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Assessing job crafting competencies to predict tradeoffs between competing outcomes

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Abstract

We introduce the job crafting competency construct and apply it to predict tradeoffs between competing outcomes that are inherent in job crafting, like performance and well-being or engagement and withdrawal. Job crafting competencies are *the clusters of individual knowledge, skills, and abilities that are necessary to achieve personal objectives through effective job crafting problem-solving*. We create a framework of job crafting competencies consisting of comprehensive/simplistic heuristic information use and approach/avoidance problem-solving skills. In Study 1, we operationalize competencies as profiles demonstrated through an aptitude-oriented assessment that predicts differences in outcomes. Five distinct profiles emerged in a sample of 174 workers. The *high-volume analytic problem-solving* profile was associated with higher performance and strain, while the *ambivalent acquiescence* profile was associated with lower performance and strain. The *practical problem-solving* profile minimized tradeoffs between performance and strain. *Rapid problem-solving* and *low-volume analytic problem-solving* profiles were variants in between these other patterns. Study 2 used a survey of 323 workers to support the uniqueness of the five competencies, and their relationships with approach/avoidance job crafting, engagement, and withdrawal. The research identifies a new job crafting individual difference (job crafting competencies) to delineate outcomes and tradeoffs according to unique competency profiles.

KEYWORDS

heuristics, job crafting, job design, motivation, performance, stress, work competencies

1 | INTRODUCTION

Research on job crafting considers the interplay between individuals and their environments, revealing that contemporary workers can be active job designers and problem-solvers as well as sources of insight and work process innovation (Bindl, Unsworth, Gibson, & Stride, 2019; Bruning & Campion, 2018, 2019; de Bloom, Vaziri, Tay, & Kujanpää, 2020; Lazzazara, Tims, & de Gennaro, 2020; Tims, Bakker, & Derks, 2012, 2013; Wrzesniewski & Dutton, 2001). Job crafting has been broadly defined as, "the changes to a job that workers make with the intention of improving the job for themselves. These changes can take structural (i.e., physical and procedural), social, and cognitive forms" (Bruning & Campion, 2018, p. 500). This body of research has considered who engages in certain types of job crafting and who has greater benefit from job crafting by explaining peoples' idiosyncratic traits, identities, characteristics, and motives (Rudolph, Katz, Lavigne, & Zacher, 2017; Zhang & Parker, 2019). However, it fails to explain how job crafters differ in problem-solving capabilities

and how these competencies explain tradeoffs between performance and well-being. Thus, the current research seeks first to explain how people differ in job crafting problem-solving competencies, and then seeks to understand how these different competencies relate to people's work outcomes (i.e., performance, well-being, engagement, and withdrawal).

We extend this research on job crafting to offer an information processing perspective by describing individual differences in job crafting problem-solving competencies that could help people manage performance/well-being tradeoffs according to the volume and function of information they use when deciding how to craft their jobs. Specifically, we explain how job crafters process information according to different problem-solving heuristics that could help (or hinder) the translation of their motives and unfulfilled needs into effective job crafting solutions (Artinger, Petersen, Gigerenzer, & Weibler, 2015; Bruning & Campion, 2018; de Bloom et al., 2020; Gigerenzer & Gaissmaier, 2011; Lazazzara et al., 2020). Therefore, we propose a theoretical perspective that integrates the literatures on information processing, problem-solving, and heuristics with the research on job crafting. This perspective is based on the fundamental assertion that job crafting involves problem-solving processes that include the recognition of problems (i.e., motives for crafting), a search for solutions, and an analysis of alternatives to achieve motives. Here, job crafting is engaged according to decisions derived from problem-solving processes that can vary in the comprehensiveness of information considered and approach/avoidance characteristics (Bruning & Campion, 2018; de Bloom et al., 2020; Gigerenzer & Gaissmaier, 2011).

Through this new perspective, we contribute in two ways. First, we explain how people differ in their competencies to process information when crafting their jobs according to the heuristics they use. Jeppesen and Lakhani (2010, p. 1019) state, "Heuristics are the rules or algorithms of search that tell the problem solvers the specific actions that need to be taken and the potential ways of finding the best solution." We propose that heuristics help guide job crafters' consideration of the most relevant and useful information. We also consider their use of approach/avoidance problem-solving skills, that accounts for this underlying distinction within job crafting processes (Bruning & Campion, 2018; de Bloom et al., 2020; Lazazzara et al., 2020; Zhang & Parker, 2019), to understand how people can be more or less competent at using knowledge in either active problem-focused or avoidant withdrawal-oriented ways.

Early theory on job crafting differentiated job crafting from personal initiative, which was characterized as being motivated by solving problems or overcoming barriers, while job crafting was focused on modifying the crafter's sense of meaning, identity, and organizational role (Wrzesniewski & Dutton, 2001). However, research now shows that job crafting involves processes akin to problem-solving, as job crafters are motivated to fulfill needs of gaining control, esteem, competence, relatedness, comfort, security, or other helpful resources (Bruning & Campion, 2018; de Bloom et al., 2020; Lazazzara et al., 2020; Tims & Bakker, 2010; Wong, Škerlavaj, & Černe, 2017). For example, Lazazzara et al. (2020) found that job crafting motives took the forms of proactive goals characterized by approach or reactive coping characterized by avoidance. de Bloom et al. (2020)

similarly framed job crafting motives as discrepancies between the crafter's desired and fulfilled approach/avoidance needs. Wong et al. (2017) assert that job crafting involves mobilizing competencies that leverage environmental opportunities to create better fit. These goals and need discrepancies indicate the role problem-solving has in job crafting processes because both represent suboptimal states that initiate competence mobilization to achieve more desired future states. We do not assert that all job crafting is engaged to address motives that crafters characterize explicitly as "problems," but instead that job crafting motives are addressed in ways that are functionally similar to problem-solving (e.g., identifying issues to be addressed or needs to be fulfilled, generating and evaluating solutions, and planning implementation). We believe that while job crafting could address a wider range of motives than traditional problem-solving, the sequence and functions of information used in problem-solving processes (Delbecq & Van de Ven, 1971; Hill, Lippitt, & Serkownex, 1979) help explain the deliberate and comprehensive modifications people make to their jobs in many instances of job crafting, thus adding to our understanding of the phenomenon.

Second, we assess how job crafters' competency profiles relate to tradeoffs they make between performance and well-being. Workers craft their jobs to improve different outcomes (Kooij, van Woerkom, Wilkenloh, Dorenbosch, & Denissen, 2017; Tims et al., 2012, 2013; Zhang, Wang, Qian, & Parker, 2021), and we expect that tradeoffs between optimizing performance and well-being will be involved in this process (Campion & Thayer, 1985; Gigerenzer & Gaissmaier, 2011; Harju, Kaltiainen, & Hakanen, in press; Morgeson & Campion, 2002; Schwartz et al., 2002). The literature currently addresses optimization by comparing different types of job crafting behaviors (Lichtenthaler & Fischbach, 2019; Rudolph et al., 2017; Demerouti & Peeters, 2018). We extend this consideration by explaining how job crafters' problem-solving competencies relate to intentional or unintentional tradeoffs.

We proceed by reviewing the literature, describing job crafting competencies, and proposing hypotheses and research questions to foster new theory. We conducted two studies using multiple methods to provide more proof of the job crafting competency concept at this early stage of the research. Study 1 ($N = 174$) used a problem-solving test that measured the volume and function of information use to categorize peoples' job crafting competencies into profiles (clusters) according to heuristics that used variable amounts of information and reflected different approach/avoidance skills. These competency profiles were then related to performance and strain. Study 2 ($N = 323$) helped to confirm the dimensional structure of the heuristics reflected in the profiles and to clarify the approach/avoidance characteristics of these heuristics using survey items derived from the profile themes to assess their relationships with approach/avoidance job crafting, engagement, and work withdrawal.

2 | JOB CRAFTING

Wrzesniewski and Dutton (2001) explained job crafting as a complement to theories of job design and social information processing (Hackman & Oldham, 1980; Salancik & Pfeffer, 1978) by describing

how people redesign work to improve their meaning and identification. Subsequent perspectives considered managing job demands and resources (Petrou, Demerouti, Peeters, Schaufeli, & Hetland, 2012; Tims et al., 2012, 2013); crafting jobs toward strengths and interests (Kooij, van Woerkom, et al., 2017; Kuijpers, Kooij, & van Woerkom, 2020); and the distinction between approach and avoidance job crafting (Bindl et al., 2019; Bruning & Campion, 2018). There also appear to be tradeoffs made in optimizing performance, engagement, and well-being versus reducing strain, bored behavior, and turnover intentions (Bruning & Campion, 2018; Demerouti & Peeters, 2018; Harju et al., in press; Lichtenthaler & Fischbach, 2019; Rudolph et al., 2017; Tims et al., 2012).

Job crafting is idiosyncratic and people craft jobs differently according to their regulatory focus (Lichtenthaler & Fischbach, 2019); personality (Bakker, Tims, & Derks, 2012; Plomp et al., 2016; Rudolph et al., 2017); self-evaluations, efficacy, and competence (Niessen, Wesseler, & Kostova, 2016; Rudolph et al., 2017; Tims & Akkermans, 2017); perceptions of overqualification (Lin, Law, & Zhou, 2017; Zhang et al., 2021); needs and values (Niessen et al., 2016; Vogel, Rodell, & Lynch, 2016); fit (Lu, Wang, Lu, Wang, Lu, Du, & Bakker, 2014; Vogel et al., 2016); time perspectives (Kooij, Tims, & Akkermans, 2017); intensity (Dierdorff & Jensen, 2018; Mäkikangas, 2018); and adaptation to constraints (Berg, Wrzesniewski, & Dutton, 2010). Interventions directed at job crafters' objectives have also related to increased job crafting, fit, well-being, and performance (Kooij, Tims, & Akkermans, 2017; Oprea, Barzin, Vîrgă, Iliescu, & Rusu, 2019; van Wingerden, Bakker, & Derks, 2017; van Wingerden, Derks, & Bakker, 2017). This research explains who engages in certain *types* of job crafting and who has greater benefit from crafting. We offer a complementary explanation of how workers craft their jobs by proposing they have different problem-solving competencies, referred to henceforth as job crafting competencies for simplicity.

3 | JOB CRAFTING COMPETENCIES

Job crafting competencies are *the clusters of individual knowledge, skills, and abilities that are necessary to achieve personal objectives through effective job crafting problem-solving*. Campion et al. (2011), p. 226) outline competency modeling, and define competency models as, "collection(s) of knowledge, skills, abilities, and other characteristics (KSAOs) that are needed for effective performance in specific jobs in question." Competencies distinguish the level of job performance and are often organized around business objectives (Campion et al., 2011). Thus, competencies reflect the set of KSAOs needed to achieve key organizational objectives. Achieving work objectives via job performance is one outcome of job crafting, but job crafters also seek to reduce strain and improve well-being outcomes. Therefore, we replace the focus on organizational objectives and job requirements with a focus on employee objectives and motives, similar to how job crafting changed the focus of job design from organizational to incumbent initiated changes in jobs (Wrzesniewski & Dutton, 2001). Competency models capture one's capability to achieve organizational goals, while job crafting competencies capture one's capability to craft their job to fulfill personal motives and needs,

which may or may not align with organizational goals. Going forward, we discuss multiple interrelated concepts, including: *job crafting competencies*, which have just been defined; *job crafting competency profiles*, which represent the specific patterns of information use that occurs within subgroups (i.e., clusters); and *problem-solving heuristics*, which reflect thematic patterns of information used for deciding how to craft one's job. Simplified variants (e.g., "profiles" or "heuristics") will sometimes be used. Job crafting competencies determine the KSAOs people have to use when job crafting; profiles represent behavioral demonstrations of this information use; and heuristics reflect the guiding theme of this pattern of information use.

Different competencies could be relevant to job crafting such as job competencies, social competencies, or technological competencies. We focus on job crafting problem-solving competencies, as reflected in profiles of information use and heuristics, to complement the existing job crafting research focused on personality, motivations, and dispositions. Here, we account for how fulfilling motives and reconciling need discrepancies is accomplished through effective problem-solving (Bruning & Campion, 2018; de Bloom et al., 2020; Lazazzara et al., 2020; Tims et al., 2012, 2013) and that people can be more expert problem solvers according to their use of heuristics (Eisenhardt, Furr, & Bingham, 2010; Jeppesen & Lakhani, 2010; Shanteau, 1992).

4 | JOB CRAFTING COMPETENCIES AND PROBLEM-SOLVING HEURISTICS

We propose that people use heuristics to decide how they will craft jobs to address problems or unfulfilled needs (Berg, Grant, & Johnson, 2010; Berg, Wrzesniewski, & Dutton, 2010; de Bloom et al., 2020; Tims et al., 2012, 2013; Wrzesniewski & Dutton, 2001). Gigerenzer and Gaissmaier (2011) define heuristics as, "a strategy that ignores part of the information, with the goal of making decisions more quickly, frugally, and/or accurately than more complex methods" (p. 454). Heuristics vary according to the amount of information used, ranging from more simplistic to more comprehensive. Prior research considers how heuristics can be used to aid problem-solving (Jeppesen & Lakhani, 2010), improve decision-making effectiveness (Artinger et al., 2015; Day & Lord, 1992), minimize tradeoffs between incongruent objectives (Eisenhardt et al., 2010), and help people process specific environmental information (Lin et al., 2019; Lind, 2001), as well as create a source of potential bias (Tversky & Kahneman, 1974). Heuristics also parallel the concepts of maximizing and satisficing patterns of information processing (Schwartz et al., 2002). Maximizing involves using complete information to get an optimal solution, while satisficing is more abbreviated and only uses information until the first acceptable solution is found. In this regard, while maximizers might achieve the intended outcomes, this mode of information processing could also decrease well-being (Schwartz et al., 2002). Maximizing and satisficing can be focused on different information and outcomes, and these different foci can be reflected in heuristics that emphasize certain information.

