the case in the present investigation.

In our model, job crafting, posited as a mediator, was predicted over time by self-efficacy, posited as the predictor (Cole & Maxwell, 2003). Moreover, autoregressive paths were included so that each cross-time cross-lagged path takes into account the stability of the variables. The hypothesized stream of relationships is represented by (1) the cross-time cross-lagged path from self-efficacy at T1 to job crafting at T2, (2) the cross-time cross-lagged path from job crafting at T1 to job performance at T2 and (3) the cross-time cross-lagged path from job crafting at T1 to self-efficacy at T2.

This model specification allowed us to test longitudinal mediations as follows. The hypothesized influence of self-efficacy on job crafting was represented by the cross-time cross-lagged paths from T1 self-efficacy to T2 job crafting. According to Cole and Maxwell (2003; see also MacKinnon, 2008), this link represents the analogous of the path usually labelled as "path a" in cross-sectional mediational models, linking the predictor to the mediator. Likewise, the path from



T1 job crafting to T2 job performance represents the hypothesized flow of influence linking these two constructs across time in the mediational chain. This path represents the analogous of the “path b”, linking the mediator to the outcome in cross sectional models (Cole & Maxwell, 2003; MacKinnon, 2008). The product between the coefficients associated with the above pairs of cross-time cross-lagged paths (i.e., the product: “path a\*path b”) provides an estimate of the partial regression coefficient associated with the mediated effect, or the longitudinal indirect effect of self-efficacy on job performance through job crafting (see Cole & Maxwell, 2003).

Control variables (i.e., gender, age and tenure) were included in relation to all latent variables and retained if they were significant ( $p < .05$ ).

### **Structural Equations Analysis**

We tested the hypothesized relations among the variables using a two-wave model and the covariance structure program *Mplus* 7.30 (Muthén & Muthén, 2012). The following criteria were employed to evaluate the goodness of fit:  $\chi^2$  likelihood ratio statistic, Tucker and Lewis index (TLI), comparative fit index (CFI) and the root mean square error of approximation (RMSEA) with associated confidence intervals. The significance value of chi-square is sensitive to large sample sizes and easily produces a statistically significant result (Bollen, 1989). We accepted TLI and CFI values greater than .90 and RMSEA values lower than .08 (Bentler, 1990).

In testing mediation, we followed MacKinnon, Lockwood, Hoffman, West, and Sheets (2002) who recommended the asymmetric confidence interval method to formally test the significance of longitudinal indirect effects (MacKinnon, Lockwood, & Williams, 2004). The critical values for the upper and lower confidence limits – 95% confidence interval (CI) – for the abovementioned indirect effect were calculated using the program PRODCLIN2 (Fritz & MacKinnon, 2007; MacKinnon, Fritz, Williams, & Lockwood, 2007).

### **Results**

Table 1 presents the zero-order correlations among self-efficacy, job crafting and job performance at the different time points. High correlations across time attest to the stability of all

variables. As expected, self-efficacy was significantly and moderately correlated with job crafting across time. Moreover, self-efficacy and job crafting correlated significantly with job performance across time.

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We implemented the mediational model in several steps.

We started with investigating the factor validity of the two measures of work self-efficacy beliefs and of job crafting. To this aim, we specified a longitudinal model in which self-efficacy and job crafting were included as latent variables, and supervisor-rated job performance as an observed variable, at T1 and T2. In detail, latent self-efficacy was loaded by seven items, and latent job crafting was loaded by three first order factors representing the individuals' scores on each of the subscales defining job crafting, namely increasing structural job resources, increasing social job resources and increasing challenging job demands. Each of the three first order job crafting indicators was loaded by its respective five items. This model showed a reasonable fit to the data:  $\chi^2(945) = 1579.763, p = .000, CFI = .936, TLI = .930, RMSEA = .038 (.035-.041)$ . Latent self-efficacy beliefs and job crafting correlated .74 at T1, and .83 at T2. The longitudinal stability resulted .75 for both work self-efficacy beliefs and job crafting.

Then, we tested the above described mediational model. In this model, at both time points, self-efficacy was defined as a latent variable loaded by its seven items, while job crafting was included as a latent variable loaded by the individuals' observed scores on its three components, and job performance was specified as an observed variable. Hypothesized cross-time cross-lagged paths among variables were specified. This model, represented in Figure 1, fit the data appreciably well:  $\chi^2(253) = 481.696, p = .000, CFI = .963, TLI = .956, RMSEA = .044 (.038-.050)$ .

