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Job crafting deconstructed: Advancing differentiation between theoretical perspectives, individual forms, and intervention mechanisms

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Summary

Job crafting refers to self-initiated changes employees make to better adapt their jobs to themselves and represents a bottom-up form of work (re-)design. Despite the central notion of the construct being *individual changes*, the literature to date has mirrored the corresponding varieties only to a limited extent. Although different theoretical models identify varying forms of job crafting, their individual mechanisms and possible discrepancies have largely remained unclear. Instead, the literature predominantly focuses on behavioral, approach-oriented forms of crafting – such as actively seeking out new, challenging tasks – and their mostly beneficial effects on individuals' well-being, work engagement, or performance. However, simply extending these findings to job crafting in general fails to adequately account for the complexity of the construct and carries the risk of overlooking the specific potential of other forms (e.g., cognitive or avoidance-oriented crafting), as well as possible unintended or negative effects. Therefore, the overall aim of this dissertation is to advance differentiation within the construct of job crafting. Specifically, I address this aim through three focuses, progressively deepening in the course of the dissertation: Differentiating 1) general theoretical perspectives, 2) different job crafting forms, and 3) their individual effectiveness and mechanisms within interventions.

Targeting the first focus, we systematically compared the two original *theoretical perspectives* on job crafting (Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001), which have long coexisted in the literature and examined possible integrative approaches. We conducted two studies among German and English-speaking employees ($N_1 = 295$, $N_2 = 557$), considering a range of job crafting measurement instruments. Across both studies, the results indicated a significant discrepancy between the perspectives in terms of factorial structures and theoretically assumed relationships between their individual forms. From these findings, we derived the recommendation not to use different job crafting perspectives interchangeably in the sense of a uniform construct. Instead, we provided evidence for the benefits of applying higher-level integrative factors (e.g., approach and avoidance crafting) or more specific individual forms.

A further longitudinal study ($N = 284$) with three measurement points focused on a joint examination of behavioral (approach and avoidance) and cognitive (approach and avoidance) crafting to provide a systematic differentiation of *different job crafting forms*. Resulting evidence from structural equation modeling and latent profile analyses revealed surprisingly high stabilities of all job crafting forms and no reciprocal relations over time between them, indicating relatively separate processes. Missing causal links to the traditionally assumed antecedent autonomy and outcome person-job fit further underscored the need for a more detailed understanding of the unique mechanisms of different job crafting forms.

Finally, two separate but interconnected intervention studies shed light on *the effectiveness and mechanisms of specific job crafting forms within interventions*. In a novel modular intervention approach, we first examined whether four job crafting forms (behavioral approach, behavioral

avoidance, cognitive approach, cognitive avoidance) could be trained individually, thereby improving specificity within interventions and providing a basis for assessing their distinct effectiveness. This short, asynchronous online training (N = 173) proved to be particularly successful in stimulating cognitive approach crafting. To further illustrate its unique mechanism, we focused a second intervention study (N = 105) on the cognitive crafting of autonomy. This study is the first to demonstrate a two-part underlying process of cognitive approach crafting that increased the perceived level of autonomy and its appraisal as a resource.

In sum, this dissertation challenges existing assumptions in the field and contributes to a more nuanced understanding of job crafting with a comprehensive set of five studies, including cross-sectional, longitudinal, and experimental data of German and English-Speaking employees. The findings enhance job crafting research by 1) identifying critical implications regarding construct validity, 2) systematically contrasting and training different forms of job crafting and examining their mechanism of change, and 3) emphasizing and illustrating previously unexplored cognitive processes. Thereby, this dissertation offers a refined perspective for the future development of job crafting theory and more specific and evidence-based practical applications.

Key words: job crafting, behavioral crafting, cognitive crafting, approach crafting, avoidance crafting, autonomy, person-job fit, work engagement

Zusammenfassung

Job Crafting bezeichnet selbstinitiierte Veränderungen, die Arbeitnehmende vornehmen, um ihre Arbeit besser an sich selbst anzupassen. Damit stellt es eine bottom-up Form der Arbeitsgestaltung dar. Obwohl der zentrale Gedanke des Konstrukts in der individuellen Art solcher Veränderungen liegt, spiegelt die Literatur eine entsprechende Vielfalt an Varianten bisher nur bedingt wider. Zwar identifizieren verschiedene theoretische Modelle unterschiedliche Formen des Job Crafting, deren einzelne Mechanismen und mögliche Diskrepanzen sind bisher jedoch weitgehend ungeklärt. Stattdessen konzentriert sich die Literatur überwiegend auf *behavioral crafting* – wie beispielsweise die Suche nach neuen, herausfordernden Aufgaben – und seine meist positiven Auswirkungen auf das Wohlbefinden, Arbeitsengagement oder die Leistung von Arbeitnehmenden. Eine bloße Übertragung dieser Erkenntnisse auf Job Crafting im Allgemeinen wird der Komplexität des Konstrukts jedoch nicht gerecht und birgt die Gefahr, das spezifische Potenzial anderer Formen (z. B. *cognitive crafting* oder *avoidance crafting*) sowie mögliche unbeabsichtigte oder negative Auswirkungen zu übersehen. Das übergeordnete Ziel dieser Arbeit besteht deshalb darin, die Differenzierung innerhalb des Konstrukts Job Crafting zu verbessern. Konkret werde ich dieses Ziel über drei Schwerpunkte adressieren, die im Laufe der Dissertation schrittweise vertieft werden: Die Differenzierung von 1) allgemeinen theoretischen Perspektiven, 2) verschiedenen Formen von Job Crafting und 3) deren individuelle Effektivität und Mechanismen im Rahmen von Interventionen.

Für den ersten Fokus wurden die beiden ursprünglichen *theoretischen Perspektiven* auf Job Crafting (Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001), die in der Literatur seit langem koexistieren, systematisch verglichen und mögliche integrative Ansätze untersucht. Zwei Studien unter deutsch- und englischsprachigen Arbeitnehmenden (N_1 = 295, N_2 = 557) berücksichtigten dabei eine Reihe verschiedener Job Crafting Messinstrumente. Die Ergebnisse beider Studien weisen auf eine signifikante Diskrepanz zwischen den Perspektiven hin, sowohl in Bezug auf faktorielle Strukturen als auch auf die theoretisch angenommenen Beziehungen zwischen ihren einzelnen Formen. Daraus leiteten wir die Empfehlung ab, verschiedene Job Crafting Perspektiven nicht austauschbar im Sinne eines einheitlichen Konstrukts zu verwenden. Stattdessen zeigten wir den Nutzen übergeordneter integrativer Faktoren (z.B. *approach* und *avoidance crafting*) oder der Fokussierung auf individuelle Formen auf.

Eine weitere Längsschnittstudie (N = 284) mit drei Messzeitpunkten konzentrierte sich auf die gemeinsame Untersuchung von *behavioral* (*approach* und *avoidance*) und *cognitive* (*approach* und *avoidance*) *crafting*, um eine systematische Differenzierung *verschiedener Formen* zu ermöglichen. Die Ergebnisse von Strukturgleichungsmodellen und latenten Profilanalysen zeigten eine hohe Stabilität aller Formen und keine wechselseitigen Beziehungen zwischen ihnen im Zeitverlauf, was auf relativ getrennte Prozesse hindeutet. Das Fehlen kausaler Beziehungen mit den traditionell angenommenen Antezedenten Autonomie und Outcome Person-Job Fit unterstreicht die Notwendigkeit eines detaillierteren Verständnisses der einzigartigen Mechanismen von verschiedenen Job Crafting Formen.

Schließlich beleuchten zwei separate, aber miteinander verbundene Interventionsstudien die *individuelle Effektivität und Mechanismen* spezifischer Job Crafting Formen in Interventionen. In einem neuartigen modularen Interventionsansatz untersuchten wir zunächst, ob vier Job Crafting Formen (*behavioral approach, behavioral avoidance, cognitive approach, cognitive avoidance*) einzeln trainiert werden können. So kann die Spezifität innerhalb von Interventionen verbessert und eine Grundlage für die Bewertung der individuellen Wirksamkeit einzelner Formen geschaffen werden. Dieses kurze, asynchrone Online-Training (N = 173) erwies sich als besonders erfolgreich bei der Stimulierung von *cognitive approach crafting.* Um dessen spezifischen Wirkmechanismus genauer zu beleuchten, fokussierten wir eine weitere *cognitive crafting* Interventionsstudie (N = 105) auf das Arbeitsplatzmerkmal Autonomie. Dabei zeigten die Ergebnisse erstmals einen zweiteiligen Prozess des *cognitive crafting* auf, bei dem nicht nur das wahrgenommene Ausmaß der Autonomie, sondern auch ihre Bewertung als Ressource gesteigert wurde.

Insgesamt stellt diese Dissertation bestehende Annahmen im Feld in Frage und trägt zu einem differenzierteren Verständnis von Job Crafting bei, basierend auf fünf Studien mit Querschnitts-, Längsschnitts- und experimentellen Daten von deutsch- und englischsprachigen Arbeitnehmenden. Die präsentierten Erkenntnisse erweitern die Job Crafting Literatur, indem sie 1) kritische Implikationen für die Konstruktvalidität identifizieren, 2) verschiedene Job Crafting Formen systematisch kontrastieren, trainieren sowie einen spezifischen Veränderungsmechanismus beleuchten und 3) bisher unklare kognitive Prozesse hervorheben. Damit bietet diese Dissertation eine geschärfte Perspektive für zukünftige Weiterentwicklungen der Job Crafting Theorie und spezifischere, evidenzbasierte praktische Anwendungen.

Schlüsselbegriffe: Job Crafting, Behavioral Crafting, Cognitive Crafting, Approach Crafting, Avoidance Crafting, Autonomie, Person-Job Fit, Arbeitsengagement

List of papers included in this publication-based dissertation

The following research articles are part of this publication-based dissertation:

Paper 1 (published)

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Paper 2 (under review)

Ebert, T., Bipp, T., & Debus, M. E. (2024). *All crafting is equal? Stability, reciprocity, and antecedent-outcome relations of different job crafting forms*. Manuscript submitted for publication.

This article was submitted for publication in *Journal of Organizational Behavior* and is currently under peer-review.

Paper 3 (under review)

Ebert, T., & Bipp, T. (2024). *Crafting with a focus – Two intervention studies on specific job crafting forms and content*. Manuscript submitted for publication.

This article was submitted for publication in the special issue "Job crafting and other proactive approaches of job design" in *Journal of Business and Psychology* and is currently under peer-review.

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Chapter 1 – General Introduction

1. Designing work that works

What characterizes a job, and how does mine differ from yours? These are central questions explored by the field *of work design*, as it involves "the content and organization of one's work tasks, activities, relationships, and responsibilities" (Parker, 2014, p. 662). In defining key factors of how, what, where, and with whom people work, work design provides the building blocks of an individual's job (Griffin, 1987; Wrzesniewski & Dutton, 2001). As such, it plays a pivotal role in influencing both organizational success and innovation, as well as individuals' motivation, health, and satisfaction (Humphrey et al., 2007; Parker et al., 2001). In its early days, the emphasis of work design research lay primarily on organizing jobs as simply as possible to achieve efficient results or limit negative effects, for example, of dangerous working environments on employees' health (Taylor, 1911). However, the focus increasingly shifted towards fostering motivation and development of employees. Traditional work design approaches, such as the *Job Characteristics Model* (JCM; Hackman, 1980; Hackman & Oldham, 1976), the *Work Design Questionnaire* (Humphrey et al., 2007; Morgeson & Humphrey, 2006), or the more recent *SMART work* framework (Parker & Knight, 2023) share the notion that work should be enriched rather than simplified, and identify various specific work characteristics. While the JCM has postulated five core motivational characteristics of work (skill variety, task identity, task significance, autonomy, and job-based feedback), subsequent models expanded this range to include social, contextual, and demand-related work characteristics. The assumed impact of these characteristics on individuals' experiences in the workplace is well-documented in research. Humphrey et al.'s meta-analysis (2007), for instance, found that *motivational work characteristics* (e.g., autonomy, skill variety or feedback from the job) explained 34% of the variance in job satisfaction, with *social* (e.g., feedback from others) and *contextual characteristics* (e.g., physical demands) explaining an additional 17% and 4%, respectively. Contemporary studies on work design furthermore account for the realities of modern workplaces, such as increased flexibility (Wegman et al., 2018), remote or hybrid work (Wang et al., 2021), or the integration of digital technologies and Artificial Intelligence into daily tasks (Parker & Grote, 2022).

Traditionally, the responsibility and opportunity for integrating these work characteristics into the design of specific jobs have lied with organizations and their managers, leaving employees in a more passive role of adaptation to imposed circumstances. The concept of *job crafting* marks a significant shift in this perspective. It represents a unique form of individual, bottom-up work re-design, characterized by "changes to a job that workers make with the intention of improving the job for themselves" (Bruning & Campion, 2018, p. 500). This approach not only carries on basic principles of work design by striving for specific job characteristics known and shown to be motivating and health-promoting, but additionally introduces a central element of proactivity: Individuals take self-initiated and future-focused actions to change their work situation (Parker et al., 2018; Parker et al., 2006). In this way, job crafting sets individuals

as experts for designing their own work, transforming the provided building blocks of tasks and responsibilities into a personally fitting and meaningful job architecture.

2. Individual work design: Job crafting

Given the fact that job crafting, with its proactive, individual nature, is a striking fit for today's fast-paced, flexible, and complex work environments (Grant & Ashford, 2008; Grant & Parker, 2009), the literature has grown exponentially since its first conceptualization (Wrzesniewski & Dutton, 2001). The construct's contemporary relevance is also reflected in its general evidence, with overall positive links to central work-related outcomes such as work engagement, job satisfaction, and performance (Rudolph et al., 2017). There is a broad consensus that job crafting can often benefit individuals and organizations and should, therefore, be fostered. However, the question of how exactly job crafting manifests itself seems much more ambiguous. Returning to the metaphor of building blocks that are assembled into an individual job, job crafting comes with different manufacturers (theoretical perspectives), blocks in various colors and shapes (job crafting forms), and varying assembly instructions (mechanisms). Although the vast potential of job crafting for positive changes is evident in the literature, without adequate consideration of these complexities, we risk producing unstable constructions: Overgeneralized findings that do not sufficiently reflect the whole range of the construct and thus lead to practical applications lacking a clear evidence base. Potočnik and Anderson (2016) summarize such issues as threats to "construct clarity" that are common in the broader literature on proactive and change-related constructs.