We propose that job crafting involves using heuristics to produce effective solutions, and job crafting competencies explain the process

according to the heuristics used. Job crafting is a dynamic and unstructured activity where workers "deconstruct" the organizationally defined job and revise it according to their own motives (Wrzesniewski & Dutton, 2001). In this regard, the utility of heuristics can differ, as complicated objectives could require more complete information (Shanteau, 1992) or require optimizing heuristics that minimize tradeoffs (Eisenhardt et al., 2010). Other objectives might be comfortably and economically achieved through satisficing (Schwartz et al., 2002). Both comprehensive and more simplistic heuristics can have benefits, with the ultimate usefulness of the heuristics being contingent on their content and function (Gigerenzer & Gaissmaier, 2011). Thus, we consider nuanced profiles to account for the amount and type of information used to explain different patterns of outcomes.

Heuristics can be derived from job crafting competencies for two reasons. First, the information used draws on relevant knowledge (the K in KSAOs). Research suggests that people's professional backgrounds relate to the expertise they bring to problem-solving (Jeppesen & Lakhani, 2010); and the research on job crafting suggests that knowledge, status, perceived capability, and work complexity predict job crafting activities (Bruning & Campion, 2018; Leana, Appelbaum, & Shevchuk, 2009; Rudolph et al., 2017; Tims & Akkermans, 2017). Second, people can be more skilled at using information to solve problems (the S in KSAOs) according to the quality of information used (Gigerenzer & Gaissmaier, 2011; Shanteau, 1992) and the fact that people craft their jobs to match their own strengths and competencies (Kooij, van Woerkom, et al., 2017; Wong et al., 2017). In summary, some heuristics will be more comprehensive in the volume and quality of information used for problem identification, solution formulation, evaluation of pros and cons, and suggested implementations (Delbecq & Van de Ven, 1971; Hill et al., 1979). Others will be more simplistic in the volume and quality of this information. In our assessment of job crafting competencies, we consider both the volume of information used and the approach/avoidance skills reflected in how this information is used (explained below). This accounts for the fact that more information often reflects better approach problem-solving skills, but that sometimes less information, that reflects avoidance skills, could help minimize tradeoffs.

5 | COMPREHENSIVENESS OF INFORMATION USE

Our first objective was to explain how people differ in job crafting problem-solving competencies, which we believe will be reflected as information processing profiles. As suggested previously, job crafting competency profiles will reflect approach and avoidance problem-solving skills that are developed through experience and that are used to match a person's competencies and avoid their weaknesses (Kooij, van Woerkom, et al., 2017). Elliot (1999) states that, "in approach motivation, behavior is instigated or directed by a positive or desirable event or possibility, whereas in avoidance motivation, behavior is instigated or directed by a negative or undesirable event or

possibility" (p. 170). These approach and avoidance characteristics are present in job crafting motives, behaviors, and outcomes (Bruning & Campion, 2018; de Bloom et al., 2020; Lazazzara et al., 2020; Lichtenthaler & Fischbach, 2019; Zhang & Parker, 2019). Approach crafting increases the utility of work toward a given personal goal; and approach problem-solving skills could involve the use of information about the problem, solution, and implementation/context to fulfill motives in a problem-focused manner (Lazarus & Folkman, 1984; Wrzesniewski & Dutton, 2001). Avoidance crafting involves evading stressful or otherwise troubling aspects of work; and avoidance problem-solving skills could involve marginalizing situational demands through cognitive distortion (Lazarus & Folkman, 1984), closer scrutiny of one's potential actions to prevent negative repercussions (Hobfoll, 1989; Lichtenthaler & Fischbach, 2019), and reducing the cognitive effort of engaging in problems, solutions, and implementation further (Drummond & Brough, 2016). In this regard, we believe that more comprehensive information processing will tend to be associated with the use of approach skills as people process more information to maximize the positive valance of their decision outcomes (Elliot, 1999; Gigerenzer & Gaissmaier, 2011). Satisficing and the use of avoidance skills are also expected to be associated when people try to reduce the time, energy, and other resources invested in resolving undesirable situations that they do not expect will have positive outcomes (Hobfoll, 1989; Schwartz et al., 2002; Tims et al., 2012). Research on information processing profiles and job crafting reveals profiles accounting for comprehensive/simplistic information use (Lin et al., 2019) and approach or avoidant job crafting strategies (Mäkikangas, 2018). These results suggest that there will be at least two profiles. One that reflects more comprehensive information use and is more predominantly characterized by approach, and one that reflects more simplistic information use and is more predominantly characterized by avoidance.

> **Hypothesis 1.** *Job crafting competency profiles reflect variation in more comprehensive* versus *simplistic information use, whereby there will be at least two distinct profiles*: *a more comprehensive profile and a more simplistic profile.*

However, comprehensiveness and approach/avoidance characteristics are only expected to be partially interrelated, as more comprehensive information could be processed in a manner that uses predominantly avoidance skills when one carefully devises solutions to troubling problems. More simplistic information could also be used alongside approach skills when a person makes important decisions quickly without much deliberation, and they have considerable experience, expertise, or simple decisions to make. These competency profiles could reflect different combinations of comprehensive/simplistic and approach/avoidance information use as comprehensive-avoidance or simplistic-approach profiles that might deviate from the more intuitive comprehensive-approach and simplistic-avoidance profiles. It is unclear that the profiles will reflect a complete set of orthogonal combinations of these characteristics. Therefore, we propose the

following research question to guide our analysis of additional profiles.

Research Question 1. *How do the distinctions between comprehensive/simplistic information use and approach/avoidance skills create different profiles?*

6 | THE PERFORMANCE ENHANCEMENT AND STRAIN REDUCTION FUNCTIONS OF JOB CRAFTING COMPETENCIES

Our second objective was to explain how different competencies (i.e., competency profiles) relate to workers' outcomes. As described previously, the literature suggests that job crafting competencies may serve both performance enhancement and strain reduction functions. We predict that greater knowledge will yield more informed problem-solving and better performance; and that more skilled problem-solvers will use information more effectively, especially when they use a higher proportion of approach skills rather than avoidance skills. In this regard, more comprehensive heuristics should encompass more knowledge and a predominant use of approach problem-solving skills. They will also reflect a less predominant use of avoidance skills, as people attend to more problem-relevant information to maximize their effectiveness in achieving the outcomes they seek (Elliot, 1999; Gigerenzer & Gaissmaier, 2011; Schwartz et al., 2002).

Heuristics are proposed to involve a tradeoff between accuracy and effort, whereby more accurate decisions require more effort and vice-versa (Gigerenzer & Gaissmaier, 2011). More comprehensive information also tends to yield better decisions (Day & Lord, 1992; Gigerenzer & Gaissmaier, 2011). Thus, higher quality information that is derived from more comprehensive processing is expected to make job crafting more effective according to the crafters' broader objectives. In this regard, research suggests that training for comprehensive and strategic job crafting could make people more efficient by aligning their competencies with their work demands (Kooij, van Woerkom, et al., 2017), could facilitate work process improvement by increasing openness to feedback and change (Demerouti, Xanthopoulou, Petrou, & Karagkounis, 2017; van Wingerden, Bakker, & Derks, 2017), and could generally improve performance and development (van Wingerden, Derks, & Bakker, 2017). The literature on experts, highly knowledgeable and skilled individuals within a profession (Shanteau, 1992), also suggests that the heuristics engaged by experts can improve decision-making (Day & Lord, 1992; Maitland & Sammartino, 2015) and reduce tradeoffs between competing objectives (Eisenhardt et al., 2010). These experts are often effective because they use the most important information in the best way, suggesting that performance depends on the use of more information and relevant problem-solving skills.

When job crafting, approach and avoidance skills are particularly relevant, as there is strong evidence that approach job crafting benefits engagement and performance (Lichtenthaler & Fischbach, 2019; Rudolph et al., 2017). Here, people with predominantly approach problem-solving skills could foster better job crafting solutions by

focusing on problems and problem-focused solutions (Lazarus & Folkman, 1984). They could also be more aware of relevant contextual information that would ultimately make the "solution" more effective (Day & Lord, 1992; Eisenhardt et al., 2010; Gigerenzer & Gaissmaier, 2011; Shah & Oppenheimer, 2008). People with predominantly avoidance job crafting skills might neglect the problem, solution, and relevant context by using capabilities in emotion focused coping (Lazarus & Folkman, 1984) like denying the existence of a problem, strategizing/justifying problem-avoidance, blocking out thoughts of a problem, obsessing over whether the solution would optimize the net reduction of uncertainty and risk, or distracting ones' self with extraneous and tangential information. In some cases, using avoidance skills could limit people's consideration of information about the problem and contextual feasibility of solutions (Gigerenzer & Gaissmaier, 2011), and make them more prone to neglect, off-task bored behavior, and turnover intentions (Bruning & Campion, 2018; Rudolph et al., 2017). We believe comprehensive information use will be more directive, and it will also specifically involve relatively more approach problem-solving skills, which together would relate to higher performance.

Hypothesis 2. *Job crafting competency profiles that involve more comprehensive information processing will be associated with relatively higher performance and profiles that involve less comprehensive (i.e., more simplistic) information processing will be associated with relatively lower performance.*

The use of higher volumes of information in job crafting could also relate to higher strain and some people could be better at using heuristics to conserve energy and other cognitive resources (Gigerenzer & Gaissmaier, 2011; Hobfoll, 1989; Schwartz et al., 2002). Gigerenzer and Gaissmaier (2011) assert that cognitive processing involves tradeoffs between accuracy and effort. We expect this effort to reflect a resource that relates to strain, as the conservation of resources theory asserts that, "people strive to retain, protect, and build resources and that what is threatening to them is the potential loss of these valued resources," (Hobfoll, 1989, p. 516). Thus, we propose that more comprehensive information processing will be more depleting and psychologically harmful than simpler and less effortful cognitive processing for two reasons. First, heuristics, particularly those that consider contextual information, can reduce this volitional effort (Gigerenzer & Gaissmaier, 2011; Shah & Oppenheimer, 2008). Here, comprehensive information processing requires more resources from the worker, such as time, attention, energy, and autonomy (e.g., the use of their unscheduled time). Second, people maintain better psychological well-being, and could engage less cognitive rumination, when they use effective satisficing strategies in lieu of maximizing (Schwartz et al., 2002; Vargová, Zibrínová, & Baník, 2020). Thus, satisficing enables people to make adequate decisions about how to craft their jobs, which they believe can have acceptable outcomes while also conserving resources.

While the research on job crafting suggests that approach job crafting benefits well-being in addition to performance (Lichtenthaler & Fischbach, 2019; Rudolph et al., 2017), and more comprehensive

information processing should foster higher performance (Gigerenzer & Gaissmaier, 2011), minimizing strain and maintaining well-being is more of a balancing act than an exercise in maximization like increasing performance tends to be (Gigerenzer & Gaissmaier, 2011; Hobfoll, 1989; Schwartz et al., 2002). Indeed, recent research suggests that approach crafting can burden workers with an increased workload in addition to helping them enrich their jobs by adding complexity (Harju et al., in press). Thus, satisficing and using heuristics could minimize resource loss and avoid the creation of new demands to avoid strain. Conversely, we expect that more effortful comprehensive information processing will be related to higher strain in the form of tension as workers struggle to pay attention to tasks when dedicating extra resources to comprehensive processing. Comprehensive processing could also create deficits and strain when people have depleted energy and attention in other life domains, use personal time to make up for delayed work and lost autonomous time, or ruminate on intractable hindrances.