Hypotheses 1 and 2, regarding the prediction of job crafting by self-efficacy (H1) and *vice versa* (H2), were both supported, confirming the hypothesized reciprocal association over time.

Hypothesis 3 (H3), positing a link between crafting behaviors and job performance over time, was also corroborated. The joint significance of the unstandardized cross-time cross-lagged path from self-efficacy beliefs to job crafting (implied by H1), and of the unstandardized cross-time cross-lagged path from job crafting to job performance (implied by H3), allowed us to formally test mediation, by estimating the statistical significance of the unstandardized indirect effect of self-efficacy on job performance through job crafting. This indirect effect resulted significant ( $B = .03$ ; 95% CI = .004–.056), supporting our fourth hypothesis (H4).

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 INSERT FIGURE 1 ABOUT HERE  
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Overall, the observed pattern of longitudinal predictions corroborated our theoretical model, which also accounted for a large proportion of variability for all variables (see Figure 1).

Among control variables, only age significantly predicted job performance both at T1 ( $\beta = -.28, t = -6.65$ ) and T2 ( $\beta = -.19, t = -5.23$ ). However, it was unrelated to self-efficacy and job crafting at either T1 or T2. Gender and job tenure were not significantly associated with self-efficacy, job crafting and job performance at any time.

### **Alternative Models**

To further corroborate our results, we tested several alternative models. First of all, we investigated the eventuality that the mediation of the influence of self-efficacy beliefs on job performance by job crafting was partial. To this aim, we tested the significance of a direct effect of T1 self-efficacy on T2 job performance. The significance of this path would constitute evidence for a partial mediation, and not full mediation as assumed in the above best fitting model. Including the aforementioned direct path did not significantly improve the fit of the model ( $\Delta\chi^2_{(1)} = 3.44, p = .06$ ).

We also tested the statistical significance of two remaining plausible reverse cross-time cross-lagged paths: (a) from job performance at T1 to self-efficacy at T2 ( $\Delta\chi^2_{(1)} = .55, p = .46$ ); and (b) from job performance at T1 to job crafting at T2 ( $\Delta\chi^2_{(1)} = .65, p = .42$ ). Neither of these reverse

effects were significant, further corroborating the likelihood of the observed direction of the relationships among variables.

### **Discussion**

The present study offers innovative insights into the network of relationships among personal resources, crafting behaviors and performance at work. First, drawing upon social cognitive (Bandura, 1986) and JD-R theories (Bakker & Demerouti, 2014), the results show evidence of a reciprocal association between a personal resource, that is self-efficacy beliefs, and job crafting. Second, the study verifies the positive link between crafting behaviors and supervisory ratings of performance over time. Finally, it provides strong empirical support for the mediating role of job crafting in the association between self-efficacy beliefs and job performance over time. Interestingly, the mediational link uncovers an additional, yet unexplored, mechanism through which self-efficacy leads to positive individual outcomes.

We found that higher self-efficacious employees were more likely to alter the task and social boundaries of their work by trying to develop their abilities and learn new things, taking on extra tasks, volunteering for new projects and asking for support and advice from colleagues and supervisors; essentially, by engaging in crafting behaviors. This finding is in line with social cognitive theory (Bandura, 1986), which designates self-efficacy as the fundamental basis of human agency. Individuals with strong beliefs in their capabilities are more likely to act proactively and intentionally on their context, meaning that they are more inclined towards “playing” with the task and social characteristics of their job. Hence, they are more prone to proactively initiate bottom-up job design processes (i.e., job crafting), aimed not only at improving the fit with their job but also at facilitating their development. Indeed, self-efficacy encourages people to continuously look for opportunities to prove and strengthen their abilities, to set challenging goals for themselves and to achieve personal and professional growth. As a consequence, the likelihood to seek job and social resources, as well as to undertake stimulating and innovative activities, increases.

Moreover, we found a positive reciprocal relationship between self-efficacy and job crafting. People engage in crafting behaviors to satisfy their need for control at work and their positive self-image (Wrzesniewski & Dutton, 2001); therefore, it is not surprising that crafting actions may enhance perceived confidence in one's capabilities to control the environment and achieve success. Our finding is in line with the current state-of-the-art JD-R theory, which suggests a positive cycle between job crafting, job and personal resources and work engagement (Bakker & Demerouti, 2014; Bakker et al., 2014). Recent research has documented the increase in job resources due to crafting behaviors (Tims et al., 2013; van den Heuvel et al., 2015). Our study adds to this knowledge by illustrating how job crafting may enhance personal resources (i.e., self-efficacy) as well. This result may be explained through social cognitive theory (Bandura, 1986). When employees increase the number of resources and challenging demands at work, they simultaneously stimulate the main sources of self-efficacy, namely mastery and vicarious experiences and verbal persuasion (Bandura, 1986). Indeed, challenging demands can create mastery experiences by offering an individual the occasion to test his or her abilities on the job and to experience goal achievement and success.