This dissertation addresses this need for more specificity and precision in the job crafting literature and pursues the central aim of refining the construct through three main focuses: Differentiating 1) two co-existing theoretical perspectives, 2) individual job crafting forms, and 3) their individual effectiveness and underlying mechanisms within interventions. The following sections of Chapter 2 provide an overview of how different theoretical perspectives on job crafting have developed, diverged, and been integrated, which different forms of job crafting can be identified, and how their mechanisms of change are applied in interventions. Subsequently, Chapter 3 will outline the resulting research questions of this thesis and summarize the corresponding papers.

2.1 Theoretical conceptualizations

Job crafting was first conceptualized by Wrzesniewski and Dutton (2001) as "the physical and cognitive changes individuals make in the task or relational boundaries of their work" (p.179). The second dominant theoretical conceptualization framed job crafting within the Job Demands-Resources (JD-R) model as "the changes that employees may make to balance their job demands and job resources with their personal abilities and needs" (Tims et al., 2012, p. 174). Despite both perspectives explicitly discussing job crafting, a closer examination reveals notable similarities and differences worth exploring. Both conceptualizations acknowledge job crafting as a proactive endeavor that employees engage in to modify aspects of their work. These changes might be extending as well as reducing in nature and have the overarching goal of increasing the fit between crafters and their jobs. One of the most distinct differences between the perspectives might be that Tims and Bakker (2010) emphasize job crafting as primarily

behaviorally manifested, by *increasing structural and social resources*, *seeking challenges,* and *reducing hindering demands* (Tims & Bakker, 2010; Tims & Bakker, 2012).

In contrast, Wrzesniewski and Dutton (2001) offer a broader view of job crafting that includes *task*, *relational,* and *cognitive* forms, suggesting that employees also alter how they view their job, beyond tangible, behavioral changes in work tasks and relationships. Their differing emphasis is also reflected in the proposed antecedents and outcomes. According to Wrzesniewski and Dutton (2001), job crafting is primarily motivated by personal needs (for control, positive self-image, and human connections with others), while Tims and Bakker (2010) assume a misfit between current resources and demands and personal preferences as the key motivation for subsequent crafting. While Wrzesniewski and Dutton (2001) point out central effects of job crafting on the meaning of work and a changing work identity, Tims and Bakker (2010) primarily follow the motivational mechanisms of the JD-R and postulate effects on work engagement, job satisfaction, or performance. Recently, the literature has established the terms of *role* and *resource perspectives* to denote these differences in the focus of conceptualizations (Bruning & Campion, 2018): changing boundaries of tasks, relations, and cognitions and thus roles at work to enhance meaningfulness and change one's work identity (Wrzesniewski & Dutton, 2001) versus a more mechanistic view on crafting as a tool to manage a job's resources and demands and thereby improve person-job fit and engagement (Tims & Bakker, 2010).

In the literature, these perspectives have largely existed in parallel. While the resource perspective, due to its integration into the JD-R model, dominates quantitative research, including meta-analyses and interventions (Oprea et al., 2019; Rudolph et al., 2017), the role perspective has inspired more qualitative investigations (Lazazzara et al., 2020). Several scholars have identified the problems of this coexistence in unnecessarily separating the research field and compromising the comparability of evidence (Zhang & Parker, 2019; Bruning & Campion) and recently suggested integrative approaches. Bruning and Campion (2018), for example, used the taxonomy of *approach and avoidance* and *role- and resource-based crafting* to propose seven new dimensions of crafting (e.g., work organization, adoption, or metacognition). Meanwhile, Lichtenthaler and Fischbach utilized *promotion-* and *prevention-focused crafting* as an overarching framework (2019). Zhang and Parker (2019) have established the most comprehensive integrative framework to date, effectively synthesizing previous models and their various forms. They propose several hierarchical over-arching factors and distinguish between *approach- and avoidance-*oriented crafting, *behavioral* and *cognitive* crafting forms, and the content of crafting *resources* or *demands*. However, this distinction on the lowest level is not as clearly separated and more covariant in nature (Lopper et al., 2024).

In summary, the field reveals an ambiguous theoretical basis, posing a clear threat to construct validity. Two theoretical perspectives are often used interchangeably, although they postulate different forms and mechanisms of job crafting. Their actual comparability has not been established to date. Integrative approaches propose various overarching crafting factors but have so far remained purely theoretical proposals.

2.2 Job crafting forms and their mechanisms

Zhang and Parker's (2019) framework theoretically acknowledges the complexity of job crafting by incorporating the broadest spectrum of how employees can proactively shape their work to date. Its structure, with the distinction of *approach* and *avoidance* and *behavioral* and *cognitive* crafting, will form the basis for the following brief overview of possible forms of job crafting and the empirical evidence on their antecedents, mechanisms, and outcomes.

On the broadest level, Zhang and Parker (2019) differentiate between two job crafting orientations: approach crafting, i.e., crafting to achieve positive aspects, and avoidance crafting, i.e., crafting to avoid negative aspects. Previous theoretical perspectives and responding measurement instruments mainly focused on approach-oriented forms, for example, *increasing structural and social resources* or *seeking new challenges* (Tims & Bakker, 2010; Tims et al., 2012), or *extending task and relational crafting* (Niessen et al., 2016; Wrzesniewski & Dutton, 2001). While these forms seem intuitively connected to the proactive core of job crafting, avoidance-oriented forms have received far less emphasis in the literature and have so far been regarded rather narrowly, primarily as merely *reducing hindering demands* (Tims & Bakker, 2010). Approach and avoidance crafting are considered to be aggregated components of job crafting, with no to low correlations (Rudolph et al., 2017) and distinct antecedents and outcomes.

The literature on their antecedents can be roughly divided into personal and situation-related factors. While proactive personality (Rudolph et al., 2017) and approach temperament (Bipp & Demerouti, 2015) have been linked with approach-oriented crafting forms, avoidance temperament, prevention focus, or neuroticism showed relations to avoidance crafting (Bipp & Demerouti, 2015; Rudolph et al., 2017; Lichtenthaler & Fischbach, 2019). A similarly contrasting pattern emerges in relation to work characteristics as a precursor to job crafting. Meta-analytic findings primarily highlight the central role of job autonomy, which is beneficial for approach but negatively related to avoidance crafting (Rudolph et al., 2017).

Vast empirical support for the positive outcomes of approach-oriented crafting forms includes increased job satisfaction (Tims et al., 2012), work engagement (Petrou et al., 2012), and performance (Rudolph et al., 2017). Though less studied, evidence suggests that avoidance-oriented crafting can lead to short-term reductions in job stress and burnout (Van den Heuvel et al., 2015). Still, it may also limit opportunities for growth and development, potentially resulting in long-term stagnation (Bakker & Oerlemans, 2019) or even a vicious cycle with exhaustion (Petrou et al., 2012; Zhang & Parker, 2019). Regarding the mechanisms through which these effects come about, the evidence to date primarily refers to core processes of the JD-R and job design theory. It depicts changes through job crafting in the form of altered work characteristics. In particular, increased resources in the course of approach crafting have been shown to increase employees' person-job fit and motivation (Demerouti et al., 2015; Tims et al., 2013), which in turn influence other relevant outcomes such as performance (Lichtenthaler & Fischbach, 2019).

Zhang and Parker (2019) further distinguish between behavioral and cognitive crafting forms. Grounded primarily in the resource perspective and the JD-R model (Bakker & Demerouti, 2007),

behavioral crafting involves tangible changes to job tasks and relationships to align them better with individual preferences. Cognitive crafting refers to consciously changing or reframing the way individuals view their jobs and roles at work (Wrzesniewski & Dutton, 2001), reflecting principles of social identity theory with an overarching goal of constructing a positive self-image (Tajfel, 1982; Dutton et al., 1994). In contrast to approach and avoidance crafting, behavioral and cognitive crafting forms are assumed to be positively related (Zhang & Parker, 2019). However, the limited number of studies on cognitive crafting complicates the question of comparable or differing antecedents and outcomes.

While the aforementioned antecedents, mechanisms, and outcomes only refer to behavioral approach and avoidance crafting forms, the specific dynamics of cognitive crafting remain largely unclear. Initial evidence points to distinct relations of behavioral and cognitive crafting with antecedents like psychological needs, self-efficacy, or job autonomy, and outcomes such as person-job fit and performance (Niessen et al., 2016; Weseler & Niessen, 2016). However, while the previously described crafting mechanism via changed job characteristics has even been meta-analytically demonstrated for the behavioral form of task crafting (Holman et al., 2023), considerations on the underlying processes of cognitive crafting have been sparse so far and remain mostly theoretical. For example, Demerouti et al. (2019) suggest that in extension of actual changes in work characteristics, a change in the perception of those characteristics might also be conceivable as a mechanism to enhance positive outcomes via cognitive crafting. Furthermore, the central role of increased meaningfulness through cognitive crafting could be a decisive mediator toward further positive outcomes including work engagement or performance (Geldenhuys et al., 2021; Wrzesniewski & Dutton, 2001).

All in all, the existing job crafting literature reveals an extreme imbalance. Various findings investigate antecedents, mechanisms, and outcomes of approach-oriented behavioral crafting, while avoidance-oriented crafting has mainly been studied through a very narrow, negative lens. Additionally, the specifics of cognitive crafting and potential similarities, differences, and reciprocal influences with behavioral crafting remain largely unclear.

2.3. Job crafting interventions

The allure of job crafting interventions lies in their potential to foster employee-driven changes without extensive top-down initiatives, as they are increasingly proving to be too slow and universal to accommodate the rapid and demanding changes in modern workplaces (Bindl & Parker, 2010; Grant & Parker, 2009). However, some shortcomings described in the previous section also prevail in the literature on job crafting interventions. This section aims to synthesize the evidence on job crafting interventions, highlighting their positive impacts while acknowledging the heterogeneous nature of existing research findings.

Oprea and colleagues' meta-analysis (2019) serves as a cornerstone, summarizing that job crafting interventions can enhance general job crafting behavior and specific forms such as *seeking challenges* and *reducing demands*. Furthermore, they yield small but positive effects on work engagement and contextual performance. Despite this positive overarching narrative, Oprea et al. (2019) emphasize the strong

fluctuations and heterogeneity in the findings, as the effects of the included studies range over several categories, from null to medium effect sizes, and partly demonstrate inconsistent patterns across studies.

A closer examination of individual studies reinforces this more varied picture. To my knowledge, all existing interventions aim to promote multiple job crafting forms together in a general job crafting training. However, this all-inclusive concept does not fully succeed in any application. Instead, there is a variety of results, ranging from no intervention effects on job crafting at all (Hulshof et al., 2020; Kuijpers et al., 2020; Van den Heuvel et al., 2015) to effects on some of the individual job crafting forms that vary greatly between studies, to further heterogeneous findings on more distal work-related outcomes. For example, some interventions particularly increase crafters' challenging demands (Van Wingerden et al., 2016; Van Wingerden, Bakker et al., 2017), while others explicitly find no effect on this form of job crafting (Dubbelt et al., 2019; Van Wingerden, Derks, et al., 2017), but only on reducing demands (Demerouti et al., 2017), although these interventions are based on the same theoretical perspective, measurement instruments, and implement similar content. In addition to these differences in the trained job crafting forms, effects on other work-relevant outcomes are also inconsistent. Although meta-analytic results (Oprea et al., 2019) alongside findings from some individual studies (Dubbelt et al., 2019; Sakuraya et al., 2016; Van Wingerden, Bakker, et al., 2017; Van Wingerden, Derks, et al., 2017) demonstrate beneficial impacts on work engagement, this positive outcome is notably not affected in several other interventions (Sakuraya et al., 2020; Van Wingerden et al., 2016). Evidence on influencing performance is also mixed, with some studies reporting enhancements in self-rated performance (Gordon et al., 2018), others finding no significant changes in general performance (Hulshof et al., 2020; Van Wingerden, Derks, et al., 2017), or even decreased in-role performance (Van Wingerden et al., 2016).

Conceptually, the generally limited focus of the job crafting literature also prevails in interventions as they primarily target behavioral crafting forms (Oprea, 2019). Interestingly, the content in most interventions also has a strong approach-oriented focus, addressing considerably more approach forms (increasing structural resources, increasing social resources, seeking challenges) than avoidance-oriented ones like decreasing hindering demands (e.g., Kooij et al., 2017; Van Wingerden et al., 2016; Gordon et al., 2018). Yet, meta-analytic evidence reveals the most substantial effects in interventions on decreasing hindering demands (Oprea et al., 2019), supporting the argument for an avoidance-oriented component in job crafting interventions. A further emerging area of interest regarding job crafting interventions is the role of cognitive crafting. Although traditionally overshadowed by strictly behavioral interventions (Dubbelt et al., 2019; Gordon et al., 2018; Kuijpers et al., 2020; Van den Heuvel et al., 2015; Van Wingerden et al., 2016), some recent studies move forward and aim to include cognitive aspects in training (Sakuraya et al., 2020; Verelst et al., 2021). While these approaches have not been extensively successful, they provide initial evidence of emphasizing cognitive changes in job crafting interventions.

In sum, job crafting interventions represent a promising avenue for empowering employees to shape their work experiences proactively. The evidence, while heterogeneous, points towards the potential of these interventions to foster positive work outcomes. However, the diversity in findings calls for a more

refined understanding of which individual forms can be trained effectively. Furthermore, theoretical advancements regarding the substantive differentiation of various forms of crafting have not yet been incorporated into the existing strongly behavioral and approach-focused intervention literature.

3. Research questions and overview of included papers

Building upon the preceding sections, this part of the introduction breaks down the overarching aim of the dissertation: to advance differentiation within the job crafting construct concerning theoretical perspectives, various job crafting forms, and their effectiveness and underlying mechanisms in interventions. Significant gaps in the literature have been identified through a detailed exploration of existing theoretical frameworks, the diversity of job crafting forms, and the current landscape of job crafting interventions. These gaps lay the groundwork for three overarching research questions, addressed by the included papers of this dissertation that constitute the following chapters 2, 3, and 4. An abstracted graphical overview of the papers is presented in Figure 1, while Table 1 provides a detailed summary of their aims, variables, and designs.