> **Hypothesis 3.** *Job crafting competency profiles that involve more comprehensive information processing will be associated with relatively higher strain and profiles that involve less comprehensive (i.e., more simplistic) information processing will be associated with relatively lower strain.*

Approach and avoidance problem-solving skills could also relate to performance and strain in ways not completely aligned with the comprehensiveness of information use. Here, expert job crafters might use competencies to foster effective job crafting without maximizing or satisficing in ways that create tradeoffs between performance and well-being (Eisenhardt et al., 2010; Shanteau, 1992). Similarly, approach and avoidance problem-solving skills could each help people combat strain under different personal and environmental conditions (Lazarus & Folkman, 1984). For example, approach skills might help job crafters address problems when they have control over their environment or when they have a high degree of competence. Yet, they could be a futile waste of personal resources when they do not have one or both of these favorable conditions. Here, avoidance skills might help people minimize strain when they have no control over their environment, when a job crafting solution could be risky, or when a person has lower general work competence. Thus, we propose a research question:

> **Research Question 2.** *How do job crafting competency profiles explain outcomes in ways other than the comprehensive-approach and simplistic-avoidance distinction?*

7 | STUDY 1 METHODS

7.1 | Procedures and sample

This study used a job crafting problem-solving test to categorize the competencies of workers according to their use of heuristics that involved variable amounts of information and approach/avoidance problem-solving skills. Competencies are constellations of KSAOs that are best considered as profiles (Campion et al., 2011), and the research on job crafting has begun to acknowledge the value of considering profiles of how people engage different types of job crafting (Mäkikangas, 2018). In the current study, participants completed a job crafting competency test within semistructured interviews. Qualitative test responses were coded into quantitative indicators of information use and analyzed using a cluster analysis to develop job crafting competency profiles. The indicators of the volume and functional content of information used in each profile were analyzed to describe the profiles according to comprehensiveness and approach/avoidance characteristics to test Hypothesis 1 and answer the first research question. This captured the use of information and skill within people, instead of levels of self-reported dimensions, and it allowed an analysis of information use and approach/avoidance skills to test Hypothesis 2 and Hypothesis 3 and address Research Question 2. The profiles were related to performance and strain using tests of profile mean differences (analysis of variances [ANOVAs]) and multilevel analyses.

We obtained ethics approval and recruited participants from organizational contacts of the research team members to conduct separate semistructured interviews with workers ($N = 174$)[1] and supervisors ($N = 50$) for multisourced data. The interviews were conducted in-person and over the telephone and were documented through audio recordings and field notes. Financial incentives were not provided to participants. We used a diverse sample to allow greater representation of possible job crafting competency profiles, with the jobs assessed representing all major occupational categories (i.e., managerial, professional, skilled, clerical, semiskilled, sales, craft, and labor) and most major industry sectors (i.e., agriculture, artistic, education, manufacturing, service, and technology). The multilevel dataset combined responses from 154 employees and 39 supervisors, with unmatched cases and those with missing data for the variables included in the model being deleted listwise. The participants had an average organizational tenure of 12 years and 56% of the sample was female.

7.2 | Measures

7.2.1 | Job crafting competencies

Given the lack of established job crafting competency measures, we developed a custom measure for several reasons: measures of cognitive ability and personality do not capture job crafting competencies as conceptualized, self-report-scale measures would not involve the demonstration of the job crafting competency aptitude, and job crafting is context-dependent. Therefore, we assessed the way participants completed a job-focused problem-solving exercise where they derived crafting solutions applied to their jobs to assess job crafting competencies.[2] The measure was built into an interview where incumbents were given 5 min to identify as many problems at their work, and job crafting solutions to these problems, as possible.[3] They were

instructed that complete answers would involve components of complex problem-solving (Delbecq & Van de Ven, 1971; Hill et al., 1979): (a) a problem at work, (b) a solution, (c) the pros and cons of the solution, and (d) implementation. Instructions and exemplar problem-solving responses appear in the Online Supplement.

All responses were tape-recorded, transcribed nearly verbatim, and coded by the first author and a second trained coder. Both coders independently assessed the number of points made and the quality for each category of information (i.e., problems, solutions, pros, cons, and implementation suggestions). The coding protocol was developed initially by the authors (see the Online Supplement for rating items). Coders were then trained on using the protocol prior to initiating the coding, where there was frequent discussion between coders to resolve discrepancies and improve the implementation of the protocol.[4] Both volume and quality scores were assessed at the person-level for categories of problems, solutions, pros, cons, and implementation suggestions. Volume scores captured the sum of unique ideas given for each category. Quality scores were based on rater evaluations of the detail, comprehensiveness, and appropriateness of information provided for each component of a given problem. These ratings were averaged for each category so that a given person would have one aggregate problem quality score, solution quality score, pro quality score, con quality score, and implementation quality score. Overall, the volume and quality measures yielded 10 component scores: five volume scores for problem count, solution count, pro count, con count, and implementation count; and five quality scores for problem quality, solution quality, pro quality, con quality, and implementation quality. The 10 scores were used to assess the job crafting competency profiles.

Interrater agreement for volume (count) scores was based on the percentage of agreement, defined as counts within one point for each score for an incumbent (Cohen, 1960). The agreement for each count score exceeded 85%, suggesting strong interrater agreement (Miles, Huberman, & Saldana, 2014). All but one problem count ranged from 0 to 11, with one outlier (16) that was re-set to the highest value (11) to reduce the skewed distribution (Tabachnik & Fidell, 2007). Quality scores were measured with two items for problem recognition ($\alpha = .95$), five items for solution suggestions ($\alpha = .96$), two items for pro evaluation ($\alpha = .97$), two items for con evaluation ($\alpha = .97$), and three items for implementation suggestions ($\alpha = .95$). All items were assessed using 5-point anchored rating scales. Interrater agreement of the quality scores was calculated at the item level based on the percentage of scores within one point of each other that were then averaged across all items. All quality scores exceeded 85% interrater agreement.

We assessed how the job crafting competency profiles related to job crafting effectiveness to provide proximal evidence of criterion-related validity and demonstrate that the profiles related to more or less effective job crafting. We assessed job crafting effectiveness according to a customized measure of participants' explanations and assessments of their own job crafting activities.[5] Participants were asked to describe job crafting activities, and we then asked them how effective they thought this job crafting activity was: "*How effective*

was the change you made regarding your reasons for making the change?" We specifically referenced their reasons for making the change to focus on their view of its effectiveness instead of the potential view of an outside party like a supervisor or coworker because job crafting is engaged to benefit the crafter by definition. This question was answered using a 4-point scale ("Very Ineffective" to "Very Effective").

7.2.2 | Outcomes

Performance captured efficiency (a common part of performance), work improvements (procedural benefits of effective job crafting), and skill development (increased work competence). Measures were assessed by supervisors using a semiforced ranking system to enhance differentiation, and they ranked all direct reports (mean = 9.03; min = 4.0; max = 24) separately on each dimension (Campion & Thayer, 1985). All rank measures were reverse coded to allow higher scores to reflect higher rankings. Measures were standardized, by mean centering and setting the *SD* to 1, to improve consistency across cluster groups that varied in size. We collected strain measures from the workers because they would be the most aware of these experiences. Work tension accounted for the immediate strain that workers experienced on the job, and work-home conflict accounted for the delayed strain that can have broader life implications. While work-home conflict can represent an antecedent stressor in some research, it can also represent a behavioral implication of a person's work style and job crafting behaviors. Work tension was assessed using four items ($\alpha = .76$: e.g., "I feel fidgety or nervous because of my job"; House & Rizzo, 1972) on a 5-point agreement scale ("Strongly disagree" to "Strongly agree"). Work-home conflict was measured using three items ($\alpha = .83$: e.g., "Do the demands of work interfere with your home, family, or social life?"; Bacharach, Bamberger, & Conley, 1991) assessed on a 5-point frequency scale ("never" to "extremely often").

7.2.3 | Controls

We controlled for personal characteristics, work context, and method characteristics according to theory, best practices, and methodological considerations. Personal controls included: *gender* (male = 0; female = 1); *organizational tenure*, a continuous measure of years working in the organization; and *education*, assessed according to categories of: "Some Secondary School," "Completed High School," "Some Post-Secondary School," "Post-Secondary Degree," and "Graduate Coursework or Degree." Gender was controlled for to account for best practices and significant correlations. Organizational tenure and education were proxies for organizational and job competencies, respectively (Campion et al., 2011).

We controlled for *job autonomy*, *job complexity*, *group opportunity*, and *group goals* to account for opportunity and motives (Rudolph et al., 2017; Wong et al., 2017; Wrzesniewski & Dutton, 2001). The

coders matched people's stated jobs with an occupation in O*NET[6] to obtain independent validated job analysis data (Peterson et al., 2001; 90% intercoder agreement). We used four items each to measure job autonomy ($\alpha = .81$: e.g., "Freedom to make decisions") and job complexity ($\alpha = .94$: e.g., "Complex problem solving"), based on Morgeson and Humphrey (2006). Items captured the amount of each job design dimension (scaled 0–100) for a job. The interviewer assessed supervisors' open-ended descriptions of opportunity and goals using anchored rating scales as the interviews occurred. Five *group opportunity* items captured scheduling autonomy, decision-making autonomy, work methods autonomy, monitoring, and overall opportunity to job craft ($\alpha = .89$: e.g., "How much authority do employees have to develop new work procedures?"). Two *group goals* items captured goals to innovate and compensation for innovation, which could include process innovation and work improvement ($\alpha = .76$: e.g., "To what degree does performance appraisal focus on innovation?").

We controlled for methodological characteristics, including the medium of the interview (i.e., face-to-face = 1 or telephone = 0) and the number of employees ranked by supervisors. The medium of the interview could cue socially desirable responses due to lower perceived anonymity in the case of face-to-face interviews. The number of employees ranked by supervisors was controlled for because we had supervisors of large groups rank up to the top 10 employees in a given category to save them time. All individuals not ranked in the top 10 were given scores of 11, which represented the lowest possible score when reversed.

8 | STUDY 1 RESULTS

We provide evidence of the construct validity of our job crafting competency measure in a few ways. First, we conducted confirmatory factor analyses on the job crafting competency indicators to test the factor structure of the measure. The average intercorrelation among the 10 competency scales was .39, but the factor analyses suggest they should be analyzed separately. Both count and quality measures of problems, solutions, pros, cons, and implementation suggestions were included in the analyses, yielding 10 total indicators. The hypothesized 10-factor solution represented the best fit with the data ($\chi^2(110) = 279.38$, CFI $= .97$, IFI $= .97$, RMSEA $= .09$), having a significantly better fit than a single factor model ($\chi^2(150) = 2,834.66$, CFI $= .46$, IFI $= .46$, RMSEA $= .32$); and a five-factor model that considered problem, solution, pros, cons, and implementation as factors not distinguished by count and quality ($\chi^2(140) = 839.58$, CFI $= .86$, IFI $= .86$, RMSEA $= .17$). The 10-factor model also had a significantly better fit than a two-factor model that included composite measures of volume and quality but did not distinguish problem-solving functions ($\chi^2(149) = 2,704.64$, CFI $= .48$, IFI $= .49$, RMSEA $= .31$).
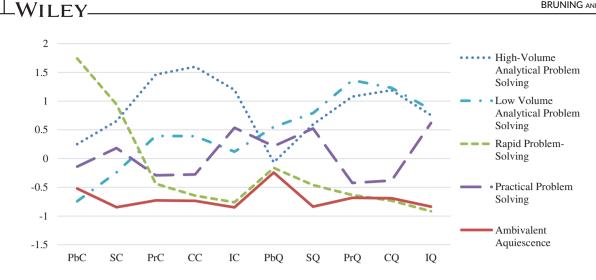
Second, we assessed correlations between job crafting competency measures and pertinent controls to further assess the measure's construct validity (Table 1). Total volume (count) and total quality scores had a strong positive correlation, which would be expected in part because they measure knowledge, skills, and abilities that tend to

positively correlate due to mental ability. The same explanation applies to the correlations between total volume and education. Total volume was also positively correlated with job autonomy and job complexity, which provides convergent validity evidence because they are aspects of motivational job design (Campion & Thayer, 1985). Total volume and total quality scores negatively correlated with organizational tenure, suggesting that newer employees might consider more ideas, consistent with prior research (Rudolph et al., 2017). A few possibilities for the lack of significant correlation between total quality and education could be that a person's education might not closely match their job requirements, that education tends to only modestly correlate with mental ability, or that education might actually help people use more efficient heuristics.

Finally, to assess whether overall count and quality measures of job crafting competencies predicted employees' perceived job crafting effectiveness we conducted OLS regressions with job crafting effectiveness as the dependent variable and controlled for a person's work competence (education and organizational tenure), opportunity (job autonomy and complexity), and tendency to engage in approach/avoidance job crafting (assigned as a dummy code). Results suggest that the total volume measure significantly related to job crafting effectiveness ($\beta = .20$, $p < .05$, $R^2 = .09$), while total quality did not ($\beta = -.11$, ns, $R^2 = .09$). These findings reveal that the pure volume of unique information conveyed by the count measure was directly related to job crafting effectiveness, but the detail and elaboration reflected by the total quality measure was not. This second finding suggests that the usefulness of information being processed is determined by more than the sheer volume of information used in job crafting problem-solving. Although detail and elaboration aspects of quality might provide some benefits in other contexts, these characteristics of information use might sometimes be inefficient. Quality detail and elaboration might be helpful in situations where it provides nuanced and necessary complementary information for solving a problem, but it might be inefficient when the detail and elaboration are superfluous, redundant, or tangential. These conditional findings reinforce the importance of considering profiles of information use instead of dimensions of total volume and total quality. Other evidence of construct validity comes from forthcoming assessments of how specific profiles relate to job crafting effectiveness, and Study 1 and 2 multivariate analyses.