Work success is also facilitated by the increase in social and structural resources, which ensures the employee has adequate support when needed. Furthermore, by extending social interactions at work (i.e., increasing social resources), workers can benefit from vicarious experiences. In other words, they may rely on social modeling and fuel their self-efficacy beliefs by observing the positive and successful experiences of similar peers. Finally, seeking supervisory feedback and coaching may increase encouragement and positive comments via social persuasion, thus boosting the employee's confidence in his or her capabilities. At the same time, feedback and coaching by supervisors and colleagues offer the employee precious information about the course of actions he/she is implementing to pursue desired goals. This information stimulates the individual to reflect on actions and objectives and to correct and regulate them. In other words, it promotes

self-reflectiveness and self-reactiveness that are the agentic capabilities underlying self-efficacy beliefs (Bandura, 2001, 2006a).

The above explanation of the reverse self-efficacy-job crafting relationship emphasizes how the change in the work environment, initiated by an employee's spontaneous crafting actions, increases self-efficacy beliefs. Crafting behaviors lead to an improvement in the range of challenging demands and resources (Tims et al., 2013), creating a more inspiring and resourceful work context and providing the individual with more numerous occasions for mastery and vicarious experiences, social persuasion, and the development of the agentic capabilities behind self-efficacy. The result is increased self-efficacy. In other words, the positive effect of job crafting on self-efficacy beliefs may not much be linked to the "potential" individual ability to alter job characteristics (a sort of job autonomy), and thus to the possibility to exert some degree of agency by acting upon and controlling the environment. Such effect may be due to the "actual", real opportunity that the person has to modify job demands and resources according to his/her needs and to the resulting improvement in the work environment. Future research should continue investigating the consequences of crafting behaviors for work characteristics and, in turn, personal resources.

Additionally, the reciprocal relationship between self-efficacy and job crafting expands results from van den Heuvel et al.'s (2015) study, which tested the effect of job crafting intervention on self-efficacy. Their study found evidence supporting the intervention's positive impact on participants' self-efficacy beliefs. It is important to note that van den Heuvel et al.'s (2015) study verified the influence of "enacted" crafting behaviors on self-efficacy, as triggered by the intervention, rather than by spontaneous behaviors, self-initiated by the employee to modify job resources and demands. Thus, the findings speak to the effectiveness of the intervention itself, rather than demonstrate the effect of job crafting. Moreover, the intervention combined JD-R theory with components from social cognitive (Bandura, 1986) and goal setting (Locke & Latham, 2013) theories. The training included a goal crafting plan and self-monitoring techniques, which could

explain improved self-efficacy beliefs, as the authors discuss. Differently, our finding isolates the positive effect of crafting behaviors on self-efficacy. Furthermore, van den Heuvel et al.'s (2015) study failed to confirm the association between weekly job crafting and self-efficacy across a period of four weeks, likely because – as the authors explain – crafting behaviors may accumulate over time, and thus a longer timeframe may be needed to detect any significant relationships. Our result seems to corroborate this explanation, since a longer, yearly gap separates our measurement of job crafting and self-efficacy. However, this is only a cautious suggestion, as longitudinal research is necessary to measure and model the effect of time in the association between the two variables.

We also found evidence for the positive association between crafting behaviors and job performance over time. Specifically, individuals who craft their job receive higher performance evaluations. Job crafters create a highly resourceful and stimulating environment for themselves by enlarging their social and structural job resources and engaging in innovative and interesting projects. This sustains their motivation and job performance, as reflected by the higher performance evaluations received. Previous research has supported the hypothesis that job crafting may favor individual productivity (Petrou et al., 2015; Tims et al., 2012, 2014, 2015). However, to the best of our knowledge, this is the first study employing organizational performance ratings, collected one year later, to assess job performance. The use of such an external measure excludes the possibility that the positive association may be inflated by self-report biases or common method variance (Podsakoff, MacKenzie, & Podsakoff, 2012).