Research Question 1: How comparable are different theoretical perspectives on job crafting?

Paper 1: Tomayto, Tomahto? An empirical comparison and integration of job crafting perspectives

Besides recent integrative efforts, the original theoretical conceptualizations of job crafting vary significantly. Despite sharing the term "job crafting", the *role* (Wrzesniewski & Dutton, 2001) and *resource perspective* (Tims & Bakker, 2010) operationalize it distinctly, raising questions about their comparability and whether they indeed capture the same construct. The long parallel existence of those perspectives within the literature led to a fragmented understanding of job crafting, with one stream predominantly inspiring qualitative research (Lazazzara et al., 2020) and the other dominating quantitative investigations, interventions, and meta-analyses (Oprea et al., 2019; Rudolph et al., 2017), ultimately challenging construct validity and the integration of findings across studies.

Paper 1 addresses this concern through a comprehensive empirical comparison of the role and resource perspective on job crafting and examines the suitability of different integrative approaches for these two original models. In two cross-sectional survey studies with samples from both German (N_1 = 295) and English-speaking employees (N_2 = 557), we systematically compared the two perspectives regarding internal and shared factor structures and theoretically assumed relations between their forms, operationalized through various measurement instruments. The findings illuminate stark differences, undermining the assumption that these perspectives articulate a singular, cohesive construct of job crafting. Instead, we provide evidence for the use of higher-order integrative factors and demonstrate the suitability of a theory-driven proposition (*approach* and *avoidance crafting*, e.g., Zhang & Parker, 2019) and an approach derived inductively from item contents (*targets of crafting*).

This examination challenges the validity of the job crafting construct and underscores the necessity of distinguishing between theoretical lenses in the comparison and integration of existing evidence as well as in future research and application. By advocating for a strategic shift toward either overarching higher-

order factors or a more granular focus on specific forms of job crafting, this paper contributes significantly to refining the job crafting construct and prompts a re-evaluation of existing and future empirical work.

Research question 2: What is the interplay between behavioral and cognitive crafting? How do they influence each other over time, and how do they differ in terms of stability and links with antecedents and outcomes?

Paper 2: All crafting is equal? Stability, reciprocity, and antecedent-outcome relations of different job crafting forms

Although a variety of job crafting forms is theoretically assumed, the literature to date places an extreme focus on specific ones: behavioral, approach-oriented crafting (Oprea et al., 2019; Rudolph et al., 2017; Zhang & Parker, 2019). This severely limits our understanding of the whole range of different job crafting forms and how they might operate alongside each other. Paper 2 focuses on the distinction between behavioral (approach and avoidance) and cognitive (approach and avoidance) crafting. It systematically contrasts their temporal stability, reciprocal influences over time, and their comparability in relation to a traditional antecedent and outcome.

Utilizing a longitudinal design, this study surveyed 284 German employees across three measurement points (time lag of four weeks each). To intricately examine *behavioral approach*, *behavioral avoidance*, *cognitive approach*, and *cognitive avoidance crafting* in a joint process, we applied structural equation modeling and latent profile analysis. The findings revealed a surprisingly high level of stability for both behavioral and cognitive crafting forms across the study period, challenging previous assumptions about the dynamic nature of job crafting forms. Notably, the study did not find support for reciprocal influences between behavioral and cognitive crafting forms over time, suggesting that they operate as more distinct processes over time with separate trajectories. There were also no causal links with the traditionally assumed antecedent autonomy and outcome person-job fit.

This paper contributes to the theoretical refinement of job crafting by highlighting the need for a more nuanced understanding of its various forms. It challenges the prevailing notion of job crafting as a predominantly spontaneous and adaptive behavior, instead proposing that crafting actions and cognitions are relatively stable over short to medium terms. Furthermore, the lack of expected reciprocal effects between behavioral and cognitive crafting and missing causal relations with a traditionally assumed antecedent and outcome call for further longitudinal investigations into their specific mechanisms.

Research question 3: Which individual job crafting forms can be effectively trained, and what possible mechanism underlies them?

Paper 3: Crafting with a focus – Two intervention studies on specific job crafting forms and content

Limitations in the scope of the existing literature also become evident in the domain of interventions, with most focusing exclusively on behavioral and approach-oriented crafting. Moreover, findings from these interventions present a mixed picture, indicating a lack of differentiated analysis of effectiveness. There is a critical need to understand which forms of job crafting are amenable to training and to illuminate the specific mechanisms of their impact.

Paper 3 addresses this issue by employing Zhang and Parker's integrative framework (2019) as its foundation, encompassing a broader content range (*behavioral* and *cognitive*, *approach* and *avoidance*-oriented crafting) than previous interventions and systematically analyzing the individual effectiveness of the four job crafting forms. This two-study research introduces a novel modular, online intervention among German employees (N_1 = 173; N_2 = 105) that targets individual job crafting forms (Study 1) and illustrates an underlying mechanism with the concrete example of cognitive approach crafting of the work characteristic of autonomy (Study 2). The findings demonstrated that particularly cognitive approach crafting can be effectively trained in a short, asynchronous online format, marking a significant departure from traditional, behaviorally focused job crafting interventions. In Study 2, the intervention delved deeper into the mechanism of cognitive approach crafting, showing that it significantly altered participants' perceived level of work-scheduling autonomy and increased their appraisal of it as a resource.

With a broadened intervention scope, including cognitive and avoidance-oriented crafting, Paper 3 contributes to job crafting theory by illustrating the potential of cognitive crafting in interventions and providing novel insights into how it influences the perception and appraisal of work characteristics. Its methodological innovation lies in demonstrating a modular, form- and content-specific intervention approach, which allows for a more precise assessment of the effects of individual job crafting forms in interventions. Practically, this research demonstrates the effectiveness of cognitive crafting strategies in fostering positive adjustments to work characteristics, offering a valuable tool for individual and organizational development.

Figure 1

Digging deeper – Advancing differentiation in theoretical perspectives, forms, and mechanisms of job crafting (abstracted graphical overview of included papers)

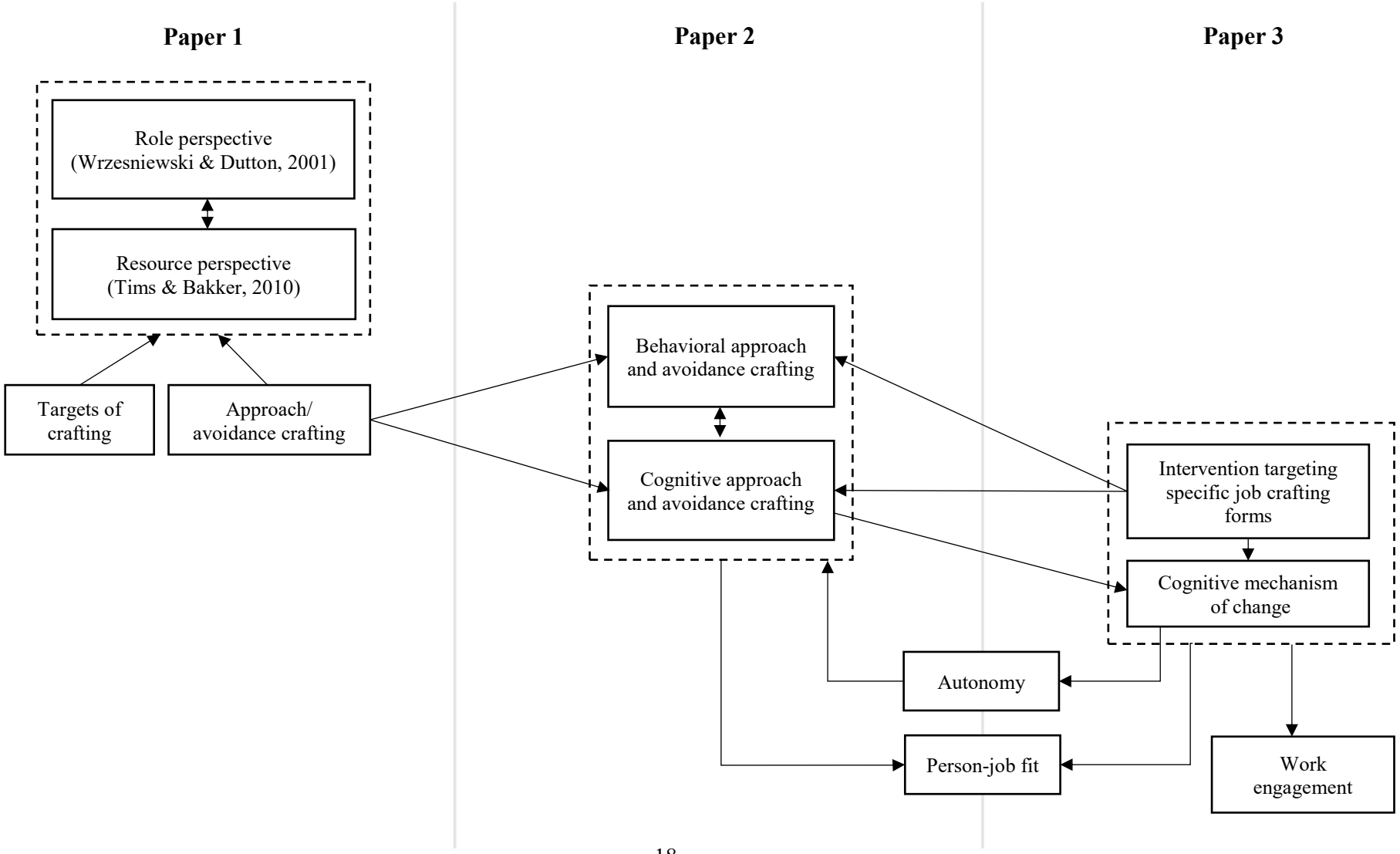

Table 1

Overview of the three included papers, their aims, variables, and designs

	Research aims	**Study variables**	**Design and sample**
Paper 1	**Comparison and integration of different theoretical perspectives on job crafting**		
Study 1	Comparison of factor structures within and between different measurement instruments, and examination of relationships between forms of different perspectives	Original job crafting perspectives and their proposed forms - Role perspective (Wrzesniewski & Dutton, 2001) - Resource perspective (Tims & Bakker, 2010)	Cross-sectional survey among German employees (N = 295)
Study 2	Integration of perspectives via 1. theory-driven approach-avoidance crafting factors 2. inductively derived (based on the items of established measures) targets of crafting factors	- Job crafting forms according to extended measures of the two original perspectives	Cross-sectional survey among English-speaking employees (N = 557)
Paper 2	**Differentiation of four different crafting forms** regarding 1. their stability over time 2. reciprocal effects among the job crafting forms, and 3. their unique relation with an antecedent (autonomy) and outcome (person-job fit)	- Behavioral approach crafting - Behavioral avoidance crafting - Cognitive approach crafting - Cognitive avoidance crafting - Decision-making autonomy - Person-job fit	Cross-lagged panel design with three times of measurement (time lag of four weeks each) among German employees (N = 284)
Paper 3	**Differentiated analysis of effectiveness within interventions** in relation to		
Study 1	individual training of specific job crafting forms and	- Behavioral approach crafting - Behavioral avoidance crafting - Cognitive approach crafting - Cognitive avoidance crafting - Work engagement Person-job fit	Randomized waiting list control group design (four intervention groups, one control group) among German employees (N = 173) Modular, asynchronous online intervention with an application phase of two weeks before post-measurement
Study 2	an underlying mechanism of change	- Cognitive approach crafting - Work-scheduling autonomy - Resource- and demand-appraisal of work-scheduling autonomy	Randomized waiting list control group design (one intervention group, one control group) among German employees (N = 105) Modular, asynchronous, and content-focused online intervention with immediate post-measurement after training

Chapter 2 – Paper 1

Tomayto, tomahto? An empirical comparison and integration of job crafting perspectives

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Abstract

Although job crafting finds widespread application as a leading approach to bottom-up work design, the foundation of the construct is rather shaky: two different theoretical perspectives exist within the research field that have largely been treated separately. An empirical examination of their congruency is missing so far, threatening construct validity, informative value of the emerging literature, and comparability of effects in practice. In two studies, we investigated the comparability and possible integrative approaches for the two perspectives, including different versions of existing measurement instruments. Our results, based on two large samples of employees stemming from diverse backgrounds and countries ($N_1 = 295$, $N_2 = 557$), indicate distinct differences in terms of the internal structure of existing job crafting measures and with regard to theoretically anticipated relationships between subdimensions. A first empirical attempt to integrate both perspectives provided promising results for overarching *approach/avoidance* as well as *targets of crafting* factors. In general, our results provide cause for concern that the two perspectives should not be regarded as one uniform construct, nor should they be used interchangeably in theory or practice.

Keywords: job crafting, proactive behavior, construct validity, measurement

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Disclosure of interests

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Tomayto, tomahto? An empirical comparison and integration of job crafting perspectives

Employees in modern workplaces constantly face new and more intensive work demands (Korunka et al., 2015) but simultaneously gain more autonomy and decision-making leeway (Allvin et al., 2011). Since traditional top-down job redesign proves to be inefficient under these circumstances, proactive work behaviors that lead to bottom-up job redesign take on importance (Bindl & Parker, 2010). In particular, the research field of job crafting (JC) –individual changes that employees make to their jobs – has recently gained momentum (Parker & Zhang, 2016). Positive outcomes of JC, such as increased work engagement (Lichtenthaler & Fischbach, 2018) or well-being and performance (Boehnlein & Baum, 2020), have led to the development of various interventions for practice (Demerouti et al., 2019; Sakuraya et al., 2016). Despite this growing attention, the research field retains a peculiarity: The parallel existence of two theoretical perspectives. Since Wrzesniewski and Dutton first described the construct (2001), and Tims and Bakker reframed it within the job demands-resources model (2010), measures and interventions have been created separately. Yet, to our knowledge, no empirical comparison of the different perspectives has taken place so far. Instead, the field has turned towards application, with most studies focusing on one of the perspectives (e.g., Hulshof et al., 2020). Despite the emergence of integrative attempts, these either remain on a theoretical level (Zhang & Parker, 2019) or generate new models and measurements (e.g., Bruning & Campion, 2018) without testing for consistency with the existing perspectives.