8.1 | Cluster structure of job crafting competency profiles (tests of Hypothesis 1)

We conducted a cluster analysis using the 10 indicators of job crafting competencies to categorize workers' job crafting competency profiles. Cluster analysis is a multivariate statistical procedure used for the empirical categorization of persons to operationalize the "cluster" concept that defines competencies (Campion et al., 2011; Punj & Stewart, 1983; Sinclair, Tucker, Cullen, & Wright, 2005; Toh, Morgeson, & Campion, 2008). Overall, the results support a five-cluster solution. Figure 1 and Table 2 present mean differences in the

TABLE 1 Study 1 descriptive statistics and bivariate correlations

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
CONTROLS and COVARIATES																				
1. Medium of interview (Tel = 0; FTF = 1)	.80	.40																		
2. Gender (M = 0; F = 1)	.56	.50	−.10																	
3. Organizational tenure	12.13	9.91	.18	−.13																
4. Level of education	3.89	.92	.18	−.19	.03															
5. Job autonomy	64.29	10.71	.21	−.36	.19	.31														
6. Job complexity	61.19	8.93	.17	−.43	.15	.35	.83													
7. Total count score	2.10	1.21	.10	−.11	−.19	.23	.22	.26												
8. Total quality score	2.27	.69	−.00	−.08	−.20	.08	.01	−.01	.53											
9. Perceived job crafting effectiveness	3.51	.40	.05	.08	.04	−.02	−.02	−.10	.09	−.02										
COMPETENCY PROFILES																				
10. High-volume analytic problem-solving	.21	.41	.10	−.14	−.05	.12	.17	.21	.67	.45	−.01									
11. Low-volume analytic problem-solving	.12	.33	.01	−.02	−.10	−.08	−.17	−.13	−.03	−.02	−.19									
12. Rapid problem-solving	.14	.35	.04	−.04	−.11	.09	.03	.15	.18	.43	.10	−.21	−.15							
13. Practical problem-solving	.21	.41	.19	.08	−.02	.12	.18	.04	−.01	.15	.09	−.27	−.19	−.21						
14. Ambivalent acquiescence	.32	.47	−.21	.10	.21	−.23	−.20	−.24	−.69	−.61	−.13	−.35	−.25	−.27	−.35					
OUTCOMES																				
15. Efficiency	.02	.99	−.01	−.18	.10	.13	.13	.18	.11	.12	−.05	.15	−.06	.04	.07	−.18				
16. Work improvement	.01	1.00	.05	−.21	.02	.16	.18	.28	.16	.19	−.10	.10	.00	.08	.07	−.21	.76			
17. Skill development	.02	1.00	.00	−.17	−.04	.17	.16	.19	.19	.15	−.06	.17	−.05	.03	.03	−.20	.76	.79		
18. Work/home conflict	2.32	.80	−.15	−.15	.00	.16	.20	.32	.15	−.01	−.17	.17	.01	.11	−.14	−.11	−.05	−.07	−.00	
19. Work tension	2.72	.81	.03	.04	.18	.12	.14	.21	.07	−.04	−.19	.19	−.09	−.01	−.12	.02	−.03	−.02	.01	.44

Note: N = 174. Correlations of .15 or higher are significant at $p \leq .05$ (two-tailed test) and correlations of .13 or higher are significant at $p \leq .10$ (two-tailed test). For the "Medium of Interview" variable "Tel" = telephone and "FTF" = face-to-face.

Figure (chart) legend:
- High-Volume Analytical Problem Solving
- Low Volume Analytical Problem Solving
- Rapid Problem-Solving
- Practical Problem Solving
- Ambivalent Aquiescence

X-axis categories: PbC, SC, PrC, CC, IC, PbQ, SQ, PrQ, CQ, IQ

Job Crafting Competency Cluster	n	Prob Count (PbC)	Sol Count (SC)	Pro Count (PrC)	Con Count (CC)	Implement Count (IC)	Prob Quality (PbQ)	Sol Quality (SQ)	Pro Quality (PrQ)	Con Quality (CQ)	Implement Quality (IQ)
High-Volume Analytic Problem-Solving	37	$.25_b$	$.65_a$	1.46_a	1.60_a	1.19_a	$-.07_c$	$.60_a$	1.08_b	1.19_a	$.76_a$
Low Volume Analytic Problem-Solving	21	$-.74_d$	$-.20_c$	$.42_b$	$.41_b$	$.14_c$	$.60_a$	$.80_a$	1.39_a	1.26_a	$.87_a$
Rapid Problem-Solving	24	1.74_a	$.94_a$	$-.44_c$	$-.64_d$	$-.76_d$	$-.16_c$	$-.46_b$	$-.63_{cd}$	$-.73_c$	$-.92_b$
Applied Problem-Solving	37	$-.14_c$	$.18_b$	$-.29_c$	$-.28_c$	$.54_b$	$.22_{bc}$	$.52_a$	$-.42_c$	$-.38_b$	$.62_a$
Ambivalent Acquiescence	55	$-.52_d$	$-.85_d$	$-.72_d$	$-.74_d$	$-.85_d$	$-.24_c$	$-.87_c$	$-.68_d$	$-.69_c$	$-.85_b$
M		.02	.01	.01	.01	.01	.01	.01	.01	.01	.00
SD		1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.00	1.00	1.00
F		59.30	35.19	91.59	173.55	87.06	3.30	38.55	108.75	123.84	73.45

Note: $N = 174$. The K-means algorithm was used to calculate and assign clusters to minimize within-cluster variance, deal with outliers and spurious attributes, and help to discriminate poorly separated clusters (Malos & Campion, 2000; Milligan & Cooper, 1985; Punj & Stewart, 1983; Slater & Olson, 2001). Indicators were standardized to minimize the effects of different scales. Tests of between-cluster differences in clustering dimensions suggest that either a five- or six-cluster solution provided the best description of the clustering dimensions as they explained differences in all dimensions beyond that which would be expected due to chance (Punj & Stewart, 1983). The five-cluster solution also displayed more variation in the overall patterns of the dimensions, whereby each cluster represented a unique pattern of performance in the activity. The smallest cluster in the five-cluster solution (12%, n=22) also captured a more meaningful number of people than the smallest cluster in the six-cluster solution (3%: n=5). Furthermore, the patterns of dimensional characteristics suggest that the 3rd and 6th clusters within the six-cluster solution could be collapsed into one cluster, yielding a five-cluster solution. Finally, results of a discriminate function analysis support the five-cluster solution as all four canonical correlations (which is the maximum number to distinguish five clusters) are above .6 (accounting for at least 36% of the variance). Each successive function provided significant description beyond that accounted for by the previous functions, as indicated by the significance of chi-square statistics upon the addition of each function (p < .001). The final function in both the four and five cluster models explained similar amounts of group membership. The five-cluster solution also presented an additional function that explains over 50% of the within cluster variance, suggesting that it captured a meaningful cluster that was neglected by the four-cluster solution. The final function in the six-cluster solution explained less than 3% of the cumulative incremental variance over the first five clusters. The table above complements the graphical display of the patterns of information use according to cluster and presents results of Analyses of Variances (ANOVAs) for the job crafting (problem-solving) competency indicators by job crafting competency cluster. Means sharing a subscript within the same column are not significantly different from each other at p < .1 (2-tail test). All F values are significant at p < .05 (2-tail test).

Abbreviation: ANOVA, analyses of variance.

FIGURE 1 Patterns of job crafting problem-solving indices by job crafting competency cluster

10 individual indicators and the average indicator domains in job crafting problem-solving (i.e., volume, quality, problem, solution, pro, con, and implementation), respectively, according to job crafting competency cluster.[7] These results suggest that job crafting competencies can involve more comprehensive or simplistic information processing according to the different volume and quality of information used. These findings support Hypothesis 1. They also suggest that job crafting competencies differ according to approach and avoidance characteristics. For example, some profiles revealed that problem-solving was focused on problems, solutions, and implementation plans in ways that approached desirable outcomes. Other profiles revealed that the problem-solving was either not focused on these aspects much at all, and avoided them, or was more predominantly focused on the evaluation aspects and showed a relative avoidance of problems, solutions, and implementation plans.

TABLE 2 Study 1 ANOVAs for job crafting problem-solving indicator domains by job crafting competency cluster

Job crafting competency cluster	n	Total count	Total quality	Total problem identification	Total solution	Total pro evaluation	Total con evaluation	Total implementation
High-volume analytic problem-solving	37	3.66$_a$	2.87$_b$	6.72$_b$	7.16$_a$	6.39$_a$	6.20$_a$	5.91$_a$
Low-volume analytic problem-solving	21	1.99$_c$	3.08$_a$	5.26$_c$	5.75$_c$	5.10$_b$	4.62$_b$	4.46$_b$
Rapid problem-solving	24	2.63$_b$	1.76$_d$	9.69$_a$	6.81$_{ab}$	1.94$_{cd}$	1.39$_d$	1.50$_c$
Practical problem-solving	37	2.07$_c$	2.47$_c$	6.15$_b$	6.23$_{bc}$	2.36$_c$	2.22$_c$	4.82$_b$
Ambivalent acquiescence	55	.87$_d$	1.64$_d$	5.04$_d$	3.17$_d$	1.47$_d$	1.31$_d$	1.43$_c$
M		2.10	2.27	6.30	5.48	3.21	2.95	3.48
SD		1.21	.69	2.13	2.38	2.33	2.19	2.28
F		105.53	88.85	42.01	37.84	113.41	183.72	98.50

Note: N = 174. Means sharing a subscript within the same column are not significantly different from each other at $p \leq .1$ (two-tailed test). All *F*-values are significant at $p \leq .05$ (two-tailed test).
Abbreviation: ANOVAs, analyses of variances.

TABLE 3 Study 1 ANOVAs for work outcomes by job crafting competency cluster

Job crafting competency cluster	n	Work efficiency	Work improvement	Skill development	Work home conflict	Work tension
High-volume analytic problem-solving	37	.30$_a$	.21$_a$	.34$_a$	2.54$_a$	3.19$_a$
Low volume analytic problem-solving	21	−.14$_{ab}$	.01$_{ab}$	−.12$_b$	2.38$_{ab}$	2.65$_b$
Rapid problem-solving	24	.24$_a$	.33$_a$	.35$_a$	2.51$_a$	2.79$_{ab}$
Practical problem-solving	37	.22$_a$	.21$_a$	.14$_{ab}$	2.03$_b$	2.58$_b$
Ambivalent acquiescence	55	−.24$_b$	−.30$_b$	−.28$_b$	2.12$_b$	2.79$_b$
M		.04	.03	.04	2.28	2.83
SD		.98	.99	.98	.85	.87
F		2.34*	2.77*	3.21*	2.77*	2.55*

Note: N = 174. Means sharing a subscript within the same column are not significantly different from each other at $p \leq .1$ (two-tailed test). 1% of multivariate outliers removed for supervisor ranked measures (efficiency, job improvement, and skill development). *$p \leq .05$ (two-tailed test).
Abbreviation: ANOVAs, analyses of variances.

To address the first research question, descriptive statistics on the volume and function of information were used to characterize the profiles as comprehensive/simplistic and approach/avoidance and give the five profiles descriptive labels based on their dominant themes. To do this, we used ANOVAs to assess mean differences in the volume and approach/avoidance functions of information used within each profile that was derived from the cluster analysis (Figure 1 and Table 2). One profile was distinctly more comprehensive and characterized by approach, and another contrasting profile was distinctly more simplistic and characterized by avoidance. These two profiles revealed that comprehensiveness and decision maximization can be characterized by approach according to their investment of effort and personal resources to achieve desired outcomes, while more simplistic heuristics and satisficing can be engaged in an avoidant manner to conserve effort and resources (Gigerenzer & Gaissmaier, 2011; Schwartz et al., 2002). However, there was not complete alignment between the comprehensiveness and the predominant use of approach or avoidance information. In other profiles, some were more comprehensive but also more predominantly avoidant, while others were more simplistic but also more predominantly characterized

by approach. These descriptive results helped characterize profiles according to their comprehensiveness and approach or avoidance characteristics for our tests of Hypotheses 2 and 3. The profiles will be described further in the following section.