Most importantly, this study contributes to better understanding the behavioral mechanisms linking self-efficacy to job performance. Indeed, the observed pattern of longitudinal predictions supported the pivotal role of job crafting as the mediator between self-efficacy beliefs and individual performance. Job crafting may be seen as the behavioral expression of human agency, representing the self-initiated agentic behaviors that carry the influence of self-efficacy on positive individual outcomes. In fact, the individual's perceptions of being in control of his/her functioning and of environmental events reinforces human agency, exerted through proactive and spontaneous

actions to take control of the situation and modify it according to one's needs and goals. These transformative behaviors ultimately represent the construct of job crafting. Self-efficacious employees, thus, will be more inclined to engage in crafting activities. This, in turn, allows the allocation of additional and sufficient resources to the task and sustains work motivation and productivity (Bakker et al., 2012; Tims et al., 2014), resulting in higher performance evaluations.

Moreover, we found small correlations between self-efficacy and job performance. This might be due to the fact that we used a generic nature of job performance, as self-efficacy has been reported to demonstrate stronger correlations with task performance rather than with job performance (Judge, Jackson, Shaw, Scott, & Rich, 2007). Furthermore, mixed results on the association between self-efficacy and job performance (e.g., Vancouver, 2012; Vancouver, Thompson, & Williams, 2001) have ignited a debate around the complex dynamics and processes underlying the link (e.g., Sitzmann & Yeo, 2013; Vancouver, 2012; Yeo & Neal, 2006). Drawing upon resource allocation theory (Kahneman, 1973; Kanfer & Ackerman, 1989; Yeo & Neal, 2004), scholars have argued that self-efficacy has a positive effect on performance only when it enhances the allocation of cognitive resources to the task (Beck & Schmidt, 2012; Vancouver, Weinhardt, & Schmidt, 2010; Yeo & Neal, 2013). Our results appear to go in the same direction. Job crafting may represent the behavioral mechanism translating self-efficacy into successful performance, because crafting actions ensure the allocation of higher cognitive, structural and social resources to the job, consequently sustaining goal achievement.

Finally, regarding demographic variables, significant associations were reported only for age and exclusively in relation to performance evaluations at both waves. Self-efficacy and job crafting do not appear to be related to the employee's gender, length of employment in the organization nor age. The negative link between age and supervisory ratings might be due to an inexorable decline in health, fluid intelligence and readiness to change associated with aging, impairing individual performance (Arvey & Murphy, 1998; Ng & Feldman, 2008). Furthermore, according to the lifespan development approach to work motivation (Kanfer & Ackerman, 2004) and to the socio-



emotional selectivity theory (Carstensen, 1995), younger individuals are more motivated to improve their abilities, pursue future- and knowledge-oriented goals and seek new and relevant information, in order to foster their personal and career development. Consequently, their job performance should be favored.

### **Limitations and Future Research**

The present study has some limitations that provide avenues for further research. First, job crafting and self-efficacy were self-reported, and this might foster common method variance (Podsakoff et al., 2012). Nevertheless, these are constructs that are most amenable to self-report, referring to beliefs, perceptions and evaluations related to the individual self-system. Furthermore, we collected data at four different points in time and gathered the supervisors' ratings of employees' performance from the performance appraisal system, which certainly attenuated the risk for correlation inflation for this variable (Podsakoff et al., 2012).

Second, although an external measure, supervisor-based job performance ratings may be affected by several biases that can influence the study results (Lefkowitz & Battista, 1995). Future studies may explore job crafting in relation to other and multiple forms of performance evaluations, for example to the outputs of 360 degree feedback (e.g., self-evaluation, colleagues' and supervisors' ratings), or more objective types of productivity, such as number of errors or goal achievement. Future research may verify to what extent supervisors are aware of the crafting behaviors of their coworkers and whether and how this may be associated with subsequent performance evaluations.

A third potential concern regards the generalizability of the findings. The specific types of jobs and organization may have influenced the results. As aforementioned, our employees held professionals positions, characterized by a certain degree of autonomy, decision power and job complexity. These job design features could have played a moderator role in our model. Indeed, our employees may have benefited from the discretion needed to craft the boundaries of their task and activities. In addition, the types of jobs may have been complex enough to offer individuals the

occasion to apply skills and abilities at work and to enhance growth and development. Furthermore, as described in the Method section, the company underwent a period of reorganization, which reshaped the organizational values and put greater emphasis on employees' proactive initiative and responsibility. This could have encouraged a climate that supported and positively evaluated proactive behaviors, such as job crafting. Therefore, this could further explain the positive relationship between employees' crafting actions and supervisory performance ratings. For future research, we strongly encourage exploring the moderating role of various characteristics related to the job, such as complexity and autonomy, as well as to the organization, such as organizational culture and climate.