This questionable foundation led to the two central aims of our paper. First, we empirically contrasted the two original perspectives on job crafting by Wrzesniewski and Dutton (2001), abbreviated as JCWD, and Tims and Bakker (2010), shortened to JCTB, from three different points of view: First, at a fundamental level of measurement, we compared the respective internal factor structures of the corresponding measurement instruments. Second, we inspected shared structures between measures of both perspectives in an exploratory factor analysis. Third, we tested theoretically hypothesized relationships between the subscales of the two perspectives. Through this comprehensive approach, we provide clarification concerning the overlap and differences between job crafting perspectives and thus move closer to the core of the theoretical construct.

As a second central aim, we build upon recent theoretical approaches and compare two variations of integrating models. On the one hand, we put a theoretically driven model using overarching approach and avoidance crafting factors that have been suggested in the literature to an empirical test (Zhang & Parker, 2019). On the other hand, we developed a bottom-up, inductively derived model (based on the items of established measures of JC from different theoretical perspectives) and tested if existing measures of JC can be alternatively aggregated into three overarching factors in terms of targets of crafting (focusing on the job, others at work and self). We discuss their theoretical usefulness for integrating the two perspectives on job crafting and compare their empirical fit.

In doing so, we strive to provide more clarity about the foundation of the research field and determine whether there are just different ‘pronunciations’ of the same construct or if we run the risk of comparing apples with oranges.

Comparison of two job crafting perspectives

Two people can have the same job and yet perform it very differently. This sparked the interest of Wrzesniewski and Dutton, who introduced the term *job crafting* for the first time in 2001. In their fundamental article, they defined JC as "the physical and cognitive changes individuals make in the task or relational boundaries of their work" (Wrzesniewski & Dutton, 2001, p. 179). Drawing on social constructionism, job design, and social identity theory, they formulate the basic premise that a job is not set in stone but rather provides raw material that can be changed by the individual. Specifically, this occurs in three ways: by *task* (e.g., introducing new approaches or technologies), *relational* (e.g., communicating with others to get a job done), and *cognitive crafting* (e.g., changing the purpose of one's role at work). The motivation to job craft primarily springs from individual needs (for control over job and work meaning, positive self-image, and human connection), and successful crafting attempts result in changes in the meaning of work and individual work identity (Wrzesniewski & Dutton, 2001).

Since Wrzesniewski and Dutton's conceptualization rests primarily on, and has largely stimulated, qualitative research, Tims and Bakker (2010) built upon their work and framed JC within the well-validated job demands-resources framework (Bakker & Demerouti, 2007) to support quantitative examinations. In their perspective, job crafters "may change their levels of job demands and job resources to align them with their own abilities and preferences" (Tims & Bakker, 2010, p. 4). They define four JC dimensions (Tims et al., 2012): *increasing structural resources* (e.g., trying to develop one's capabilities), *increasing social resources* (e.g., asking others for feedback), *increasing challenging demands* (e.g., taking on extra tasks) and *decreasing hindering demands* (e.g., avoiding difficult decisions). In the search for balance between job demands and resources, individuals are mainly motivated to job craft by a person-job misfit in this perspective. Changes towards a better fit then go hand in hand with a range of assumed positive outcomes, such as higher work engagement, resilience, or performance. (Tims & Bakker, 2010).

The basis for similarities between the perspectives lies in the fundamental fact that both aim to represent the same construct, with a clear overlap in definitions and suggested nomological nets. JCTB explicitly built on JCWD and adopted the construct's name. Both perspectives frame JC as a proactive behavior that aims at changing aspects of an employee's job. These behaviors can include extending and reducing forms and do not have to be approved by the supervisor or support organizational goals (Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001). Outcomes for the job crafter are consistently regarded as positive in nature (Tims et al., 2016; Wrzesniewski et al., 2013). Furthermore, both perspectives propose several JC dimensions with considerable content overlap, as the social interaction aspect in *relational crafting* (Wrzesniewski & Dutton, 2001) as well as in *increasing social resources* (Tims & Bakker, 2010). Based on these similarities, first attempts have been made to theoretically integrate the two perspectives. Zhang and Parker (2019) developed a comprehensive model of the construct by separating *approach* and *avoidance* tendencies as well as *behavioral* and *cognitive* crafting. Further integrative approaches include the distinction between *role* and *resource* crafting (Bruning & Campion, 2018) or regulatory focus (Bindl

et al., 2019). However, integrative approaches have so far remained purely theoretical or result in new models and corresponding measures, while their relationship with the original perspectives remains unclear.

The attention and development that the construct receives in this way are valuable and important, yet its foundations cannot be ignored to ensure valid, comparable research and applications in the future. To supplement the current developments and contribute to a more comprehensive understanding of the construct, we concentrated on a first step to empirically compare the original two perspectives and their measures. Since the perspectives show clear congruence in their definitions and basic assumptions, their underlying measurement structure should be comparable, representing a similar degree of abstraction and consideration of specific and general factors. The literature supports this view of JC as a hierarchically structured construct with at least several first-order factors representing the different subdimensions and a superordinate, general JC factor (e.g., Costantini et al., 2020). We therefore expected a higher order model to be the best fitting one for scales of both perspectives.

Hypothesis 1: JC measures for both perspectives display the same internal structure (H1a), which is represented best by a higher order factor model (H1b).

With regard to discrepancies, there are clear theoretical disagreements on the scope and forms of JC between the perspectives. Recently, Zhang and Parker (2019) highlighted differences in the purpose of the changes through JC (improve meaning of work in JCWD vs. increasing person-job fit in JCTB) and the content of crafting, which for JCWD consists of changing boundaries of tasks, relationships, and cognitions, while in JCTB changes affect particular job characteristics. Tims and Bakker specifically stress the fact that "job crafting may also occur as a solution of short duration in a demanding period" (Tims & Bakker, 2010, p. 3), whereas Wrzesniewski and Dutton (2001) do not explicitly consider the temporal orientation. However, their perspective focuses on meaning of work and work identity as outcomes that could be regarded as more stable and slower to change, compared to changes in job demands and resources (Tims & Bakker, 2010). Taking a closer look at the respective dimensions, another deviation emerges: Only JCWD (2001) includes *cognitive crafting* and emphasizes its particular importance. However, JCTB considers this dimension more as passive coping than active behavior and therefore excludes it.

To pinpoint overlaps and divergences between the perspectives, we need a closer look at the specific dimensions and their relationships with each other. Several researchers have (at least partially) suggested theoretical overlaps between the perspectives (Rudolph et al., 2017; Zhang & Parker, 2019). Concerning *task crafting* (JCWD), we follow their view on a relation with *decreasing hindering demands* as well as *increasing challenges* (JCTB), given that a change in work tasks may involve extended responsibilities and thus new challenges, as well as a reduction of demands when tasks are narrowed down. Furthermore, we add the assumption that by doing more, fewer, or different tasks, employees also learn of new resources and opportunities for development and, therefore, *increase structural resources* (JCTB).

Hypothesis 2: Task crafting is positively related to (a) *increasing structural resources*, (b) *decreasing hindering demands*, and (c) *increasing challenges*.

Since *relational crafting* (JCWD) and *increasing social resources* (JCTB) both clearly aim at social connections at work, we expect a positive relationship in line with the literature (Rudolph et al., 2017). By changing the level of involvement with colleagues, supervisors, or customers, social resources like feedback or support change accordingly.

Hypothesis 3: Relational crafting is positively related to *increasing social resources*.

As JCTB deliberately excludes the dimension of cognitive crafting, considerations of connections between perspectives are much rarer here. However, as JCWD explicitly emphasizes, the crucial role of this dimension within JC – "as changing the view of the job in this way fundamentally changes how employees approach the job" (Wrzesniewski & Dutton, 2001, p. 186) – we assume links to all JCTB dimensions. When altering how they perceive their role at work, employees also gain more structural resources like new knowledge about their job. They may also change with whom and how they interact and incorporate social resources like feedback in further cognitive crafting. Besides, hindering demands might first become apparent when examining the job mentally. By actively reframing demands, they can subsequently be perceived as less strenuous or entail behavioral steps to reduce them. A changed view of the job (e.g., as a whole instead of a set of individual tasks) can have a motivating effect and lead to a deliberate search for new challenges, which in turn may expand one's identity and role at work.

*Hypothesis 4***:** *Cognitive crafting* is positively related to (a) *increasing structural resources*, (b) *increasing social resources*, (c) *decreasing hindering demands*, and (d) *increasing challenges*.

Study 1

To address our first aim to empirically compare the two perspectives, we inspected the internal structures of two JC measures (H1), their shared structure in an exploratory factor analysis (EFA), and the theoretically anticipated relationships of the subscales (H2-H4) in a study among employees.

Method

Participants and Procedure

Participants were German full- and part-time employees who were recruited via the authors and four research assistants to complete an online cross-sectional survey. As an incentive, participants had the option to obtain course credits or to enter a lottery for gift vouchers. Following Kenny's (2020) recommendation for confirmatory factor analyses, we aimed for a minimum of 200 participants. Complete data were collected from 295 participants (response rate approx. 51%), subjects were excluded only if they showed missings on at least half of the study variables. Most participants were women (70.8%), and, on average, they were 34.88 years old (SD = 13.28) and worked 20.06 (SD = 12.93) hours per week. 62.6% of the participants were full-time employees, 37.4% combined studying with a part-time job or internship. Besides questions on their background, participants were presented with items on their job crafting attempts and work characteristics in randomized order.

Measures

JCWD. To capture the core of the original JC construct, we used a (forward-backwards) German translation of the eleven original items assessing job crafting attempts (Wrzesniewski et al., in preparation).

Four items represented *task* (e.g., "I have tried to alter the procedures for doing my job."), four items *relational* (e.g., "I choose who I am in contact with at work to help me get my job done") and three items *cognitive crafting* (e.g., "I have tried to change the purpose or mission of my role at work"). The response scale ranged from 1 (*don't agree at all)* to 7 (*totally agree*). A comparable German translation of the scale, with a high level of agreement in the wording of items, has recently been successfully applied by Debus, Gross, and Kleinmann (2020). While *task* and *cognitive crafting* demonstrated solid reliabilities of .84 and .85, relational crafting only achieved a Cronbach's α value of .47.

JCTB. We used Vogt et al.'s (2015) validated German version of the JC scale by Tims et al. (2012). Five items measured *increasing structural resources* (e.g., "I try to develop myself professionally"), five *increasing social resources (e.g., "*I ask others for feedback on my job performance"), four *decreasing hindering demands* (e.g., "I make sure that my work is mentally less intense") and three assessed *increasing challenging demands* (e.g., "I ask for more responsibilities"). Participants indicated their answers on a Likert scale from 1 *(never)* to 5 *(very often)*. In terms of internal consistency, the subscales mostly reached acceptable values between α = .70 and .78, only *decreasing hindering demands* being slightly lower (α = .62).

Analytic approach

All statistical analyses were carried out using IBM SPSS 25 and IBM SPSS Amos 25 (Arbuckle, 2017). For both studies, we report how we determined our sample size, data inclusion/exclusion and criteria (if any), whether inclusion/exclusion criteria were established prior to data analysis, and all measures in the study. Furthermore, we describe all analyses, including all tested models, which estimation methods were used, the model fit obtained, and exact p-values for model comparisons. Within study 1, we assessed multiple examples of evidence to evaluate construct validity (American Educational Research Association et al., 2014). First, we considered measures for the two perspectives separately and based our approach on Brunner et al.'s (2012) recommendations for hierarchically structured constructs. In detail, we compared different confirmatory factor analysis (CFA) alternatives for both measurement instruments: A *one-factor model* in which all items load onto one general JC factor; a *first-order model* that represents the individual subscales and their intercorrelations; a *higher order model* where a general JC factor is added above the subscales; and finally a *nested-factor (or bifactor model)*, which also assumes specific subscale factors and a general JC factor, but both directly influence the indicators. Illustrations of the different model variations are available in the Electronic Supplementary Material (ESM 1, Figure 1). For both our studies we evaluated model fit based on the recommendations by Hooper et al. (2008) and West et al. (2012): comparative fit index (CFI; > .95), root mean square error of approximation (RMSEA; < .06), and standardized root-mean-square residual (SRMR; < .08). Furthermore, we report the Akaike information criterion (AIC) as a parsimony measure.

Second, we inspected shared structures in an exploratory factor analysis (EFA) across all 28 items of both scales, using maximum likelihood estimation and Promax rotation. Following Thompson and Daniel's (1996) recommendations for multiple decision rules in factor extraction, we considered the

eigenvalues > 1 rule (Kaiser, 1960) as well as the scree test (Cattell, 1966). To counterbalance the Kaiser criterion's tendency to overestimate the number of factors (Henson & Roberts, 2006), we also performed parallel analysis of random data (Horn, 1965).

Third, we examined theoretically anticipated intercorrelations among subscales of both models with structural equation modeling (SEM) and maximum likelihood estimation. Intercorrelations were modeled according to the original publications of the scales (Tims et al., 2012; Wrzesniewski et al., in preparation).

Results and discussion

Table 1 displays descriptive statistics, reliabilities, and intercorrelations among study variables. We first tested different internal structures for the scales separately (H1), comparing alternate CFAs similar to the procedure of Brunner and colleagues (2012). Although the JCWD subscale relational crafting presents a questionable Cronbach's α of only .47, we decided to keep it in the analyses at this point, as we concentrated on the comparison of measurement models on the item level without drawing resulting conclusions on the scale level to other variables. For both measures, hierarchical solutions fit the data better than a general one-factor model (Table 2). However, they did not display the same type of hierarchical structure as the best-fitting one (rejecting H1a; the best-fitting models are displayed in ESM 1, Figures 2a and 2b). Regarding JCWD, a first-order or higher order factor model, which are statistically equivalent in this case, provide the best fit; $\chi^2(41) = 93.18$, $p < .001$; CFI = .96; RMSEA = .066; SRMR = .044; AIC = 165.18. Following the principle of parsimony, the first-order factor model emerges as the best-fitting model, thereby rejecting H1b. For JCTB, the higher order model showed no superiority over the first-order model, contrary to H1b. However, a nested-factor model provided the best fit to the data with a satisfactory fit ($\chi^2(102) = 191.04$, $p < .001$; CFI = .93; RMSEA = .054; SRMR = .051; AIC = 327.04).