8.2 | Profile content and outcomes (tests of Hypotheses 2 and 3)

To test these hypotheses, we used ANOVAs to assess mean differences in the outcomes of the job crafting competency profiles, and multilevel analyses to assess the outcomes of these profiles accounting for controls and nesting within supervisors.[8] Table 3 presents differences in workers' outcomes by cluster.[9] Table 4 presents the results of multilevel tests of the relationships between job crafting competency profiles and outcomes that account for the controls. Job crafting competency profiles were included into the multilevel models as dummy codes, representing a comparison of profiles (comparison codes) with an excluded profile (the baseline code). We conducted two sets of analyses for each dependent variable: one that used ambivalent

TABLE 4 Study 1 hierarchical linear modeling outcomes of job crafting competency profiles

	Performance						Strain			
	Efficiency		Work improvement		Skill development		Work/home conflict		Work tension	
Variable Comparison (baseline) profile	AA	HVAPS	AA	HVAPS	AA	HVAPS	AA	HVAPS	AA	HVAPS
Level 2 controls										
Group opportunity	.01 (.06)	.01 (.06)	−.03 (.09)	−.03 (.09)	−.03 (.08)	−.03 (.08)	.12 (.07)t	.12 (.07)t	−.05 (.06)	−.05 (.06)
Group goals	.20 (.13)	.20 (.13)	.04 (.11)	.04 (.11)	.16 (.12)	.16 (.12)	.13 (.09)	.13 (.09)	.02 (.07)	.02 (.07)
Number of members ranked	−.09 (.01)**	−.09 (.01)**	−.08 (.01)**	−.08 (.01)**	−.06 (.02)**	−.06 (.02)**				
Level 1 controls										
Medium of interview (Tel = 0; FTF = 1)	.02 (.19)	.02 (.19)	−.05 (.14)	−.05 (.14)	.12 (.16)	.12 (.16)	−.48 (.17)**	−.48 (.17)**	−.11 (.14)	−.11 (.14)
Gender	−.03 (.16)	−.03 (.16)	−.20 (.16)	−.20 (.16)	−.11 (.15)	−.11 (.15)	−.02 (.13)	−.02 (.13)	.23 (.14)t	.23 (.14)t
Level of education	−.07 (.06)	.07 (.06)	.06 (.08)	.06 (.08)	−.09 (.08)	−.09 (.08)	−.04 (.08)	−.04 (.08)	.11 (.10)	.11 (.10)
Organizational tenure	.01 (.01)	.01 (.01)	−.00 (.01)	−.00 (.01)	−.01 (.01)	−.01 (.01)	.01 (.01)	.01 (.01)	.02 (.01)*	.02 (.01)*
Autonomy	−.00 (.01)	−.00 (.01)	−.01 (.01)	−.01 (.01)	−.00 (.01)	−.00 (.01)	−.02 (.01)*	−.02 (.01)*	.00 (.01)	.00 (.01)
Complexity	−.00 (.01)	−.00 (.01)	.02 (.01)	.02 (.01)	.00 (.01)	.00 (.01)	.03 (.01)**	.03 (.01)**	.01 (.01)	.01 (.01)
Level 1 job crafting competencies										
High-volume analytic problem-solving	.38 (.14)**		.29 (.16)t		.40 (.18)*		.28 (.17)t		.32 (.20)	
Low-volume analytic problem-solving	.01 (.24)	−.37 (.28)	.21 (.20)	−.08 (.23)	.02 (.21)	−.39 (.32)	.13 (.16)	−.15 (.17)	−.10 (.18)	−.42 (.19)*
Rapid problem-solving	.13 (.23)	−.25 (.25)	.32 (.23)	.02 (.23)	.24 (.23)	−.16 (.23)	.14 (.20)	−.14 (.21)	.03 (.23)	−.29 (.22)
Practical problem-solving	.31 (.14)*	−.07 (.14)	.42 (.18)*	.12 (.17)	.20 (.21)	−.21 (.20)	−.00 (.14)	−.28 (.16)t	−.06 (.20)	−.38 (.20)t
Ambivalent acquiescence		−.38 (.14)**		−.29 (.16)t		−.40 (.18)*		−.28 (.17)t		−.32 (.20)
Level 2 ICC	.34**		.27**		.23**		.32**		.06	
Pseudo *R*²	.20		.20		.12		.11		.04	

Note: N = 154, 39 groups, unstandardized coefficients with standard errors included in parentheses. For the "Medium of Interview" variable "Tel" = telephone and "FTF" = face-to-face. Pseudo *R*² values compared to baseline model with no predictors for outcomes with meaningful group effects. We conducted two sets of analyses of the dummy coded job crafting competencies to compare the different competency profiles with different baseline profiles to compare the different profiles to the two most extreme profiles regarding both the amount of information used and approach/avoidance characteristics. The variable listed as the "comparison (baseline) profile" was the dummy code that was removed from the specific model. Analyses where profiles were compared with AA allowed the assessment of the other profiles as compared to the profile with the lowest total information use (i.e., the least "competent" profile), while profiles compared with HVAPS allowed the assessment of the other profiles as compared to the profile with the highest total information use (i.e., the most "competent" profile). For tests of Hypothesis 2, ambivalent acquiescence reflects the baseline profile for assessing how the use of more comprehensive information in the comparison profiles related to higher performance than the use of highly simplistic information in this baseline profile (Gigerenzer & Gaissmaier, 2011). High-volume analytic problem-solving was used as an alternative baseline profile to assess how the use of highly comprehensive information used in the comparison profiles related to lower performance than the use of highly comprehensive information in this baseline profile. For tests of Hypothesis 3, high-volume analytic problem-solving was used as the baseline comparison profile for assessing how the use of less comprehensive information in the comparison profiles were related to lower strain than the use of highly comprehensive information in this baseline profile (Gigerenzer & Gaissmaier, 2011; Schwartz et al., 2002). Ambivalent acquiescence was used as an alternative baseline profile to assess how the more simplistic information used in the comparison profiles related to lower strain than the use of highly comprehensive information in this baseline profile. t *p* ≤ .1 (two-tailed test); **p* ≤ .05 (two-tailed test); ***p* ≤ .01 (two-tailed test).
Abbreviations: AA, ambivalent acquiescence; HVAPS, high volume analytic problem-solving.

TABLE 5 Summary results of profiles and heuristic themes

Competency profile definition and description	Heuristic theme	Support
Hypothesis 1 (Study 1): Job crafting competency profiles reflect variation in more comprehensive versus simplistic information use, whereby there will be at least two distinct profiles: a more comprehensive profile and a more simplistic profile.		*Supported*
High-volume analytic problem-solving: Characterized by comprehensiveness and approach according to its consideration of complete information about the problem, solution, and implementation.	**Complete analysis**: The capture of full information for multiple problems.	
Low-volume analytic problem-solving: Characterized by comprehensiveness and avoidance due to its predominant focus on evaluation and its relative neglect of problems and solutions.	**Excessive elaboration**: The inefficient and tangential thinking that reduces the speed of problem solution.	
Rapid problem-solving: Characterized by moderate simplicity and approach due to its almost exclusive and cursory focus on problems and solutions.	**Summary listing**: a superficial focus on listing a large number of problems and summary solutions.	
Practical problem-solving: Characterized by moderate simplicity and approach due to its predominant focus on implementation, relative focus on problems and solutions, and minimal focus on evaluation.	**Practicality**: An efficient focus on the functionality of a solution.	
Ambivalent acquiescence: Characterized by simplicity and avoidance according to its relative neglect of all information.	**Acquiescence**: Apathetically accepting or minimizing work problems.	
Hypothesis 4 (Study 2): Job crafting problem-solving heuristics will be reflected in five dimensions that represent high-volume analytic problem-solving, low-volume analytic problem-solving, rapid problem-solving, practical problem-solving, and ambivalent acquiescence.		*Supported*

acquiescence as the baseline profile that involved using the least information, and one that used high-volume analytic problem-solving as the baseline profile that involved using the most information. We proceed to report the results of these analyses for each profile. The profiles will be described in more detail next to address the second research question and provide tests of Hypotheses 2 and 3 for each profile. Here, we used a p-value of .1 as the significance criteria for all tests of directional hypothesis to approximate a one-tailed test and help balance Type I and II errors. The profile structures, characteristics, and results of structural hypothesis tests are presented in Table 5. The relationships the profiles have with outcomes and the results of hypothesis tests are provided in Table 6.

High-volume analytic problem-solving is a comprehensive/approach profile that involves a relatively complete use of information focused on most domains of information. This comprehensive focus was supported by observations during the interviews and seemed to enable multiple actionable solutions in the limited amount of time. This profile related to higher performance but also higher strain, which suggests a tradeoff whereby well-being was sacrificed, either intentionally or unintentionally, for improved performance. *Low-volume analytic problem-solving* is a comprehensive/avoidance profile that involves a modest volume of problems and solutions but a substantial consideration of the quality aspects of job crafting through evaluation of pros and cons. Interview observations suggested that these people were less efficient with their time, which resulted in them addressing fewer problems than most other groups. The results suggest this profile does not relate to performance but relates to lower strain, which could reveal an intentional or unintentional tradeoff of maximum performance for better well-being.

Rapid problem-solving is a simplistic/approach profile that involves identifying problems and proposing simple solutions but otherwise paying limited and superficial attention to evaluation and implementation. Interview observations suggested that these people used rather simplistic heuristics that fostered simple immediate solutions by listing problems (and possibly simplified solutions) in order without addressing evaluation or implementation. They seemed to focus on verbalizing the problems as though they were grievances without providing detailed and functional solutions. *Practical problem-solving* is a simplistic/approach profile that involves a relatively predominant focus on implementation. Observations suggested these people put less emphasis on evaluation and more focus on the context, practicality, and functionality of implementation. The results suggest this profile enables individuals to minimize the tradeoffs between performance and well-being.

Ambivalent acquiescence is a simplistic/avoidance profile that involves a relative neglect of all aspects of information. Observations suggested these people were not overly troubled by work problems because they could cognitively avoid or minimize them in an ambivalent manner. While they did present solutions, they engaged fewer problems, apparently choosing to minimize or ignore the problems instead. These results suggest a tradeoff whereby performance is sacrificed, intentionally or unintentionally, for improved well-being.

9 | STUDY 1 DISCUSSION

The Study 1 results support the prediction of Hypothesis 1 that job crafting competency profiles differ according to comprehensive/simplistic information use. The findings guided by Research Question 1 also revealed five profiles that were distinguished according to comprehensiveness and approach/avoidance characteristics in nuanced ways. These profiles had outcomes that largely supported Hypotheses 2 and 3. Although there was considerable general support for our

TABLE 6 Summary results for Study 1 tests of predicted outcomes

Competency profile	Mean difference results compared to high-volume analytic problem-solving	Mean difference results compared to ambivalent acquiescence	Multivariate results compared to high-volume analytic problem-solving	Multivariate results compared to ambivalent acquiescence
H2 (Study 1): Job crafting competency profiles that involve more comprehensive information processing will be associated with relatively higher performance and profiles that involve less comprehensive (i.e., more simplistic) information processing will be associated with relatively lower performance.				
High-volume analytic problem-solving	n/a	*Efficiency* (higher), *work improvement* (higher), *skill development* (higher) **H2 support = 100%**	n/a	*Efficiency* (higher), *work improvement* (higher), *skill development* (higher) **H2 support = 100%**
Low-volume analytic problem-solving	*Skill development* (lower) **Not formally tested as a hypothesis**	None **H2 support = 0%**	None **Not formally tested as a hypothesis**	None **H2 support = 0%**
Rapid problem-solving	None **H2 support = 0%**	*Efficiency* (higher), *work improvement* (higher), *skill development* (higher) **H2 support = 100%**	None **H2 support = 0%**	None **H2 support = 0%**
Practical problem-solving	None **H2 support = 0%**	*Efficiency* (higher), *work improvement* (higher) **H2 support = 67%**	None **H2 support = 0%**	*Efficiency* (higher), *work improvement* (higher) **H2 support = 67%**
Ambivalent acquiescence	*Efficiency* (lower), *work improvement* (lower), *skill development* (lower) **H2 support = 100%**	n/a	*Efficiency* (lower), *work improvement* (lower), *skill development* (lower) **H2 support = 100%**	n/a
H3 (Study 1): Job crafting competency profiles that involve more comprehensive information processing will be associated with relatively higher strain and profiles that involve less comprehensive (i.e., more simplistic) information processing will be associated with relatively lower strain.				
High-volume analytic problem-solving	n/a	*Work home conflict* (higher), *work tension* (higher) **H3 support = 100%**	n/a	*Work home conflict* (higher) **H3 support = 50%**
Low-volume analytic problem-solving	*Work tension* (lower) **Not formally tested as a hypothesis**	None **H3 support = 0%**	*Work tension* (lower) **Not formally tested as a hypothesis**	None **H3 support = 0%**
Rapid problem-solving	None **H3 support = 0%**	*Work home conflict* (higher) **H3 support = 50%**	None **H3 support = 0%**	None **H3 support = 0%**
Practical problem-solving	*Work home conflict* (lower), *work tension* (lower) **H3 support = 100%**	None **H3 support = 0%**	*Work home conflict* (lower), *work tension* (lower) **H3 support = 100%**	None **H3 support = 0%**
Ambivalent acquiescence	*Work home conflict* (lower), *work tension* (lower) **H3 support = 100%**	n/a	*Work home conflict* (lower) **H3 support = 50%**	n/a

Note: For the hypothesis tests, low-volume analytic problem-solving was treated as a comprehensive profile, along with high-volume analytic problem-solving, according to the high total information quality displayed by people with this profile. Thus, while people with this profile displayed lower levels of skill development and work tension, we did not treat these results as formal support for Hypothesis 2 or Hypothesis 3, respectively.

predictions, not all hypotheses were supported for all profiles and all outcomes. Some of these unexpected findings revealed important new insights. First, low-volume analytic problem-solving only related to lower skill development, suggesting a focus on maintaining adequate performance instead of maximizing performance or pursuing new competencies. This profile appeared to generally avoid maximizing performance in the service of minimizing strain. When contrasted with aggregate evidence of the minimal strain-reduction benefit of

avoidance crafting behavior (Lichtenthaler & Fischbach, 2019; Rudolph et al., 2017; Tims et al., 2013), these potential strain reduction benefits of low-volume analytic problem-solving suggest that studying job crafting competencies could complement research on job crafting behavior. Second, practical problem-solvers also appeared to focus on efficiency and work improvement instead of skill development, possibly as a way of managing performance/well-being tradeoffs.