Fourth, although a two-wave model may support causal inferences, we cannot definitely conclude that self-efficacy causes job crafting, and that job crafting causes self-efficacy and job performance. For this purpose, experimental designs have to be implemented. Moreover, although two waves of data allowed us to estimate the indirect effect of self-efficacy on job performance via job crafting, another wave of data is needed in order to formally test this mediation.

Our final concern is related to the self-report scales we used. The three dimensions of job crafting focused only on a small set of job demands (i.e., challenging) and job resources (i.e., structural and social), which may not reflect the entire or main range of demands and resources the employee may mold. Future studies may aim to enlarge the number of job characteristics included. In this regard, more explorative methodologies, such as focus groups or the critical incident technique (Flanagan, 1954), may be useful to depict the group of job demands and resources that individuals in diverse job positions manipulate more frequently. It could also be worthwhile to measure multiple facets of self-efficacy in relation to job crafting. We assessed work self-efficacy because it is consistent with behaviors aimed at work activities. However, social and affective self-efficacy (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003; Caprara & Cervone, 2000) might be more strongly associated with those aspects of job crafting oriented toward attaining satisfactory degrees of social interactions or seeking support (i.e., increasing social job resources).

### **Practical Considerations for Organizations**

With regard to the practical implications of our findings, organizations might want to promote job crafting behaviors, allowing enough autonomy to individuals to mold their job and designing training to empower them to use effective job crafting tactics, to re-create their own work in accordance with their needs, preferences and goals. The opportunity to craft structural and social resources as well as challenging demands should have positive consequences for individual productivity. Organizations may couple top-down job design approaches, conceived to adjust job demands and resources in the same way for all employees, with more innovative bottom-up designs, where job characteristics are optimized through crafting strategies in an individual-tailored way which suits each employee's motivation and objectives (Demerouti et al., 2015a). Such crafting strategies may be promoted via planned interventions combining informative sessions of crafting behaviors, setting personal crafting plans and employing self-monitoring techniques (van den Heuvel et al., 2015). Additionally, stimulating crafting behaviors may result in employees with more robust beliefs in their own capabilities to control the work context and effectively manage job assignments, consequently supporting employees' well-being and their personal and professional development (Bandura, 1997).

Finally, organizations may benefit from interventions directly aimed at strengthening workers' self-efficacy. Efficacy beliefs are susceptible to development through specific strategies. Thus, training should focus on the main sources of self-efficacy, such as mastery and vicarious experiences and social persuasion (Bandura, 1997), to encourage crafting behaviors that in turn facilitate individual achievement.

### **Conclusions**

In conclusion, the study contributes to unfold the relationships among personal resources (i.e., self-efficacy), job crafting and job performance by integrating JD-R (Bakker & Demerouti, 2014) and social cognitive (Bandura, 1986) theories. First, evidence of a positive reciprocal association between self-efficacy and job crafting was provided. Highly self-efficacious employees

are more likely to engage in crafting actions and, thus, to modify job demands and resources according to their needs and goals. Simultaneously, crafting behaviors boost self-efficacy beliefs. Indeed, by enlarging the number of structural and social resources as well as challenging demands on the job, employees may create a more resourceful and inspiring work environment that stimulates the agentic capabilities (e.g., forethought, self-reactiveness) behind self-efficacy beliefs and its main sources (e.g., mastery and vicarious experience, social persuasion; Bandura, 1997). Moreover, job crafting was positively related to job performance and, more importantly, mediated the relationship between self-efficacy and performance over time. Therefore, job crafting may be seen as the behavioral mechanism underlying the positive effect of self-efficacy on job performance, increasing our understanding of the processes linking self-efficacy beliefs to positive organizational outcomes. Organizations may want to set up interventions to promote the development of self-efficacy and the engagement in job crafting actions among their workforce. Future research is needed to explore our empirical model in other contexts and to support causal inference by adopting experimental and longitudinal designs.