Next, we examined both scales jointly and carried out an EFA using principal axis factoring and Promax rotation. Following the multiple decision rules by Thompson and Daniel (1996), we obtained reasonable 2- (30.64% of explained variance) or 5-factor-solutions (43.41%). Horn's parallel analysis yielded results in support of a 5-factor solution. Both solutions almost exactly map the separate perspectives. Within the 2-factor-model, all JCWD items (except one of *relational crafting*: "I limit my communications about work to others in my team/department/group of colleagues") form one distinct factor (factor loadings ranging from .35 to .79), while the second factor combines all JCTB items except those of the *decreasing hindering demands* dimension (factor loadings ranging from .33 to .71). The 5-factor solution reinforces this pattern of missing overlap even more: The JCWD items form one factor, while the JCTB items map the exact four suggested subdimensions of this perspective. It is particularly noteworthy that in none of the EFAs items show any essential cross-loadings on a factor of the other theoretical perspective.

We tested the anticipated relationship between subscales (H2-4) using SEM. The postulated model with all hypothesized relationships showed a borderline adequate fit; $\chi^2(337) = 614.74$, $p = .00$;

χ^2/df = 1.82; CFI = .89; RMSEA = .053; SRMR = .091. Only four of the eight anticipated intercorrelations reached significant path coefficients (Figure 1): *task crafting* was positively related with *increasing structural resources* (r = .12, H2a) and *decreasing hindering demands* (r = .18, H2b). *Cognitive crafting* showed positive associations to *decreasing hindering demands* (r = .25, H4c) and *increasing challenges* (r = .20, H4d)[1].

To our knowledge, our study is the first to empirically compare the two JC perspectives based on developed measurement instruments. Although results are limited due to the cross-sectional nature of the data, they provide important insights as they indicate more discrepancies than similarities between the two perspectives. First, they revealed different internal structures on a measurement level: While JCWD was represented best by a first-order factor model that only depicts the intermediate level of specific subdimensions, a nested-factor model containing both general and specific factors with direct influence on the indicators fitted best for JCTB. This finding suggests that the two perspectives on job crafting focus on different hierarchical levels and thus cover varying ranges of the construct, casting doubt on the comparability of scale scores between them. Seconding this divergence, both possible EFA solutions over all items resulted in a clear separation of the two perspectives. Furthermore, the limited relationships between theoretically linked subdimensions (not exceeding values of r = .26, and only half of the assumed relationships confirmed) strongly question the comparability of perspectives instead of providing evidence for a common underlying theoretical construct.

Study 2

In our second study, we aimed at a conceptual replication of our findings on internal structures. Whereas we contrasted two German scales representing the original conceptualizations of the two perspectives in study 1, study 2 broadens this comparison by assessing recently expanded measures of both perspectives in an English-language sample. Furthermore, we inspected possible superordinate factors for integration. From a distinction between *role* and *resource* crafting (Bruning & Campion, 2018), the incorporation of regulatory focus theory (Lichtenthaler & Fischbach, 2018) or basic motivational tendencies like *approach* and *avoidance* (Zhang & Parker, 2019), several superordinate factors have mainly theoretically been proposed for the various JC dimensions. Therefore, we empirically test the applicability of one central integrative approach (*approach* and *avoidance)* for the two original perspectives. Furthermore, we propose an alternative structure of superordinate factors that we inductively derived from the operationalizations of the original perspectives, thus reflecting the core of the construct on the measurement level. The hypotheses, design, and planned analyses of study 2 were preregistered prior to conducting the research.

[1] To take the problematic α of *relational crafting* into account, we also carried out the analyses without this subscale. All significant relationships displayed in Figure 2 remained in unchanged direction. In addition, also the relationship between *task crafting* - *increasing challenges* (H2c, r = .18, p = .02) and *cognitive crafting* - *increasing structural resources* (H4a, r = .19, p = .003) reached significance.

Approach and avoidance crafting

Zhang and Parker (2019) summarize that both JC perspectives share the assumption that "employees both enrich and expand, or reduce and limit, their job boundaries" (Zhang & Parker, 2019, p. 4), which leads to the possibility of approach and avoidance tendencies as superordinate factors in JC (see also Bruning & Campion, 2018). Following their argumentation, *approach crafting* is motivated by obtaining desirable goals in an active, effortful, problem-directed manner. *Avoidance crafting*, by contrast, aims to prevent negative end states and is, therefore, more about reducing, restrictive behaviors. Indeed, Bipp and Demerouti (2015) demonstrated distinct connections between approach/avoidance temperament and JC dimensions. Recent developments regarding measurement tools for JC also reflect these superordinate categories by including a wider range of behaviors, especially adding avoidance-oriented items to both original perspectives. For example, within JCTB, Demerouti and Peeters (2018) differentiated the *decreasing hindering demands* dimension further into *minimizing demands* (minimizing the emotionally, mentally, or physically demanding aspects of one's work) and *optimizing demands* (optimization of work processes). For JCWD, Weseler and Niessen (2016) split *task* and *relational crafting* into one *extending* and one *reducing* dimension each.

Based on these theoretical developments (Nielsen & Abildgaard, 2012; Zhang & Parker, 2019), we expected that *increasing structural resources, increasing social resources, increasing challenges, task crafting – extending, relational crafting – extending,* and *cognitive crafting* form an *approach crafting* factor, while *minimizing demands, task crafting – reducing* and *relational crafting – reducing* constitute the *avoidance crafting* factor. For *optimizing demands,* we assume a load on both factors.

> *Hypothesis 5:* The theoretically assigned subscales form *approach crafting* and *avoidance crafting* higher order factors (H5a), and the higher order approach/avoidance crafting model fits better than a first-order model of all JC dimensions without integrative factors (H5b).

Targets of crafting

We contrasted the aforementioned theory-based approach with a bottom-up, inductive one. To consider the whole range of JC behaviors represented by existing measures, we listed all 38 items from the validated, extended instruments for both perspectives (Demerouti & Peeters, 2018; Petrou et al., 2012; Tims et al., 2012; Weseler & Niessen, 2016). Subsequently, two raters independently formed clusters based on item similarity of these items (inter-rater reliability Cohen's $\kappa = .84$, $z = 7.32$, $p < .001$). In the rare cases of disagreement (initial allocation of four out of 38 items), the two raters went back to the respective items together and discussed the classification, which could then be resolved unanimously. Content analysis of the clusters resulted in three alternative superordinate factors, differentiated by the *target* of the JC behavior: crafting which is aimed at one's concrete job, at social interactions with others, or at aspects of the self. This distinction finds theoretical support in the literature on *foci of proactive behavior* (Belschak & Den Hartog, 2010) and largely reflects the categorization of pro-active behavior into pro-self, pro-social, and pro-organization.

Hypothesis 6: The bottom-up reassigned subscales form *target job*, *target others*, and *target self* higher order factors (H6a), and the higher order targets of crafting model fits better than a first-order model of all JC dimensions without integrative factors (H6b).

Method

Participants and procedure

We used the online platform *Prolific* to collect data in an English-speaking sample. Participants were paid 1.10 £ for the approximately six-minute (M = 5.81, SD = 2.47) cross-sectional survey and were only eligible to participate if they were native English speakers and currently full- or part-time employed. While there has long been evidence that crowdsourcing behavioral data results in at least comparable reliability with traditional survey methods (Buhrmester et al., 2016), *Prolific* represents a newer platform with further significant improvements compared to, for example, *Amazon MTurk* (Peer et al., 2017). We also put special effort into detecting insufficient effort responding according to the recommendations of Huang et al. (2012) and screened for participants (initial sample of 600 participants) who did not pass the built-in attention checks, showed a high percentage of consecutive identical answers, and low individual reliability. Ultimately, we performed analyses on 557 complete datasets. Most participants originated from the UK (94.8%), and the majority were female (60.9%). Age ranged from 18 to 70 (M = 35.59, SD = 11.16). On average, employees worked 31.65 hours/week (SD = 15.53).

Measures

JCWD. We administered the 14-item scale by Weseler and Niessen (2016) that assesses JCWD using the five dimensions *task crafting – extending*, *task crafting – reducing*, *relational crafting – extending, relational crafting – reducing,* and *cognitive crafting* (Example items can be found in the Electronic Supplementary Material (ESM 2, Table 2). Items were answered on a 5-point Likert scale from 1 (*never*) to 5 (*always*). Internal consistencies were mostly acceptable (.63 - .78), but *task crafting – extending* only reached a Cronbach's α of .42.

JCTB. We used the original Job Crafting Scale by Tims et al. (2012), complemented by additions from Demerouti and Peeters (2018) and Petrou et al. (2012). Five items assessed *increasing structural resources*, five *increasing social resources*, five *increasing challenging demands*, five *optimizing demands*, and four *minimizing demands*. Participants rated the frequency of their behavior on a 5-point Likert scale from 1 (*never*) to 5 (*always*). All subscales achieved satisfactory internal consistencies between α = .71 and .83.

Analytic approach

Since new or extended measurement instruments in a different language were included in this study, our first goal was to replicate our findings on the differing internal structures of the measurement models. We used the same statistical programs and fit indices applied in study 1. Regarding possible integrations, we used SEM to compare a null model without superordinate factors (only the subscales of both perspectives were modeled) with the theoretically derived *approach/avoidance crafting* and the

inductively developed *targets of crafting* model. As bottom-up clustering of items resulted in a complete allocation of the respective subscales to the target factors, we carried out analyses at the subscale level.

Results and discussion

Table 3 presents descriptive statistics, reliabilities, and intercorrelations. Confirming our prior findings, the extended measures differed regarding their internal structures. Again, the results confirmed best-fitting models with satisfactory fit indices in terms of a first-order structure for JCWD and a nested-factor model for JCTB (fit indices shown in ESM 2, Table 1).

The first integrative model depicting higher order *approach* and *avoidance crafting* factors achieved an acceptable fit (Table 4). The theoretically anticipated factor loadings of all subscales were significant (supporting H5a) and ranged from .29 to .91 (see ESM 2, Table 2). As expected, *optimizing demands* loaded on both crafting factors, which did not correlate significantly (r = -.10, p = .11). In line with H5b, this model fitted significantly better than the null model without superordinate factors. However, *approach* and *avoidance crafting* were not significantly correlated, which adds further evidence to the assumption that JC does not necessarily represent one uniform construct. In the second hierarchical model comparison, partial support was found for H6a, as it was possible to assign a large part of the subscales to the three inductively developed JC factors *target job*, *target others,* and *target self*. Only two subscales (*minimizing demands* and *task crafting – reducing)* showed no significant loading on the expected factor *target job*. This integrative model also fitted significantly better than the null model (supporting H6b).

In sum, we were able to replicate our previous results on deviating internal structures of measures of the two JC perspectives, building upon a different sample of employees stemming from another country and using new or expanded measurement instruments. Furthermore, our findings indicate that the theoretically proposed integration of JC perspectives using approach and avoidance factors, as well as our inductive targets of crafting model, hold up an empirical evaluation. In an absolute consideration of fit indices, both integrative models only achieve a medium to acceptable fit. However, we believe the model tests have informative value nonetheless due to the complexity and abundance of included subscales and the first empirical application of integrative factors to the original perspectives.

General discussion

Our results provide much-needed empirical evidence for a comparison of the two perspectives in the field of JC (Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001) and thus create a secure basis for further investigations and applications of this construct. Furthermore, we advanced joint considerations and tested variations for integration on the original perspectives. In a field where the current focus lies heavily on applications (Demerouti et al., 2019; Gordon et al., 2018) and new theoretical models with new dimensions are created without first checking whether and to what extent the two original ones coincide (e.g., Bruning & Campion, 2018), construct validity and comparability between studies becomes questionable. Therefore, our results complement the series of recent theoretical considerations on the integration of JC perspectives (Bruning & Campion, 2018; Zhang & Parker, 2019) and answer the call for a clearer, empirical-based investigation on the nature of the job crafting construct (Costantini et al., 2020;

Potočnik & Anderson, 2016). Our studies are – to our knowledge – the first to empirically test the congruency of the two perspectives and evaluate different integrative approaches. In two samples of employees, including diverse backgrounds and two languages, and considering the original scales along with recently expanded measures, we examined differences and similarities among operationalizations as well as different models for integration. In sum, more differences than similarities emerged in the empirical comparison on different levels. Therefore, our results concerning construct validity force us to conclude that the different theoretical approaches of JC are not necessarily dealing with the same construct and therefore should not be treated interchangeably.

In detail, our results contribute to the literature in two ways. First, following the *Standards for Educational and Psychological Testing* (American Educational Research Association et al., 2014), we applied a variety of approaches to examine construct validity. Since the research field hitherto lacks this empirical comparison, it is vulnerable to the danger of a possible jingle fallacy – the assumption that since two scales are named the same, they must be measuring the same construct (Marsh, 1994). A risk that Potočnik and Anderson (2016) have already demonstrated for the broader area of change and innovation-related concepts. They particularly emphasize "the need to clarify constructs and to operationalize constructs transparently and use appropriate terminology" (Potočnik & Anderson, 2016, p. 21). Following this request, we compared different measurement instruments of the two perspectives from several points of view. We already encountered incongruencies at the basal measurement level. Following Costantini and colleagues (2020), who recently demonstrated the assumption of JC as a hierarchical construct with multiple subdimensions and a superordinate general factor, we assumed such a higher order structure to be the best-fitting one for measures of both perspectives. Contrary to our expectations, measurement instruments for JCWD and JCTB did not share the same internal structure. While two different measures for the JCWD perspective were best represented by a first-order structure (without a general factor), we were able to demonstrate a nested-factor structure twice for the original and extended measurement instrument JCTB, assuming specific and a general factor as well as direct effects of both on the indicators. Although the two perspectives aim to measure the same construct with their scales, our findings suggest that this might not be the case. Assuming that they nevertheless share a common underlying "true" core of job crafting, our findings indicate that this is only partially captured in both perspectives and that each perspective further contains its own specific job crafting elements. The differing measurement structures suggest that one reason for this might be that the perspectives focus on different levels of abstraction and thus reflect different bandwidths of the construct. Given that we were able to replicate these structures using different scales in two different languages highlights the importance of our findings.