Third, rapid problem-solving failed to predict outcomes in the presence of controls, suggesting that some people just identified a lot of problems, possibly in some cases to impress the researcher, with no follow-through changes that could improve their outcomes. Although the results would suggest a tradeoff where well-being is sacrificed, either intentionally or unintentionally, for performance, the results only show slight support for such a tradeoff. Moreover, the implications of these tradeoffs could be marginal when compared to those of high-volume analytic problem-solving. While it is possible that this profile might be at least partially influenced by respondents' attempts to present themselves positively to the researcher, the interview medium variable that assessed whether an interview was conducted in a face-to-face format did not correlate significantly with this profile. However, this profile did positively correlate with an objective measure of job complexity. Together, these findings suggest that social desirability and self-presentation were not dominant explanations for this profile.

Fourth, perhaps ambivalent acquiescence only related to lower work-home conflict instead of more immediate work tension in the multilevel model because it mainly helped people detach from work demands when they are away from work. Finally, the results for the low-volume analytic problem-solving, rapid problem-solving, and practical problem-solving profiles show that these profiles differed from only one of the two baseline conditions for performance or strain outcomes. These profiles might approximate, but not exceed, the levels of performance and strain of the baseline profiles most conducive to these respective outcomes.

There were also aspects of Study 1 to address in a subsequent study. First, while Study 1 revealed profiles of information use in job crafting problem-solving, it did not directly measure the cognitive heuristics that were used within these profiles. This behavioral test response evidence from Study 1 should be cross validated with self-reported heuristics. Second, while the types of information used in the Study 1 profiles suggest the use of approach and avoidance skills, the profiles' approach and avoidance characteristics were assessed according to the types of information used. Thus, it should be empirically assessed how heuristics relate to specific approach and avoidance constructs to more objectively test the heuristics' approach and avoidance characteristics. Finally, while Study 1 provides evidence that generalized measures of job crafting competencies and the competency profiles relate to workers' perceived job crafting effectiveness, it does not assess how the heuristics relate to specific job crafting behaviors.

10 | STUDY 2 OVERVIEW AND PREDICTIONS

We conducted another study to assess the (a) dimensional structure of job crafting problem-solving heuristics derived from the dominant themes of Study 1 competency profiles using a direct measure of self-reported cognitive heuristics; and (b) approach/avoidance outcomes of these heuristics, including approach/avoidance job crafting

behaviors and outcomes, to more objectively assess the approach and avoidance characteristics of the profiles and to assess how the heuristics relate to job crafting behaviors. Here, we assess the dimensional structure of the heuristics implied by the five themes of information use from Study 1 (Table 5). We believe these five themes will be reflected in distinct heuristics as follows:

> **Hypothesis 4.** *Job crafting problem-solving heuristics will be reflected in five dimensions that represent high-volume analytic problem-solving, low-volume analytic problem-solving, rapid problem-solving, practical problem-solving, and ambivalent acquiescence.*

We also assess how job crafting problem-solving heuristics relate to approach/avoidance outcomes. Here, approach heuristics (high-volume analytic problem-solving, rapid problem-solving, and practical problem-solving) are expected to relate positively with job crafting behaviors and outcomes characterized by approach. Avoidance heuristics (low-volume analytic problem-solving and ambivalent acquiescence) are expected to relate positively with behaviors and outcomes characterized by avoidance. We consider five types of approach job crafting behaviors (work role expansion, social expansion, work organization, adoption, and metacognition) and two types of avoidance crafting behaviors (work role reduction and withdrawal) (Bruning & Campion, 2018). Approach and avoidance characteristics have been found in previous research to explain differences in the dimensional structure and outcomes of job crafting (Bipp & Demerouti, 2015; Bruning & Campion, 2018; Lichtenthaler & Fischbach, 2019; Rudolph et al., 2017; Zhang & Parker, 2019). Specifically, the meta-analysis conducted by Rudolph et al. (2017) showed that three types of approach crafting had quite consistent loadings onto a general job crafting factor, while the dimension of avoidance crafting had a much weaker loading than the other factors. This meta-analysis, along with the meta-analysis conducted by Lichtenthaler and Fischbach (2019), also showed that approach crafting had consistent patterns of relationships with different antecedents and outcomes.

> **Hypothesis 5a.** *Job crafting problem-solving heuristics more characterized by approach will positively relate to approach job crafting behaviors.*

> **Hypothesis 5b.** *Job crafting problem-solving heuristics more characterized by avoidance will positively relate to avoidance job crafting behaviors.*

Approach and avoidance job crafting are also related to outcomes characterized by approach and avoidance, respectively (Bruning & Campion, 2018; Lichtenthaler & Fischbach, 2019; Rudolph et al., 2017). These findings suggest that job crafting problem-solving heuristics characterized by approach or avoidance could also relate positively to respective approach and avoidance outcomes. Specifically, approach job crafting competencies will positively relate to physical and cognitive engagement, which

represent effortful work and are indicative of performance (Bruning & Campion, 2018; Lichtenthaler & Fischbach, 2019; Rudolph et al., 2017). Avoidance job crafting competencies will positively relate to avoidance outcomes of bored behavior and turnover intentions (Bruning & Campion, 2018; Rudolph et al., 2017).

> **Hypothesis 6a.** *Job crafting problem-solving heuristics more characterized by approach will positively relate to physical and cognitive work engagement.*

> **Hypothesis 6b.** *Job crafting problem-solving heuristics more characterized by avoidance will positively relate to bored behavior and turnover intentions.*

11 | STUDY 2 METHODS

Our sample included 323 working adults[10] from the United States collected with the assistance of StudyResponse (Stanton & Weiss, 2002), a nonprofit academic recruitment service used in prior job design research (Piccolo & Colquitt, 2006). Ethical approval was obtained for the study and participants were given small financial incentives for their participation. The sample was 52% male, and participants had worked in their current job and organization for averages of 5.81 and 10.23 years, respectively. Participants worked in managerial, professional, craft, health, clerical, skilled, semiskilled, and labor occupations.

11.1 | Measures

Our measure of job crafting problem-solving heuristics was based on the themes of the Study 1 profiles.[11] *High-volume analytic problem-solving* conveyed complete analysis ($\alpha = .79$). *Low-volume analytic problem-solving* conveyed excessive elaboration ($\alpha = .64$). *Rapid problem-solving* conveyed summary listing ($\alpha = .73$). *Practical problem-solving* conveyed practicality ($\alpha = .74$). *Ambivalent acquiescence* conveyed acquiescence ($\alpha = .68$).

We assessed job crafting using the Bruning and Campion (2018) dimensions and 5-point frequency scales (1 = "Never" and 5 = "All of the Time"): *work role expansion* ($a = .83$), *social expansion* ($a = .85$), *work role reduction* ($a = .83$), *work organization* ($a = .79$), *adoption* ($a = .88$), *metacognition* ($a = .84$), and *withdrawal crafting* ($a = .72$).

We also assessed items from Rich, LePine, and Crawford's (2010) measures of *physical engagement* (three items: $\alpha = .72$) and *cognitive engagement* (five items: $\alpha = .90$), as well as *turnover intentions* (four items: $\alpha = .93$: Kelloway, Gottlieb, & Barham, 1999), and *bored behavior* (six items: $\alpha = .93$: van Hooff & van Hooft, 2014), on 5-point agreement scales (1—"Strongly disagree" to 5—"Strongly agree").

We controlled for gender, age, organizational tenure, and job tenure. Each of these demographic or experience characteristics correlated with at least one of the outcomes assessed in the study. Gender was reported by the participants (male = 0, female = 1). Participants reported their age, organizational tenure, and job tenure in years. Study 1 correlations showed that people in face-to-face interviews were less prone to respond in ways consistent with the ambivalent acquiescence profile that could be considered less socially desirable. Therefore, we controlled for moralistic social desirability (nine items, $a = .88$: Kovačić, Galić, & Jerneić, 2014) to address sources of common method bias derived from participants' recognition of possible social implications of job crafting (Tims, Bakker, & Derks, 2015; Tims & Parker, 2020).

12 | STUDY 2 RESULTS AND DISCUSSION

Table 7 provides results of confirmatory factor analyses of the dimensional structure of job crafting competencies. The results suggest that the hypothesized five-factor model of job crafting competencies fit the data better than a one-factor model and the best fitting alternative four-factor model. These results support Hypothesis 4.

Table 8 provides descriptive statistics and intercorrelations between job crafting competencies, approach/avoidance job crafting, engagement, and work withdrawal. The intercorrelations are assessed according to bivariate correlations and semipartial correlations (that control for social desirability). Table 9 provides the results of multivariate regression analyses that control for demographic characteristics and social desirability in all models, as well as job crafting behaviors in models predicting outcomes to assess incremental relationships. In the multivariate analyses, we used a *p*-value of .1 as the significance criteria for all tests of directional hypothesis to approximate a one-tailed test and help balance Type I and II errors. Table 10 presents a summary of the Study 2 bivariate correlations and multivariate analyses.

Overall, the semipartial correlation results suggest that approach heuristics related to approach crafting in fifteen of fifteen (100%) tests and engagement in six out of six (100%) tests, while they only

TABLE 7 Study 2 CFAs for the job crafting competency scale

Variable	χ^2	*df*	IFI	CFI	RMSEA
Study 2 job crafting competency only CFAs					
One-factor model	624.77	120	.70	.69	.11
Four-factor model (combined HVAPS and PPS)	282.99	113	.90	.90	.07
Five-factor model	263.85	109	.91	.91	.07

Note: N = 323. All alternative four-factor models were tested, and χ^2 tests reveal the five-factor model and the best fitting four-factor model (i.e., the model with high-volume analytic problem-solving and practical problem-solving combined) are different at *p* < .01.

TABLE 8 Study 2 descriptive statistics and bivariate correlations

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. High-volume analytic problem-solving	3.54	.66	(.79)	.30	.54	.68	.12	.58	.58	.26	.44	.52	.53	-.05	.31	.31	-.00	.13
2. Low-volume analytic problem-solving	3.08	.91	.25	(.64)	-.03	.20	-.08	.13	.12	.37	.05	.15	.09	.27	.12	.08	.13	.25
3. Rapid problem-solving	3.42	.69	.56	-.02	(.74)	.54	.37	.45	.42	.27	.31	.40	.37	.06	.24	.27	-.04	.11
4. Practical problem-solving	3.74	.60	.69	.15	.55	(.74)	.14	.42	.45	.13	.49	.37	.45	-.04	.37	.40	-.11	.07
5. Ambivalent acquiescence	2.76	.85	.12	-.02	.37	.13	(.68)	.05	.14	.23	-.03	.08	.07	.24	-.03	-.04	.08	-.07
6. Work role expansion	3.31	.75	.58	.13	.47	.46	.07	(.83)	.75	.41	.50	.75	.65	.05	.27	.25	.03	.17
7. Social expansion	3.46	.75	.57	.11	.43	.46	.13	.75	(.85)	.31	.52	.69	.71	-.08	.29	.32	-.02	-.03
8. Work role reduction	2.28	.91	.24	.43	.27	.11	.27	.37	.26	(.83)	.01	.38	.24	.43	-.03	-.14	.23	.33
9. Work organization	3.79	.76	.48	.01	.34	.52	-.02	.52	.51	-.05	(.79)	.41	.66	-.07	.33	.41	-.04	.03
10. Adoption	3.35	.85	.54	.13	.43	.41	.09	.76	.71	.34	.42	(.88)	.55	.03	.25	.26	.04	.12
11. Metacognition	3.56	.72	.53	.07	.38	.47	.07	.66	.74	.18	.66	.58	(.84)	.03	.34	.30	-.03	.01
12. Withdrawal	2.37	1.03	-.04	.36	.04	-.08	.23	.01	-.13	.50	-.14	-.01	-.05	(.72)	-.08	-.16	.19	.25
13. Physical engagement	4.05	.68	.32	.23	.23	.37	-.04	.26	.31	-.10	.36	.29	.35	-.14	(.72)	.78	-.31	-.08
14. Cognitive engagement	4.16	.66	.34	.00	.28	.39	-.03	.24	.32	-.18	.43	.28	.30	-.25	.75	(.90)	-.36	-.14
15. Bored behavior	2.04	.89	-.07	.25	-.09	-.16	.07	-.04	-.10	.34	-.19	-.03	-.10	.43	-.33	-.43	(.93)	.34
16. Turnover intentions	2.52	1.24	.08	.34	.09	.03	.02	.13	-.06	.38	-.05	.09	-.03	.39	-.11	-.20	.45	(.93)

Note: N = 323. All bivariate correlations (below the diagonal) of .12 or over are significant at $p < .05$ (two-tailed). All semipartial correlations controlling for social desirability (above the diagonal) of .13 or over are significant at $p < .05$ (two-tailed). Coefficient alphas are presented in the diagonal.

related to avoidance crafting in three out of six (50%) tests and work withdrawal outcomes in one out of six (17%) tests. Avoidance heuristics related to avoidance crafting in four of four (100%) tests and work withdrawal outcomes in two of four tests (50%), while they only related to approach crafting in three of fifteen (20%) tests and did not relate to engagement. Thus, Hypotheses 5a, 5b, and 6a were fully supported. Hypothesis 6b was partially supported.