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Table 1

Zero-order correlations and descriptive statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Self-efficacy T1	1								
2. Job Crafting T1	.53**	1							
3. Job Performance T1	.09	.14**	1						
4. Self-efficacy T2	.71**	.46**	.11*	1					
5. Job Crafting T2	.45**	.69**	.12*	.59**	1				
6. Job Performance T2	.10*	.19**	.62**	.15**	.19**	1			
7. Gender	-.08	-.02	.04	-.09	.01	-.01	1		
8. Age	-.10*	-.20**	-.29**	-.13**	-.16**	-.36**	-.07	1	
9. Job Tenure	-.12*	-.15**	-.29**	-.15**	-.15**	-.32**	.02	.81**	1
Mean	5.46	4.95	7.55	5.46	4.92	7.22	1.43	44.23	15.08
SD	.89	.66	1.12	.75	.65	.94	.50	8.95	10.23

Note. \*  $p < .05$ ; \*\*  $p < .01$ . T1 (= Time 1) corresponds to Year 1 of data collection. T2 (= Time 2) corresponds to Year 2 of data collection. SD = Standard Deviation. Gender was coded using 1 as male, and 2 as female.

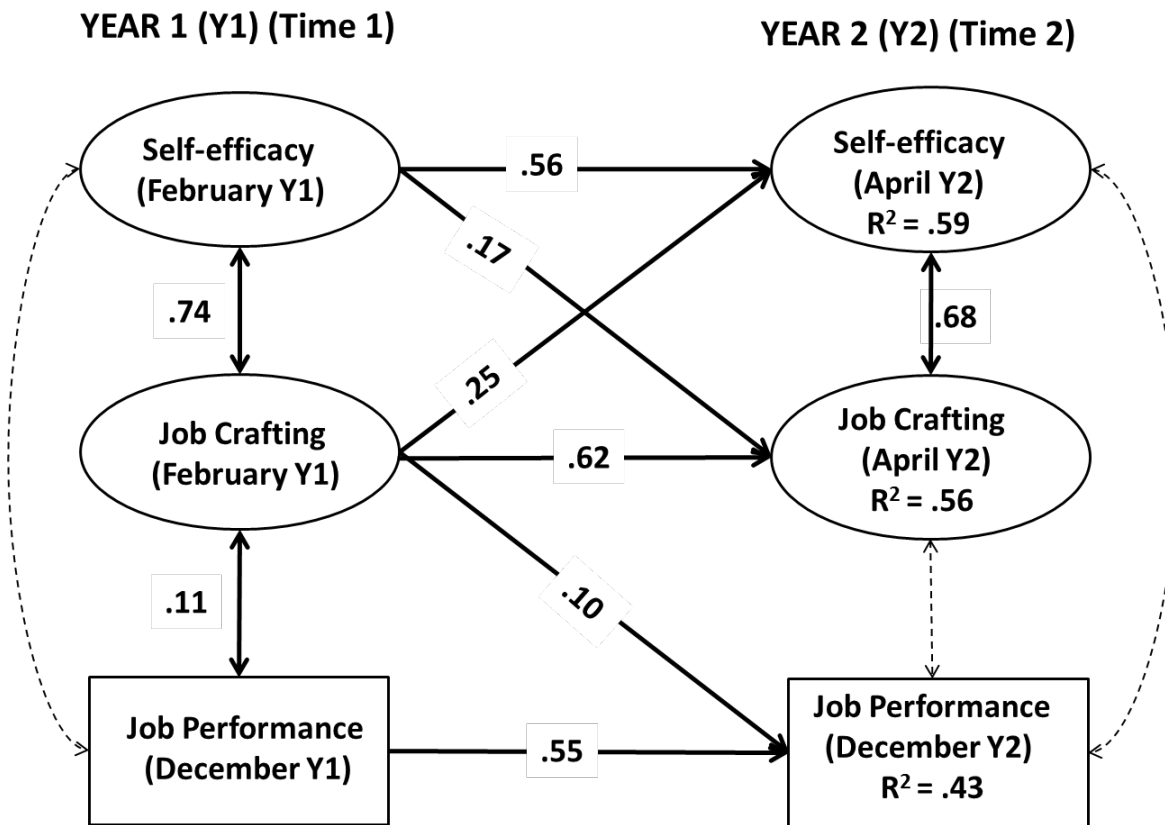


Figure 1. Results from structural equation analyses

Variables are indexed by year of data collection. Year 1 corresponds to Time 1 (T1) and Year 2 corresponds to Time 2 (T2). For the sake of clarity, the precise time points are reported (i.e., February Y1 for T1 self-report measures, December Y1 for T1 job performance, April Y2 for T2 self-report measures, December Y2 for T2 job performance). Significant coefficients are in bold and on solid lines. Non-significant coefficients are fixed to be equals to zero and are represented by dashed lines.