Likewise, an EFA over all items of both scales produced separate factors almost without significant cross-loadings of items on factors of the other perspective, indicating a remarkable lack of overlap between the two approaches. The relationships between corresponding dimensions also raise questions of comparability. Contrary to existing theoretical mappings (e.g., Rudolph et al., 2017), we could not empirically confirm several of the expected relations. Furthermore, intercorrelations found between the

subdimensions of JCWD and JCTB did not exceed $r = .26$, and only half of our assumed relationships found confirmation. In detail, we were not able to confirm that *task crafting* is related to *increasing challenges,* and *cognitive crafting* showed no relationship with *increasing structural* or *social resources*. Particularly noteworthy is the finding that we found no significant link between *relational crafting* and *increasing social resources*, although we expected one of the highest overlaps based on the construct definition.

As a second contribution, we tested and supported the possibility of integrating the two original JC perspectives in terms of higher order factors. Overall, our findings indicate that the theoretically proposed integration of JC perspectives using *approach* and *avoidance* factors (Bruning & Campion, 2018; Zhang & Parker, 2019) appears to hold up an empirical evaluation. However, these factors were not significantly correlated, which adds further evidence to the assumption that JC does not necessarily represent one uniform construct. In addition, an alternative model separating *targets of JC* achieved a better fit than a first-order model without superordinate factors. Although the *approach/avoidance crafting* model showed slightly better fit indices on a descriptive level, the bottom-up model *targets of crafting* also proved to be a reasonable representation of the data. Based on our results, future research should address – empirically and theoretically – a broader range of possible superordinate factors of JC.

To our knowledge, our study is the first to empirically test both the congruency of the two original perspectives and possible integrations. In addition, we were able to replicate core findings across two studies, in German and English samples, using various measurement instruments and current extension. Nonetheless, our study contains limitations that may spark implications for further research. The nature of the cross-sectional design does not allow causal conclusions. Since our data rely solely on self-reports, common method bias must be kept in mind as a risk (Podsakoff et al., 2003). One specific problem might result from the weak psychometric quality of some subscales. Reliabilities are throughout relatively low (and partly unacceptable), although CFA supported the measurement models in general. As we wanted to gain a first, comprehensive impression across all subscales, we kept scales with low reliabilities in the analysis nonetheless and provided additional analyses without them where necessary. Since reliability is a sample-dependent measure, it does not necessarily reflect the quality of the tests used. However, a look at other applications of the measures reveals that a large part of JC subscales frequently reaches only Cronbach's α values of below .80 (Schachler et al., 2019; Tims et al., 2012; Weseler & Niessen, 2016). Thus, our reliability problem appears to be a finding in itself: in the field of JC it seems to be not only problematic what we measure but also how precisely we do it. As numerous different JC scales coexist, their psychometric quality needs to be examined and contrasted more closely in the future (Oldham & Fried, 2016). Likewise, some model fit indices lie at the lower limit of acceptable values, although they appear to be similar to those of the original publications of the scales (Tims et al., 2012; Weseler & Niessen, 2016).

Our findings on congruency and integration also contain further key implications for future research, theoretical developments, and the evaluation of existing studies. Since distinct differences emerged, the comparability of studies using different perspectives becomes problematic. Therefore, it may be advisable to no longer apply the construct on an aggregated scale level but to rather focus on individual

subdimensions or to work on a higher level using superordinate factors (e.g., approach/avoidance crafting, targets of crafting) to generate study findings for better evidence-based practice. Our recommendation in this regard also finds support in a recent paper by Zampetakis (2021), who, following a multidimensional Item Response Theory analysis, also raises caution against using aggregated scores across different JC dimensions. Drawing on existing meta-analytical evidence on separate antecedents and outcomes of the different dimensions (Rudolf et al., 2017; Lichtenthaler & Fischbach, 2019), future research needs a stronger focus on the uniqueness as well as the interplay of different job crafting dimensions.

In addition to this specific suggestion for future studies, we can also identify several critical issues for the evaluation of existing evidence. Given the rapidly growing number of publications in the field in recent years, meta-analyses provide an essential contribution to systematization, yet some results should only be interpreted with caution. As mentioned above, the usage of aggregate total JC scores is not plausible and should be avoided. Moreover, existing meta-analyses sometimes reflect only a fraction of the construct as they either include only one perspective (Rudolph et al., 2017) or theoretically include both perspectives but exclude with cognitive crafting a central dimension of the original conception of the construct (Boehnlein & Baum, 2020). Future meta-analyses should make a special effort to reflect this dimension, for example, by including so far unpublished findings. For single studies, especially interventions, we also consider the exclusion of the cognitive facet to be questionable. In our findings, cognitive crafting constitutes the facet with the strongest and broadest links to other JCTB as well as JCWD dimensions, indicating that stimulated behavioral changes might automatically be accompanied by cognitive ones. The fact that such cognitive changes are often not measured within studies could form a possible hidden explanation for heterogeneous effects of interventions in this field. Furthermore, we focused on parts of construct validity, whereby questions of convergent validity among measures from the same theoretical perspective remain open. Nevertheless, our ambiguous results show the fundamental importance of construct validation studies. Before new models and measures are suggested in this field, we clearly see the need to subject them to systematic validity checks to see how they relate to existing ones. Although the extension of a framework by adding antecedents, new dimensions, or higher-level structures is an important and necessary development in the vastly growing field of JC, the connection to its original form should be clearly outlined and empirically supported.

Implications for practice arise above all in the use of JC measures, also when used as foundations for developing interventions in practice. Based on our results, it seems problematic that the focus in this field has already turned to the design and evaluation of interventions, although the foundations of the construct are not fully secured. It must be kept in mind that interventions may not be comparable depending on the perspective they are based on and may vary regarding their outcomes. We thus strongly recommend consciously deciding and naming which perspective (JCTB or JCWD) at which level of abstraction (e.g. approach/ avoidance crafting or individual subdimensions) is used. Since our findings speak against a general underlying job crafting factor in different perspectives, the selection and promotion of single dimensions may also prove useful in practice, thus allowing for more economical and tailored interventions.

Specifically, a stronger inclusion of the cognitive dimension might be desirable in practice, although JCTB explicitly advocates the exclusion of this dimension on a theoretical level (Tims & Bakker, 2010) and does not take them into account for interventions (Gordon et al., 2018; Van Wingerden et al., 2017). However, our results suggest an essential overlap of *cognitive crafting* with behavioral crafting dimensions, suggesting a role of this aspect also within the JCTB perspective. In detail, *cognitive crafting* was the only dimension that (at least partially) showed the expected relationships to the other JC dimensions. Stimulating employees to use this type of JC could thus also be accompanied by an increase in other JC behaviors and, therefore, lead to positive consequences.

By addressing both the fundamental question of comparability and suggestions for integration and empirically testing them for the two original perspectives of JC, we make an important contribution towards more construct clarity in this research field. Our investigations pointed out distinct differences between perspectives in several aspects. At a higher abstracted level, we were able to show that integration seems possible through a variety of factors. Above all, researchers and practitioners should be well aware and clearly identify which 'tomato' they are working with to avoid the risk of fishing for effects in an ambiguous sauce.

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Open Science

Preregistration of Studies and Analysis Plans: Parts of this study (study 2) were preregistered with an analysis plan prior to conducting the research (link to the time-stamped preregistration: https://osf.io/mnd3b/?view_only=c9823b3fb814454b8a4d8d4207a0ac9d). The preregistration adheres to the disclosure requirements of the institutional registry. All preregistered analyses are reported in the text.

Data: The information needed to reproduce all of the reported results are not openly accessible. The material is available on request from the authors.

Materials: The information needed to reproduce all of the reported methodology is not openly accessible. The material is available on request from the authors.

Link to electronic supplementary material:
https://osf.io/zh9sy/?view_only=aa424c2001214ef9bbd57200a1e8c32c

Table 1

Descriptive statistics and bivariate correlations of sample characteristics and job crafting subscales (Study 1)

	Descriptive statistics		Intercorrelations						
Variables	*M*	*SD*	1	2	3	4	5	6	7
1. JCTB *Increasing structural resources* [a]	3.91	.67	(.78)						
2. JCTB *Increasing social resources* [a]	2.88	.70	.37**	(.73)					
3. JCTB *Decreasing hindering demands* [a]	2.80	.71	.16*	.15**	(.62)				
4. JCTB *Increasing challenging demands* [a]	2.66	.85	.24**	.28**	.11	(.70)			
5. JCWD *Task crafting* [b]	4.22	1.46	.32**	.13*	.19**	.12*	(.84)		
6. JCWD *Relational crafting* [b]	4.38	1.13	.25**	.09	.06	.04	.62**	(.47)	
7. JCWD *Cognitive crafting* [b]	3.92	1.58	.26**	.10	.25**	.21**	.66**	.52**	(.85)

Note. $N = 295$. * $p < 0.05$, ** $p < 0.01$. [a] 5-point Likert scale. [b] 7-point Liker scale. Cronbachs α coefficients are in brackets.

Table 2

Fit indices of the different CFAs of the JC measures (Study 1)

Wrzesniewski & Dutton (JCWD)

Model	χ^2	df	χ^2/df	$\Delta\chi^2$ (Δdf)	CFI	RMSEA	SRMR	AIC
One-factor Model	191.36	44	4.35		.887	.107	.059	257.36
First-Order Factor Model	93.18	41	2.27	98.18(3)***	.960	.066	.044	165.18
Higher Order Factor Model	93.18	41	2.27		.960	.066	.044	165.18
Nested-Factor Model	113.22	37	3.06	20.04(4)***	.941	.082	.054	193.22

Tims & Bakker (JCTB)

Model	χ^2	df	χ^2/df	$\Delta\chi^2$ (Δdf)	CFI	RMSEA	SRMR	AIC
One-factor Model	638.84	119	5.37		.588	.122	.110	749.84
First-Order Factor Model	252.74	117	2.16	386.10(2)***	.892	.063	.081	358.74
Higher Order Factor Model	249.13	116	2.15	3.61(1)	.894	.062	.074	357.13
Nested-Factor Model	191.04	102	1.87	58.09(14)***	.929	.054	.051	327.04

Note. $N = 295$. *** $p < .001$. Chi-Square Difference test compares to the previous model.

Table 3

Descriptive statistics and bivariate correlations of job crafting subscales (Study 2)

Variables	Descriptive statistics		Intercorrelations									
	M	*SD*	1	2	3	4	5	6	7	8	9	10
1. JCTB *Increasing structural resources*	3.88	.57	(.71)									
2. JCTB *Increasing social resources*	2.91	.78	.28**	(.83)								
3. JCTB *Increasing challenges*	3.21	.68	.62**	.36**	(.74)							
4. JCTB *Minimizing demands*	3.08	.72	.11*	.05	.00	(.72)						
5. JCTB *Optimizing demands*	3.58	.58	.41	.11*	.37**	.37**	(.71)					
6. JCWD *Task crafting – extending*	3.77	.52	.46**	.22**	.47**	.04	.27**	(.42)				
7. JCWD *Task crafting – reducing*	2.53	.73	-.02	.09*	.06	.18**	.14**	.09*	(.69)			
8. JCWD *Relational crafting – extending*	3.82	.72	.38*	.26**	.24**	.30**	.23**	.40**	.13**	(.63)		
9. JCWD *Relational crafting – reducing*	3.16	.86	.00	-.10*	-.07	.20**	.10*	.03	.39**	.17**	(.78)	
10. JCWD *Cognitive crafting*	3.16	.86	.50**	.33**	.55**	.02	.16**	.32**	.02	.27**	-.14**	(.77)

Note. $N = 557$. * $p < 0.05$, ** $p < 0.01$. Cronbachs α coefficients are in brackets.

Table 4

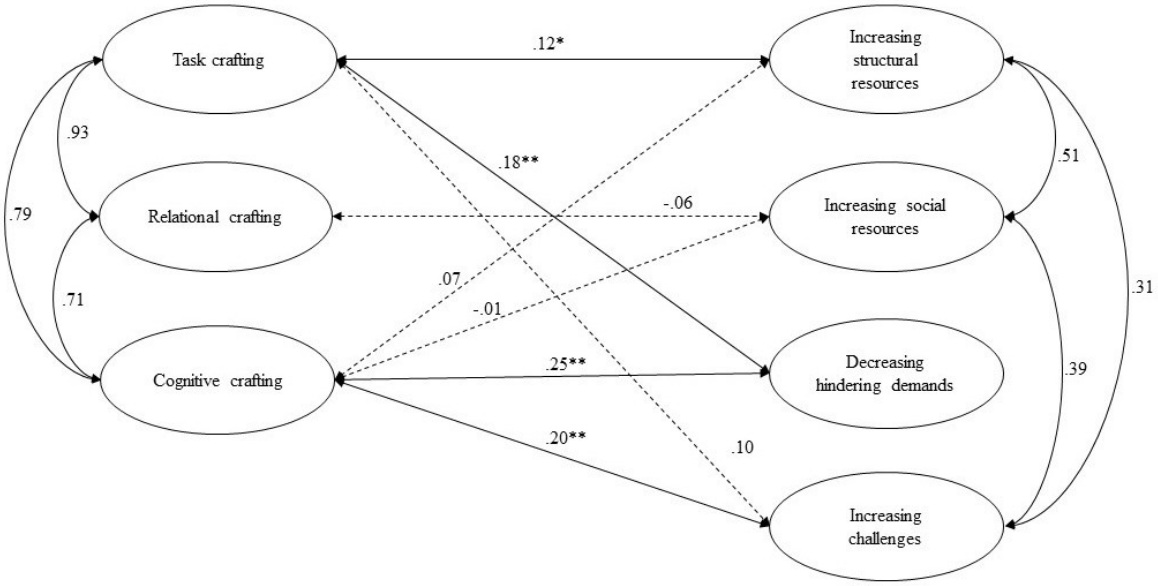
Fit indices of hierarchical CFAs (Study 2)

Model	χ^2	df	χ^2/df	$\Delta\chi^2$ (Δdf)	CFI	RMSEA	SRMR	AIC
First-order (without higher order) factors	2063.00	618	3.33		.794	.065	.125	2307.00
Approach/ Avoidance	1784.09	618	2.89	278.91(0)***	.834	.058	.080	2028.09
Targets of crafting (job / other / self)	1882.98	616	3.05	180.02(2)***	.805	.061	.089	2130.98

Note. $N = 557$. ***$p < .001$. Chi-Square Difference test compares to first-order model.