Multivariate results show that approach heuristics related to approach job crafting in ten of fifteen (67%) tests and engagement in three out of six (50%) tests accounting for job crafting behavior. Avoidance heuristics related to avoidance crafting in four of four (100%) tests and withdrawal in none of the tests accounting for job crafting behavior. The heuristics explained significant incremental variance in all job crafting behaviors beyond the controls (ΔR^2 range = .14–.34). The heuristics also explained significant variance in engagement and withdrawal outcomes (ΔR^2 range = .03–.20), and engagement outcomes beyond job crafting behaviors (ΔR^2 range = .06–.07). These results provide supplemental evidence that approach/avoidance problem-solving heuristics relate to respective approach and avoidance job crafting and outcomes (engagement and withdrawal), although the relationships that avoidance heuristics have with bored behavior and turnover intentions became much less prominent (and sometimes negative) in the multivariate analyses. The results also show that practical problem-solving positively related to engagement and negatively related to bored behavior. Multivariate results support Hypothesis 6a, partially support Hypotheses 5a and 5b, but do not support Hypothesis 6b.

The Study 2 results support the results of Study 1 by suggesting that the Study 1 profiles reflect the use of distinct and meaningful heuristics when assessed using a survey instead of a job sample. These job crafting competencies also related to hypothesized approach/avoidance job crafting activities, suggesting the job crafting competencies were characterized by approach and avoidance. Moreover, like we found in Study 1, practical problem-solving seemed to help minimize tradeoffs between using resources through engaged work and diminishing behavioral strains. Finally, the multivariate analyses showed that job crafting heuristics incrementally explain job crafting behavior beyond demographic characteristics, and that they also explain engagement beyond demographic characteristics and job crafting behaviors. Collectively, the Study 2 findings complement the validity of the Study 1 competency profiles and provide evidence of their approach/avoidance characteristics and engagement/withdrawal functions.

13 | GENERAL DISCUSSION

The current research sought to explain how people differ in job crafting problem-solving competencies, and how these different competencies relate to outcomes of performance, well-being, engagement, and withdrawal. To address these objectives, we first introduced the concept of job crafting competencies, which are reflected in how people use different patterns of relevant information, knowledge, and skills. We applied this concept to explain different profiles of information used in a job

crafting competence test and different self-reported problem-solving heuristics. These profile and heuristic measures were then used to explain tradeoffs job crafters make between performance and well-being, and between engagement and withdrawal. The results suggested five distinct job crafting competency profiles that differed according to comprehensive/simplistic information use and approach/avoidance skills. These profiles related to differences in workers' job crafting behaviors, performance, engagement, strain, and withdrawal. These results suggest the value of considering job crafting competency profiles instead of high and low levels of dimensions. Individual differences in motives, personality, person-job fit, and confidence are currently used to explain differences in peoples' job crafting behaviors (Kooij, Tims, & Akkermans, 2017; Kooij, van Woerkom, et al., 2017; Rudolph et al., 2017; Wrzesniewski & Dutton, 2001; Zhang & Parker, 2019). However, these characteristics fail to adequately account for peoples' job crafting competencies. Therefore, we propose an individual difference specific to job crafting that complements dispositional perspectives by explaining how job crafting relates to specific outcomes and tradeoffs according to profiles and heuristics that reflect the volume and pattern of information used when people decide how to craft their jobs.

13.1 | Theoretical implications

Job crafting involves conscious, volitional, and semipermanent changes that a person makes to their work (Bruning & Campion, 2018; Zhang & Parker, 2019). This suggests that cognitive processes precede the enacted job crafting tactics and behaviors (Bindl et al., 2019; de Bloom et al., 2020; Lazazzara et al., 2020; Wong et al., 2017; Wrzesniewski & Dutton, 2001). Currently, the published research positions these cognitions as motives, needs, goals, or situational opportunity. This prior literature is replete with explanations of how motives are transferred to job crafting behaviors and job crafting effectiveness according to contextual factors like control, demands, feedback, behaviorally-focused training interventions, and other job characteristics; and personal characteristics like demographics, rank, and disposition (Zhang & Parker, 2019). However, the literature does not address the competence with which people process information when deciding how to achieve these motives through job crafting. Therefore, we propose an information processing perspective to explain how people can be more or less competent at processing information when deciding how to craft their jobs, and offer this perspective as a complement to the tactical-behavioral perspective that currently dominates the literature (Lichtenthaler & Fischbach, 2019; Oprea et al., 2019; Rudolph et al., 2017; Zhang & Parker, 2019). In this regard, the research that considers cognitive crafting represents a tactical-behavioral approach because it captures distinct cognitive activity that is engaged to directly change how a person experiences their work by addressing a person's demands, objectives, or unfulfilled needs (Bindl et al., 2019; Bruning & Campion, 2018; Wrzesniewski & Dutton, 2001; Zhang & Parker, 2019). The information processing perspective proposed herein complements this cognitive-tactics approach and the other more discretely behavioral approaches by explaining how people use information to suggest, evaluate, and ultimately decide which

TABLE 9 Results of Study 2 ordinary least squares regression analyses and assessments of incremental prediction

| Variable | Job crafting behavior | | | | | | | Work engagement | | | | Work withdrawal | | | |
	Work role expansion (M1)	Social expansion (M1)	Work role reduction (M1)	Work organization (M1)	Adoption (M1)	Metacognition (M1)	Withdrawal (M1)	Physical engagement (M1)	(M2)	Cognitive engagement (M1)	(M2)	Bored behavior (M1)	(M2)	Turnover intentions (M1)	(M2)
Gender	.01	.12*	−.24**	.14**	.07	.13*	−.08	.12*	.06	.12*	.10	.01	.06	−.11t	−.01
Age	−.15*	−.11t	−.12*	.01	−.19**	.05	.02	.06	.05	.10	.11t	−.19**	−.19**	.02	.05
Organizational tenure	−.03	.02	−.02	−.09	.05	−.12t	−.17**	.04	.06	−.03	−.04	−.01	.01	−.12	−.10
Job tenure	.09	.05	.07	.01	−.01	−.00	.13*	−.03	−.02	−.08	−.06	.06	.05	−.05	−.09
Social desirability	−.05	−.11*	.09	−.09	−.12*	−.07	.30**	−.08	−.03	−.08	.01	.49**	.45**	.29**	.22**
Work role expansion									−.03		−.07		−.00		.24*
Social expansion									−.03		.15		−.09		−.28**
Work role reduction									−.08		−.21**		.17*		.25**
Work organization									.10		.24**		.06		.09
Adoption									.08		.12		−.01		−.01
Metacognition									.18t		−.05		−.04		−.12
Withdrawal									−.05		−.08		.08		.12
High-volume analytic problem-solving	.44**	.47**	.06	.24**	.40**	.41**	−.22**	.08	−.03	.05	−.08	.06	.12	.02	.09
Low-volume analytic problem-solving	−.01	−.02	.38**	−.09	.02	−.05	.35**	.02	.08	−.01	.11	.11t	.02	.25**	.11
Rapid problem-solving	.25**	.14*	.19**	.07	.21**	.11	.11	.13	.12	.16*	.17**	−.01	−.04	.18*	.11
Practical problem-solving	.02	.06	−.11	.32**	−.02	.13t	−.03	.29**	.23**	.34**	.23**	−.16*	−.14t	−.09	−.05
Ambivalent acquiescence	−.11*	.02	.16**	−.12*	−.05	−.02	.21**	−.10t	−.07	−.12*	−.05	.08	.05	−.10	−.12t
R^2	.40**	.41**	.38**	.35**	.33**	.36**	.36**	.23**	.27**	.28**	.37**	.41**	.43**	.25**	.35**
ΔR^2	.34**	.33**	.20**	.27**	.26**	.29**	.14**	.17**	.06*	.20**	.07*	.03*	.01	.08*	.03t

Note: N = 236, Standardized coefficients. M1 = Model 1 and M2 = Model 2. ΔR^2 captures the incremental R^2 value that job crafting behaviors and outcomes above-and-beyond personal characteristics for models without coefficients for specific job crafting behaviors. They represent the incremental R^2 value that job crafting heuristics have on outcomes above-and-beyond personal characteristics and job crafting behaviors for models that include specific job crafting behaviors. Significant values within the models with job crafting behavior included suggest that, as a set, the job crafting heuristics variables explained a meaningful portion of the variance in employees' subjective work experiences above-and-beyond personal characteristics, social desirability, and job crafting behaviors. t $p \le .1$ (two-tailed test); * $p \le .05$ (two-tailed test); **$p \le .01$ (two-tailed test).

TABLE 10   Summary Study 2 results for predictive analyses

Competency heuristic	Semipartial correlation results	Multivariate analysis results
Hypothesis 5 (Study 2): *Job crafting problem-solving heuristics (a) more characterized by approach will positively relate to approach job crafting behaviors; and (b) more characterized by avoidance will positively relate to avoidance job crafting behaviors.*		
High-volume analytic problem-solving	*Work role expansion* (+), *social expansion* (+), *work role reduction* (+), *work organization* (+), *adoption* (+), *metacognition* (+)	*Work role expansion* (+), *social expansion* (+), *work organization* (+), *adoption* (+), *metacognition* (+), *withdrawal* (−)
	H5a support = 100%	**H5a support = 100%**
Low-volume analytic problem-solving	*Work role expansion* (+), *work role reduction* (+), *adoption* (+), *withdrawal* (+)	*Work role reduction* (+), *withdrawal* (+)
	H5b support = 100%	**H5b support = 100%**
Rapid problem-solving	*Work role expansion* (+), *social expansion* (+), *work role reduction* (+), *work organization*, (+), *adoption* (+), *metacognition* (+)	*Work role expansion* (+), social *expansion* (+), *work role reduction* (+), *adoption* (+)
	H5a support = 100%	**H5a support = 60%**
Practical problem-solving	*Work role expansion* (+), *social expansion* (+), *work role reduction* (+), *work organization* (+), *adoption* (+), *metacognition* (+)	*Work organization* (+), *metacognition* (+)
	H5a support = 100%	**H5a support = 40%**
Ambivalent acquiescence	*Social expansion* (+), *work role reduction* (+), *withdrawal* (+)	*Work role expansion* (−), *work role reduction* (+), *work organization* (−), *withdrawal* (+)
	H5b support = 100%	**H5b support = 100%**
Hypothesis 6 (Study 2): *Job crafting problem-solving heuristics (a) more characterized by approach will positively relate to physical and cognitive work engagement; and (b) more characterized by avoidance will positively relate to bored behavior and turnover intentions.*		
High-volume analytic problem-solving	*Physical engagement* (+), *cognitive engagement* (+), *turnover intentions* (+)	None
	H6a support = 100%	**H6a support w/o behaviors = 0%** **H6a support w behaviors = 0%**
Low-volume analytic problem-solving	*Bored behavior* (+), *turnover intentions* (+)	*Bored behavior* (+ w/o behaviors), *turnover intentions* (+ w/o behaviors)
	H6b support = 100%	**H6b support w/o behaviors = 100%** **H6b support w behaviors = 0%**
Rapid problem-solving	*Physical engagement* (+), *cognitive engagement* (+)	*Cognitive engagement* (+ w and w/o behaviors), *turnover intentions* (+ w/o behaviors)
	H6a support = 100%	**H6a support w/o behaviors = 50%** **H6a support w behaviors = 50%**
Practical problem-solving	*Physical engagement* (+), *cognitive engagement* (+)	*Physical engagement* (+ w and w/o behaviors), *cognitive engagement* (+ w and w/o behaviors), *bored behavior* (− w and w/o behaviors)
	H6a support = 100%	**H6a support w/o behaviors = 100%** **H6a support w behaviors = 100%**
Ambivalent acquiescence	None	*Physical engagement* (− w/o behaviors), *cognitive engagement* (− w/o behaviors), *turnover intentions* (− w behaviors)
	H6b support = 0%	**H6b support w/o behaviors = 0%** **H6b support w behaviors = 0%**

Note: "w/o behaviors" is used to show results for regressions that did not include the job crafting behaviors as a set and "w behaviors" is used to show results for regressions that included the job crafting behaviors as a set.

specific tactics they should use to address their motives. This new perspective explains how people decide the different ways to craft their tasks, relationships, cognitions, skills, demands, and resources. Our research operationalizes this focus on the volume and function of information use and complements the existing job crafting research by

assessing a context-relevant job sample measure of job crafting that measures capability as opposed to a self-reported approximation.

Our research also reveals outcomes of job crafting competencies and how certain competencies can reduce tradeoffs between performance and well-being (Campion & Thayer, 1985; Demerouti, Bakker,

Nachreiner, & Schaufeli, 2001). Prior research suggests that job design can serve distinct functions that precipitate tradeoffs when a specific type of job design is evaluated by outcomes it was not intended to address (Campion & Thayer, 1985) and that nuanced strategies can help minimize these tradeoffs (Morgeson & Campion, 2002). Tradeoffs could also occur when people craft their jobs, as suggested by our results. Job crafting competency profiles and heuristics could help explain these tradeoffs according to heuristics that involve different patterns of maximizing and satisficing. In this regard, the Study 1 results suggest that high-volume analytic problem-solving serves a performance-enhancing function. Rapid problem-solving appears to have a similar function but could partially minimize the tradeoffs through less pronounced relationships with performance and strain. Ambivalent acquiescence appears to have a well-being-enhancing function, with low-volume analytic problem-solving serving this same function to partially balance tradeoffs between performance and well-being. Practical problem-solving, a simplistic approach profile that accounts for context-relevant information, appears to minimize tradeoffs between performance and well-being. Study 2 largely supports these findings by suggesting that approach heuristics are more related to approach crafting and engagement than to avoidance crafting and withdrawal. It also shows that avoidance heuristics are more related to avoidance crafting, bored behavior, and turnover intentions than approach crafting and engagement. Practical problem-solving simultaneously benefits engagement and reduces bored behavior. These results suggest most job crafting competencies could have specific purposes and functions.