Figure 1

Standardized solution for relations between subscales SEM model (Study 1)



Note. * $p < .05$, ** $p < .01$. Non-significant path coefficients in dashed lines. Measurement model omitted to simplify presentation.

Electronic Supplementary Material

ESM Table 1

Fit indices of the different CFAs of the JC measures (Study 2)

Wrzesniewski & Dutton								
Model	χ^2	df	χ^2/df	$\Delta\chi^2$ (Δdf)	CFI	RMSEA	SRMR	AIC
One-factor Model	1313.56	77	17.06		.351	.170	.166	1397.56
First-order Factor Model	285.26	72	3.96	1028.30(5)***	.888	.073	.083	379.26
Higher order Model	370.83	72	5.15	85.57(0)***	.843	.086	.110	464.831
Nested-Factor Model	340.04	64	5.31	40.93(8)***	.855	.088	.110	450.04

Tims & Bakker								
Model	χ^2	df	χ^2/df	$\Delta\chi^2$ (Δdf)	CFI	RMSEA	SRMR	AIC
One-factor Model	2397.55	230	10.42		.506	.130	.127	2535.55
First-order Factor Model	744.73	224	3.32	1652.82(6)***	.881	.065	.076	894.73
Higher order Model	825.45	225	3.67	80.72(1)***	.863	.069	.089	973.45
Nested-Factor Model	693.25	207	3.35	70.23(17)***	.889	.065	.073	877.25

Note. N = 557. CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual. AIC = Akaike Information Criterion.

*** $p < .001$. Chi-Square Difference test compares to the previous model.

ESM Table 2

Factor loadings of subscales on the two integrative higher order factor models (Study 2)

	Approach crafting	Avoidance crafting	Target job	Target others	Target self
Increasing structural resources (e.g., "*I try to develop my capabilities.*")	.89				.85
Increasing social resources (e.g., "*I ask my supervisor to coach me.*")	.49			.55	
Increasing challenges (e.g., "*If there are new developments, I am one of the first to learn about them and try them.*")	.91		.98		
Minimizing demands (e.g., "*I try to ensure that my work is physically less intense.*")		.41	.03[a]		
Optimizing demands (e.g., "*I look for ways to do my work more efficiently.*")	.49	.28	.49		
Task crafting – extending (e.g., "*I work more intensively on tasks I enjoy.*")	.92		.90		
Task crafting – reducing (e.g., "*I pass on tasks that do not really suit me.*")		.65	.04[a]		
Relational crafting – extending (e.g., "*I invest in relationships with people whom I get along with the best.*")	.51			.57	
Relational crafting – reducing (e.g., "*I communicate less with people who do not fully support my personal work objectives.*")		.66		-.13	
Cognitive crafting (e.g., "*I find personal meaning in my tasks and responsibilities at work.*")	.72				.72

Note. $N = 557$. [a] = non-significant loadings. Blank cells represent not modeled paths.

Chapter 3 – Paper 2

All crafting is equal? Stability, reciprocity, and antecedent-outcome relations of different job crafting forms

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Abstract

Recent integrative job crafting frameworks suggest organizing the multifaceted construct with superordinate factors, emphasizing the separation of behavioral (actions to change characteristics of a job) and cognitive crafting (reframing one's view on the job). However, most existing job crafting literature focuses solely on behavioral crafting forms, while the dynamics between behavioral and cognitive crafting or their comparability regarding antecedents or outcomes remains unclear. This study demonstrates the first systematic juxtaposition of behavioral (approach and avoidance) and cognitive (approach and avoidance) crafting forms regarding their stability and reciprocal influences over time. Furthermore, we investigated their unique relations with decision-making autonomy as an antecedent and person-job fit as an outcome. We applied structural equation modeling and latent profile analyses within a longitudinal design with three measurement points ($N = 284$ German employees). Our study revealed remarkably high levels of stability in all job crafting forms. Contrary to our expectations, we found no support for reciprocal relationships between the crafting forms over time nor longitudinal relations with decision-making autonomy and person-job fit. These findings call for reevaluating current theoretical frameworks and their practical applications and underline the need for more differentiated theory development in the future.

Keywords: Job crafting; behavioral crafting; cognitive crafting; person-job fit, autonomy; job crafting profiles

Funding

As part of a "PsychLab online" call by the Leibniz Institute of Psychology (ZPID), the study proposal already underwent anonymous peer review prior to data collection. Subsequently, the data collection was funded by PsychLab.

Compliance with ethical standards & disclosure of interests

The study was conducted in accordance with the ethical standards of the APA. Informed consent was obtained (according to the guidelines of the German Psychological Society, DGPs) after participants received information about the voluntariness of their participation, protection of data privacy, and usage of anonymized data.

The authors report no conflicts of interest.

Pre-Registration & open data

All Hypotheses, their theoretical underpinnings, the desired sample size, all measures, and planned analyses were addressed in the reviewed proposal and defined in the study's pre-registration: https://doi.org/10.23668/psycharchives.5395

The data are also openly accessible: https://doi.org/10.23668/psycharchives.12338

All crafting is equal? Stability, reciprocity, and antecedent-outcome relations of different job crafting forms

Both researchers and practitioners are increasingly interested in employees' ability to proactively approach obstacles and better adapt their work to their needs (Grant & Ashford, 2008) – this perception of employees as experts in designing their own jobs embodies the principle of *job crafting* (Wrzesniewski & Dutton, 2001). While multiple theoretical perspectives within the job crafting literature have led to heterogeneous operationalizations and mixed findings (Ebert & Bipp, 2022), recent developments focus on organizing existing dimensions with hierarchical factors such as approach and avoidance crafting or the distinction of behavioral and cognitive crafting (Lopper et al., 2024; Zhang & Parker, 2019).

However, most existing research, including interventions and meta-analyses, focuses only on *behavioral crafting* – tangible actions whereby employees change their work tasks and relationships at the workplace, seek new challenges, and reduce stressful demands (e.g., Boehnlein & Baum, 2022). The field has gained essential and practically relevant insights in this stream of literature, such as identifying a range of beneficial outcomes (Tims et al., 2016; Rudolph et al., 2017). In contrast, *cognitive crafting* – "consciously changing the meaning of work and work identities" (Niessen et al., 2016, p. 1289) – and the interplay and comparability of the different job crafting forms have not yet been theoretically or empirically clarified (Zhang & Parker, 2019). This presents both wasted potential and a risk of unintended effects: Qualitative studies demonstrate the prevalence and impact of cognitive crafting among employees (Berg et al., 2010; Lazazzara et al., 2020), and a cognitive evaluation of an individual's job and perceived fit with it might precede all subsequent crafting efforts (Buonocore et al., 2018; Berg et al., 2010). Therefore, confining the literature to only one form produces a fragmented understanding of job crafting and its differentiated mechanisms, limiting its potential for theoretical development and practical interventions.

The central aim of this study is to address this imbalance and improve the differentiation between behavioral and cognitive job crafting. Grounded in several theoretical job crafting models (Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001; Zhang & Parker, 2019) and the broader literature on motivation and stress at work (Cavanaugh et al., 2000; Demerouti et al., 2001), we comprehensively contrast behavioral and cognitive crafting regarding the following four aspects: (1) Their respective stability over time, (2) the relative strengths of their reciprocal effects, and their comparability regarding (3) autonomy as an antecedent and (4) their effects on person-job fit as an outcome. Thereby, this research contributes to the literature in three meaningful ways. We clarify the comparability of different job crafting forms regarding their temporal stability and possible implications for influenceability in practical interventions. Furthermore, we advance the understanding of their reciprocal relationships and compare the strengths of their mutual influences, for the first time illustrating behavioral and cognitive crafting within a job crafting process over time. Third, we draw on two core assumptions of broader job crafting theory and directly compare the job crafting forms in terms of their relationships to autonomy

as an antecedent and person-job fit as an outcome. In doing so, we advance job crafting theory by challenging its lopsided focus with a more holistic view on the construct and provide a refined foundation for future theory developments and application.

Job crafting conceptualizations

Wrzesniewski and Dutton originally introduced the term as "the physical and cognitive changes individuals make in the task or relational boundaries of their work" (Wrzesniewski & Dutton, 2001, p. 179), thereby suggesting behavioral (task and relational) as well as cognitive manifestations of job crafting. In doing so, employees can "customize [the job] to fit their own sense of what the job should be" (Wrzesniewski & Dutton, 2001, p. 185) and ultimately change their work identity and enhance the meaning of their work. Building upon this framework, Tims and Bakker (2010) revisited job crafting within the well-validated Job Demands-Resources model (JD-R; Bakker & Demerouti, 2007). In their perspective, job crafters "may change their levels of job demands and job resources to align them with their own abilities and preferences", leading to desirable outcomes such as increased person-job fit and higher work engagement (Tims et al., 2012). In contrast to the original conceptualization, Tims and Bakker (2010) do not take cognitive crafting into account.

While the two perspectives have long been considered separately despite their discrepancies, the demand for an integrated view has recently become more pressing. For example, Bruning and Campion (2018) adopted an approach that integrates the previous perspectives by distinguishing between *role* and *resource* crafting and *approach* and *avoidance* tendencies, leading to seven conceptually new subdimensions of job crafting. In a similar line of reasoning, Zhang and Parker (2019) suggested a more comprehensive model that integrates the existing dimensions by Wrzesniewski and Dutton (2001) and Tims and Bakker (2010) with the superordinate factors of job crafting *orientation* (approach vs. avoidance), *form* (behavioral vs. cognitive) and *content* (resources vs. demands). While the division of approach and avoidance crafting has already been considered in recent research (Hu et al., 2020; Petrou & Xanthopoulou, 2021), the second differentiation in behavioral and cognitive crafting has been neglected so far. This seems particularly problematic as the existing empirical research and development of interventions, mainly based on the conceptualization of Tims and Bakker (2010), also largely excludes cognitive crafting and thereby lacks a comprehensive, differentiated view on job crafting theory.

Current study: Contrasting behavioral and cognitive crafting

Behavioral and cognitive crafting

As noted above, the ongoing quantitative research around job crafting focuses heavily on behavioral crafting. According to Zhang and Parker (2019), this crafting form aims at changes in actual job characteristics. It is represented in subdimensions such as *task* and *relational crafting* (Wrzesniewski & Dutton, 2001) or *increasing resources*, *seeking challenges,* and *reducing hindering demands* (Tims & Bakker, 2010). Following the theoretical trajectory of most of the prior research, behavioral crafting serves as a central pathway within the JD-R model (Demerouti et al., 2001) to

rebalance job resources and demands. Job crafters actively seek out new resources like learning opportunities or support from colleagues, which in turn leads to an increase in these resources as well as other positive outcomes (Tims et al., 2015). Similarly, they try to reduce hindering demands that exceed their capabilities to avoid burnout (Tims & Bakker, 2010).

The theoretical framing within the JD-R model provided a powerful momentum for quantitative research on behavioral job crafting and an essential basis for understanding how we can apply it in practice to achieve positive effects. But one aspect that also emerges from a closely related model on work stress and motivation, the Challenge-Hindrance framework (Cavanaugh et al., 2000), remains unaccounted for in the mere distinction of job demands and resources: the cognitive appraisal of job characteristics, roles or situations. Although the quantitative job crafting literature is heavily dominated by behavioral forms, mainly qualitative studies repeatedly demonstrate the occurrence and potential of cognitive crafting. In their meta-synthesis of the qualitative job crafting literature, Lazazzara et al. (2019) report cognitive crafting strategies such as redefining one's view on the nature of a task, reframing separate tasks as a meaningful whole, or consciously emphasizing positive aspects of a role. Berg et al. (2013) support this mental form of job crafting with evidence for the sole impact of mind-sets on subjective experiences at work, without physically changing anything about the job (e.g., Crum & Langer, 2007). Therefore, we contrast behavioral crafting – *changing actual job characteristics to align job resources and demands with one's own preferences* – with cognitive crafting, *changing the perception of work characteristics, roles, and the job as a whole*. These conscious changes of perception may include, for example, looking at the job as an integrated whole instead of a set of discrete tasks or focusing on the influence one's work has on the "bigger picture". Crafters thereby increase their sense of meaningfulness (Geldenhuys et al., 2021) and align the job better with their personal interests or essential aspects of identity (Berg et al., 2010).

Although both forms undoubtedly represent job crafting, Zhang and Parker (2019) also emphasize their aggregate nature and that they should not be used interchangeably. Instead, they suggest on a theoretical level that the two forms might influence each other reciprocally while still displaying significant differences. This differentiation of job crafting forms constitutes the core of our study. We compare behavioral and cognitive crafting regarding their stability over time, their reciprocal influences, and their comparability regarding autonomy as an antecedent and effects on the outcome of person-job fit.

Stability

Tims and Bakker (2010) generally assume that behavioral job crafting does not need a long-term focus but can be a short-term reaction to demanding work tasks or periods. This assumption is supported by findings on short-term fluctuations, even daily (Bakker & Oerlemans, 2019). However, there is no empirical evidence yet for the variability or stability of cognitive crafting or comparing the two forms of job crafting in this regard. In contrast to changing individual tasks or demands, cognitive crafting aims at the broader, more general perception and framing of the job (Berg et al., 2013). This

reframing goes hand in hand with changes in self-image and perceived roles at work (Wrzesniewski & Dutton, 2001). Thereby, it might be more person-related and less dependent on external circumstances than behavioral crafting. In several cross-sectional studies (Niessen et al., 2016; Schachler et al., 2019), cognitive crafting exhibited lower relations with work characteristics like autonomy or task interdependence than behavioral crafting. Therefore, we propose the following hypothesis:

Hypothesis 1: Cognitive crafting is more stable over time than behavioral crafting.