13.2 | Limitations and future research

There were some limitations and provocative findings that should help guide future research. Some limitations were addressed through complementary methods across the studies. Study 1 complemented Study 2 by measuring job crafting competencies according to the information people used in a job crafting test, which directly measured the volume and function of information being processed. The Study 2 measures were collected on the same survey. However, concerns over common method bias are reduced by the differential predictions and controlling for social desirability, a theoretical source of common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Study 1 further complemented Study 2 by using multiple methods and collecting data from multiple sources to provide source and methodological separation between the endogenous and exogenous variables (Podsakoff et al., 2003). Study 2 complemented Study 1 by directly measuring heuristics and showing empirical support for the dimensional structure of job crafting competencies. It also elaborated the prediction of relevant approach/avoidance job crafting behaviors and outcomes associated with approach (engagement) and avoidance (withdrawal), while showing the relative distinctiveness from less relevant behaviors and outcomes.

Although we sampled a variety of jobs in Study 1 and the profiles had a relatively proportional distribution of profile membership

(ranging from 12 to 32% of the sample), our sample was a convenience sample and was limited in its capacity to generalize to the larger population according to the relatively small absolute number of participants falling within each profile. Thus, future research should consider a range of employees and occupations across larger samples to evaluate the generalizability of our findings and address whether occupational differences curtail or encourage job crafting. Future research should also study experts in specific occupations to learn about creativity outcomes of job crafting competencies and to use coders with detailed knowledge of the specific occupation and organizational context. It could also study specific problem-solving domains (Lin et al., 2017; Petrou, Demerouti, & Schaufeli, 2018).

Other limitations reflect the nascency of the topic, as the measurement instruments for job crafting competencies do not match the refined measurement of job crafting behaviors (Bindl et al., 2019; Kooij, van Woerkom, et al., 2017; Nielsen, Antino, Sanz-Vergel, & Rodríguez-Muñoz, 2017; Tims et al., 2012). Specifically, measures of job crafting effectiveness, which reflect attributions job crafters make about the effectiveness of their job crafting, needs to be developed further. Measures of job crafting competency profiles and heuristics also need further refinement and validation according to prescribed steps of item development, scale creation, and scale validation (DeVellis, 1991; Hinkin, 1995). Here, the test measure's time limit was short; items asking about "my job," "one's job," and "your job" may have created ambiguity; and low-volume analytic problem-solving and ambivalent acquiescence subscales warrant consideration to address their marginally acceptable coefficient alphas. We also encourage future scale development efforts to begin with a substantial number of initial items with an adequate degree of redundancy. More broadly, this research should use multisource, multimethod, or multiwave designs.

Future research should also assess antecedents, mediators, outcomes, and moderators of job crafting competencies. These relationships should be considered according to different levels and sources of job autonomy, and competencies like metal ability and creativity. The relationships that organizational tenure and education have with job crafting competencies should be studied further as well. Organizational tenure could bring more knowledge and experience to make workers more competent. However, the descriptive results suggest that newer employees might be more motivated to innovate, have more flexible mental models, and be less resistant to change. These possibilities seem to tap into different job competencies. These finding point to a larger question of how job competencies relate to job crafting competencies, and what explains the difference between the two competency sets. Here, it is possible that job crafting competencies could be influenced by tensions between stabilizing competencies (job competencies that help a person do their job better as it was formally designed) and change competencies (innovation competencies that help a person change their job to create more novel and useful work processes). The findings also suggested that education was positively related to the total count measure of job crafting competencies but not to the total quality measure. Here, it is possible that educated people have more knowledge and come up with a greater number of

unique and feasible ideas more efficiently. In this regard, more educated people might use more efficient problem-solving heuristics, while less educated people might have to process more information and invest more effort to devise equally effective solutions.

Other research should seek to understand the role self-presentation and social desirability have in predicting job crafting competency profiles and heuristics, as Study 1 correlations and observations suggest that the medium of the interview might have played at least a partial role in peoples' response patterns. Future research should consider human resource management implications of job crafting competencies in personnel selection, training, job analysis, and performance appraisal. This research might also study tradeoffs between well-being and performance, operationalized as discrete choices via choice modeling, experimentation, or continuous judgments, as predicted by job crafting competency profiles and heuristics.

13.3 | Practical implications

Current research suggests that interventions directed at changing the goals and objectives of job crafters can increase job crafting, fit, well-being, and performance (e.g., Kooij, van Woerkom, et al., 2017; van Wingerden, Bakker, & Derks, 2017; van Wingerden, Derks, & Bakker, 2017). Yet, these applications currently focus on changing motives, self-set goals, and specific job crafting behaviors. Our research shows the importance of considering job crafting competencies in terms of problem-solving, and how these competencies relate to different outcomes. Managers should train people on how to build and actualize their job crafting competencies according to the outcomes of interest. Managers should also be trained that it is legitimate for employees to craft their jobs (Wong et al., 2017) to reduce personal costs like strain as well as to increase performance. Importantly, job crafting training should complement stress interventions that reduce the stressors that employees face, rather than supplement these interventions. Additionally, job analysis should incorporate job crafting measures to understand how jobs are performed differently by different incumbents, which is often treated as error but actually captures meaningful work process improvements. Performance appraisals and employee assistance programs should also be updated to account for job crafting competencies, heuristics, and behaviors as respective performance dimensions and strain management strategies.

Individual employees should practice certain job crafting problem-solving processes to achieve work objectives. These objectives should align with the employee's work role, as well as their personal goals, motives, and needs. Most job crafting competencies can serve rather nuanced purposes, and job crafters can use both comprehensive and simplistic information when solving problems. High-volume analytic problem-solving seems to greatly benefit performance to the detriment of the worker's short- and long-term well-being. Conversely, ambivalent acquiescence might benefit the worker's well-being to the detriment of their performance. However, the results also suggest that practical problem-solving appears

to reflect a more balanced and optimal approach, as people with this competency profile experienced relatively higher performance and relatively lower strain. We suggest that attempts should be made by managers and employees to adopt and promote practical problem-solving competencies whenever possible. Organizations could support practical problem-solving by designing jobs to provide diagnostic information that inform the effective implementation of job crafting; and job crafting competencies could be used as a criteria for selecting adaptive, innovative, and self-managing workers using complementary test ("can do") and self-report ("will do") measures. When optimum performance greatly outweighs the liabilities to the worker's well-being, temporary high-volume analytic problem-solving might suffice. Ambivalent acquiescence should be avoided, as it appears to offer no unique benefits when compared to other profiles.

13.4 | Conclusion

This research adopts an information processing approach to job crafting by developing the job crafting competency construct and using it to explain how people make tradeoffs between performance and well-being when crafting their jobs. Our results revealed five distinct job crafting problem-solving profiles and related heuristics that reflected the patterns of information use that occurred within the profiles. These profiles and heuristics differed on the comprehensiveness of information use and they were differentially characterized by approach and avoidance. The profiles and heuristics related to job crafting behavior, engagement, performance, strain, and work withdrawal. Overall, this research reveals the importance of understanding how people process information when solving problems and fulfilling needs as a complement to traditional behavioral perspectives on job crafting.

DATA AVAILABILITY STATEMENT
The data are not publicly available for privacy and due to the sensitive nature of the information.

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ENDNOTES

[1] The sample provided adequate statistical power to detect correlations of .20 (82–86%, at $p < .05$, two-tailed) and .10 (90–92%, at $p < .10$, two-tailed) across analyses (Cohen, 1988).

[2] Evidence of the construct validity of this measure comes from the fact that it is a job sample—that is, a demonstration of job crafting problem-solving relevant to an actual job—which has content validity by definition (see the Principles for the Validation and Use of Personnel Selection Procedures by the Society of Industrial and Organizational Psychology, 2018). Before administering the measure, participants were trained on the definition of job crafting and asked for examples from their prior experience to ensure they understood what job crafting was.

[3] This constitutes a measure of maximum performance that more effectively differentiates skill level (Sackett, Zedeck, & Fogli, 1988).

[4] Subject matter experts coded the responses to provide an independent evaluation to avoid method variance and self-presentation biases, and was a consistent perspective across participants, jobs, organizations, and industries. They were given frame-of-reference training by being given instructions from the first author regarding the materials and standards for coding responses, and then coding an initial set of responses with the first author, where they discussed their decisions and any disagreements. These procedures allowed them to practice identifying different levels of answer quality.

[5] Self-report measures of job crafting effectiveness are ideal because the job crafter has the best knowledge of the outcomes that might not be visible to others, because the competencies and assessments of job crafting effectiveness were assessed using different methods, and because we assessed supervisor-rated performance in hypothesis tests to give a different perspective. We trained participants by reviewing the job crafting concept and its defining characteristics with them based on a protocol developed and refined in pilot interviews and open-ended pilot survey questions. We then asked them to provide at least two examples of their own job crafting that they had engaged previously. We paid close attention to each of these descriptions of their job crafting activities to ensure compliance with the defining characteristics of job crafting. In situations where a person was describing an activity that would not comply with the defining characteristics of job crafting, we would explain the defining characteristic that did not seem to be met. Here, we would ask for another example that better aligned with the defining characteristics. We then asked them specifically about their reasons for making the change because job crafting can be motivated by reasons other than organizational objectives (Wrzesniewski & Dutton, 2001). We averaged all of a person's job crafting activity-level measures to account for all distinct situations and activities they described, which could not be assumed to be intercorrelated (Chan, 1998).

[6] Data were collected from the O*Net Online Website (https://www.onetonline.org/).

[7] Results of an OLS regression analysis that used the same sets of controls that were used in the job crafting effectiveness validity checks also suggest that approach profile dummy codes for rapid problem-solving ($\beta = .25$, $p \leq .01$, $R^2 = .12$), practical problem-solving ($\beta = .18$, $p \leq .05$, $R^2 = .12$), and high-volume analytic problem-solving ($\beta = .15$, $p \leq .1$, $R^2 = .12$) significantly related to higher levels of job crafting effectiveness when compared against the baseline condition of ambivalent acquiescence, a simplistic and avoidant profile. These results suggest that in addition to generalized measures of job crafting competencies, the competency profiles are also relevant to job crafting effectiveness.

[8] We analyzed the power for the ANOVA tests of between cluster differences in clustering indices and outcomes. With an α of .05 (Harmonic mean = 30.96), the ANOVAs had a power of .52 to detect medium sized differences ($d = .5$: Howell, 2010). Multilevel analyses were used instead of analysis of covariance due to the unequal (competency profile) group sizes within the sample (Howell, 2010).

[9] For mean difference tests, there were two consistent multivariate outliers across all supervisor-ranked performance outcomes that represented 1% of the entire sample. Separate analyses of supervisor-ranked outcomes were conducted with these individuals both included and removed according to quantitative and qualitative outlier identification (Aguinis, Gottfredson, & Joo, 2013; Tabachnik & Fidell, 2007). Multivariate outliers were identified using box plots (Tabachnik & Fidell, 2007) that were run separately by cluster for each dependent variable. This procedure allowed us to identify outliers within each cluster for each dependent variable. Two of these individuals were not ranked by their supervisor. As per the instructions given to supervisors, unranked individuals would be automatically assigned the lowest rank possible for the group. As such, the lack of a rank given to these individuals automatically identified them as extremely low performers on all dimensions of performance and development, as each was at least one full SD below the next lowest value in the category. We discuss the results as analyzed with the two outliers removed (Table 3) and include the analyses with no outliers removed in the Online Supplement. The patterns of results were somewhat less clear but largely the same.

[10] The sample had adequate statistical power to detect correlations of .20 (89–97%, at $p < .05$, two-tailed) and .10 (94–99%, at $p < .10$, two-tailed) across analyses (Cohen, 1988).

[11] Items were developed by subject matter experts on job crafting and job crafting competencies to reflect the unique focus on information use and approach/avoidance characteristics displayed in the Study 1 job crafting competency profiles. Themes of job crafting problem-solving heuristics were derived from the patterns of information use displayed in the descriptive characteristics of the information used by Study 1 participants in their responses to the job crafting competency test (Table 2 and Figure 1). Descriptions of the heuristics are presented in Table 5 and items appear in the Online Supplement. Items were created to reflect the themes of the specific heuristics derived from the Study 1 profiles. Therefore, the item development procedure was deductive as it used a classification typology of heuristics that had been established in Study 1 prior to the data collection for Study 2, and the items reflected the dominant themes of these heuristics instead of a collection of unclassified incidents collated from the participants' responses (Hinkin, 1995). Item(s) with the lowest squared multiple correlations were removed from the subscale sequentially when a subscale had low internal consistency, because items were prespecified reflections of the specific heuristic.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.