Reciprocal relations

Although behavioral and cognitive crafting represent distinct forms of job crafting, they have been suggested to be closely related and to influence each other (Zhang & Parker, 2019). Since the detailed analysis of the nature of this relationship is a novelty in the literature, we assume both directions – behavioral to affect cognitive crafting and vice versa – and will empirically contrast and quantify their respective strengths in the current study. First, concerning the effect of behavioral crafting on cognitive crafting, we propose that cognitive crafting can, at least in part, reflect the perception and further cognitive reworking of previously altered job characteristics (Zhang & Parker, 2019). As tasks or relationships at work are modified in behavioral crafting, we expect cognitive changes to follow gradually. For example, as new tasks expand the work role, they provide new building blocks for subsequent cognitive crafting (e.g., concentrating on new aspects that are particularly meaningful), or changed social relationships provide feedback that individuals can use to proactively update their identity at work. This idea is generally supported in the Challenge-Hindrance framework (Cavanaugh et al., 2000), in that observing a changed situation and its consequences can lead to a cognitive re-evaluation. Indirect support for such an influence of behavioral crafting on more cognitive variables stems from Van den Heuvel et al. (2015), who discovered that their behavioral crafting intervention also had a cognitive effect on participants in the form of higher self-efficacy beliefs. In line with this reasoning, Schachler and colleagues (2019) found a positive, albeit small, correlation between cognitive crafting and self-efficacy in their cross-sectional study (r = .22).

Second, concerning the effect of cognitive crafting on behavioral crafting, when employees alter how they perceive their job and role at work, this should also be expressed in changed behaviors over time, for example, which tasks they accept or give up and how they present themselves in social contexts at work. Wrzesniewski and Dutton especially emphasize this influence of cognitive crafting in their original conceptualization, as it "fundamentally changes how employees approach the job" (Wrzesniewski & Dutton, 2001, p. 186). From this point of view, cognitive crafting might act as a new pair of glasses: changing one's appraisal of the job or specific characteristics influences which goals are targeted in the future (Horan et al., 2020) and which behavioral changes may follow. Indirect empirical support for such an anticipated effect stems from Tims et al. (Tims et al., 2015), who apply a division of job crafting in the form of crafting *intentions* and *behavior*. In their longitudinal study, job crafting intentions – a more cognitive representation of the planned behavioral changes – lead to actual job crafting behaviors four weeks later.

Prior, cross-sectional findings on the relationship between behavioral and cognitive crafting provided first indications for moderate, positive correlations (Niessen et al., 2016; Slemp & Vella-Brodrick, 2013). The current study extends these findings by considering reciprocal relationships over time and comparing their strengths using competing informative hypotheses (for further details on this approach, see section "Analysis strategy"). To determine which reciprocal influence might be the stronger one over time, we will compare the following two competing hypotheses:

Hypothesis 2.1: Behavioral crafting is a stronger positive predictor over time of cognitive crafting than cognitive crafting is of behavioral crafting.

Hypothesis 2.2: Cognitive crafting is a stronger positive predictor over time of behavioral crafting than behavioral crafting is of cognitive crafting.

Decision-making autonomy as an antecedent of crafting

To compare the job crafting forms in context, we next focus on the key predictor regarding situational antecedents of job crafting: autonomy (Rudolph et al., 2017). Following the broader job demands-resources literature (e.g., Demerouti et al., 2001) and all aforementioned theoretical job crafting perspectives (Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001; Zhang & Parker, 2019), we assume a positive influence of autonomy on job crafting in general. As the opportunity to make independent decisions is considered to be a central resource that enables individuals to take action (Debus et al., 2020; Demerouti et al., 2001), gain further resources and buffer demands (Bakker & Demerouti, 2007), job crafting should occur more readily in jobs or situations with a high degree of decision-making autonomy as the behavioral or cognitive changes can be executed with concrete and independent decisions, without possible opposing factors such as managerial control or high interdependency with colleagues. We anticipate this facilitating effect for both behavioral and cognitive crafting but to a lesser extent for the latter. A meta-analysis by Rudolph et al. (2017) further supports this notion with positive relations between job autonomy and overall behavioral crafting, whereas at least initial correlative evidence points to a link between autonomy (or related constructs) and cognitive crafting as well (e.g., Niessen et al., 2016; Leana et al., 2009). Cognitive crafting has previously been shown to have weaker links with external work characteristics (e.g., Niessen et al., 2016; Schachler et al., 2019) and, through its central mechanism of cognitive appraisal (rather than changing actual job characteristics), lies much more within the individual's control. Consequently, even when the external conditions of a job do not allow for much behavioral change, cognitive crafting may still offer opportunities for changing one's perspective and views on the job.

While previous job crafting literature has mostly considered autonomy as a general, broad construct (e.g., Kim, Im, & Qu, 2018; Rudolph et al., 2017), we aim to specify the impact of this job characteristic as several studies have pointed out its multidimensional nature (e.g., Breaugh, 1985; De Spiegelaere et al., 2016; Morgeson et al., 2006). We expect that, in particular, the autonomy to rely on one's personal judgment when making decisions at work – decision-making autonomy – will facilitate

following behavioral and cognitive crafting changes and accordingly specify our examination to this facet.

Hypothesis 3: Decision-making autonomy will be a positive predictor over time of a) behavioral crafting and b) cognitive crafting. Furthermore, we assume that c) this prediction will be weaker for cognitive crafting than for behavioral crafting.

Person-job fit as an outcome of crafting

The central objective of behavioral and cognitive job crafting based on different theoretical perspectives is to "change [employees'] levels of job demands and job resources in order to align them with their own abilities and preferences" (Tims & Bakker, 2010, p. 4) and to "customize [the job] to fit their own sense of what the job should be" (Wrzesniewski & Dutton, 2001, p. 185). In short: to increase person-job fit. As a subtype of person-environment fit, person-job fit describes the compatibility between an individual and the respective job (Kristof, 1996), referring to the two aspects of whether an employee's needs, wishes, and preferences are met by what the organization provides (*needs-supplies fit*) and whether the knowledge, skills, and abilities of the employee correspond to the demands of the job (*demands-abilities fit*). According to Kristof-Brown and colleagues (2005), person-job fit predicts numerous organization-relevant outcomes, thus further emphasizing the central importance of this proximal outcome of job crafting.

The goal to increase person-job fit might be accomplished through behavioral as well as cognitive job crafting. Since behavioral crafting involves the actual modification of work characteristics, by the end of this process, there may be an objectively better fit between those and the characteristics of the individual, for example, as resources and demands are better aligned (Tims & Bakker, 2010) or new tasks and relationships serve the employee's needs and abilities more effectively (Wrzesniewski & Dutton, 2001). Cognitive crafting may also lead to an improved subjective assessment of person-job fit through changes in perception. Especially in jobs where changes on the behavioral level are harder to realize, for example, due to low levels of autonomy (Rudolph et al., 2017), job crafters still can reframe aspects of their job to extend their perspective to the big picture or, on the contrary, to focus on single parts of their job and thus experience a higher fit. Previous findings partially support both of these paths to an improved person-job fit. Behavioral crafting (of work characteristics and relations) related to an increase in both dimensions of person-job fit among Chinese employees in a study by Lu and colleagues (2014), while Niessen et al. (2016) provide evidence for a prediction of needs-supplies fit through cognitive crafting. However, so far, there has been no direct juxtaposition of these effects and thus no comparison of their respective strengths, which is necessary to build a comprehensive theory concerning job crafting outcomes at work.

To determine which influence might be the stronger one over time, we will compare two competing hypotheses:

Hypothesis 4.1: Behavioral crafting is a stronger positive predictor over time of a) needs-supplies and b) demands–abilities person-job fit than cognitive crafting.

Hypothesis 4.2: Cognitive crafting is a stronger positive predictor over time of a) needs-supplies and b) demands–abilities fit than behavioral crafting.

Method

Pre-Registration

All Hypotheses, their theoretical underpinnings, the desired sample size, all measures, and planned analyses were defined in the study's pre-registration (*link redacted for anonymity*). As part of a "PsychLab online" call by the Leibniz Institute of Psychology (ZPID), this proposal already underwent anonymous peer review prior to data collection. Subsequently, the data collection was funded by PsychLab using Respondi as a panel provider (targeting German employees; for a similar panel approach, see Debus et al., 2023).

We adhered to all planned hypotheses, methods, and analyses. Based on the statistical results, we adjusted the execution of some analyses and performed additional ones. Those deviations from the pre-registration are marked at all times. Due to space constraints, we have omitted a planned analysis on the perception of decision-making autonomy as a resource or demand that can be found in the pre-registration.

Procedure and participants

This study follows a longitudinal design with three times of measurement (T1, T2, and T3) and a four-week time-lag each, and data were collected using Internet-based surveys. Participants received demographic questions (T1) and items on behavioral crafting, cognitive crafting, person-job fit, and decision-making autonomy (T1, T2, and T3). Questionnaires and items within the scales were presented in randomized order. We screened for significant changes in job design (e.g., changing teams, jobs, or organizations) within the time-lag.

Regarding a suitable time interval, we considered both preliminary findings from the field of job crafting and general recommendations before designing our study. The few studies to date that measured job crafting over time rely on intervals between two (Niessen et al., 2016) and four weeks (Tims et al., 2015). Dormann and Griffin (2015) support this approach and state that optimal time intervals for cross-lagged designs are usually relatively short. On this basis, we decided on a time interval of four weeks. Since job crafting is generally considered to be an everyday occurrence (Petrou et al., 2012), this time period provides enough opportunities for change but is limited enough to avoid major top-down shifts in job design.

To ensure that job crafting can be assessed sufficiently, a minimum weekly working time of 10 hours was applied as an inclusion criterion at T1, as well as no significant changes in job design (e.g., taking on a new job, reduction of working hours below 10 hours/week) within the following four-week intervals.

At Time 1, the survey was completed by 472 participants, and 384 (81.4%) continued until Time 2. At Time 3, $N = 302$ (64.0%), German employees completed all three measurements, but 18 of those reported significant external changes in job design (e.g., changing jobs or organizations) within

the four-week intervals and were therefore excluded. Thus, the final sample was $N = 284$. Of those, 54.2% of participants identified as male, 45.4% as female, and one person chose not to indicate their gender. Ages ranged from 19 to 68 years ($M = 45.17$, $SD = 12.22$). The sample represents a wide range of industries, for example, health and social professions (13,4%), public administration (10,9%), business services (6.7%), or education (5.6%). On average, participants worked 39.33 hours per week ($SD = 5.14$), and 27.6% had leadership roles.

Measures

Job Crafting

The job crafting forms were measured using a German scale by Lopper and colleagues (2024) that assesses job crafting according to the theoretical framework by Zhang and Parker (2019). The questionnaire measures behavioral crafting (e.g., "I actively develop relationships with other people", "I spend less time working on tasks that don't really interest me") and cognitive crafting (e.g., "I concentrate on the positive aspects of my work", "I take mental distance from tasks that put an emotional strain on me.") with 20 items each, and also further differentiates both regarding approach/avoidance orientation. Answers were indicated on a five-point Likert scale (*totally disagree* to *totally agree*). The German version of the items has been validated in several studies (Lopper et al., 2024).

Decision-making autonomy

We measured decision-making autonomy using the Work Design Questionnaire (Morgeson & Humphrey, 2006; German version by Stegmann et al., 2010). The scale for *decision-making autonomy* encompasses three items (e.g., "The job allows me to make a lot of decisions on my own"), which were rated on a five-point Likert scale (*strongly disagree* to *strongly agree*).

Person-job fit

We applied the *needs-supplies person-job fit* and *demands-abilities person-job fit* subscales by Cable and DeRue (2002). A forward-backward translation of the altogether six items (e.g., "The job that I currently hold gives me just about everything that I want from a job", "My abilities and training are a good fit with the requirements of my job") into German has been adopted in prior studies of the research group with good psychometric quality. Participants rated their answers on a five-point Likert scale (*totally disagree* to *totally agree*).

Analysis strategy

To match the study's central aim of a comprehensive juxtaposition of behavioral and cognitive crafting, we chose a methodological fitting approach of structural equation modeling (SEM) combined with Bayesian hypothesis testing. Unlike the mere rejection/non-rejection of a hypothesis in null hypothesis testing, this methodology enables us to calculate a Bayes factor (BF) for each hypothesis. This factor quantifies the support for each hypothesis, allowing us to subsequently compare multiple (competing) hypotheses and their Bayes factors directly, for which no definite difference could be expected on a purely theoretical basis (Hoijtink et al., 2019). In an example of hypothesis A with a

Bayes factor of 2 and a competing hypothesis B with a Bayes Factor of .50, the resulting comparative Bayes factor (2/.50) of 4 may be interpreted as having four times more support in the data for hypothesis A as compared to hypothesis B.

We conducted latent variable modeling with Bayesian estimation within Mplus 8.4, based on two Markov chain Monte Carlo chains and Mplus default priors (Van de Schoot et al., 2012). Bayes factors were computed using the R package *bain* (Van Lissa et al., 2023). To accommodate the model's complexity and increase power, we conducted three separate SEMs: The first crafting model included only the job crafting factors, their auto-regressive paths and reciprocal cross-lagged influences (H1-2), a second antecedent model with crafting factors and decision-making-autonomy as an antecedent (H3), and a third outcomes model contained the crafting factors and needs-supplies and demands-abilities fit as outcomes (H4). The scale items acted as indicators of the latent variables. Trace plots and Gelman-Rubin Diagnostic indicated Bayesian model convergence for all SEMs (Carlin & Chib,1995). We also report RMSEA and SRMR as traditional fit indices (Hooper et al., 2008).

Results

Preliminary analyses

Descriptive statistics and intercorrelations of all study variables are presented in Table 1. Reliability analysis revealed solid measurement models and reliabilities for all variables except the job crafting subscales (see Table 1, Cronbach's α coefficients in brackets.). Further inspection via confirmatory factor analysis (CFA) showed that modeling job crafting as two (behavioral and cognitive) factors did not yield satisfactory fit results as two other strong factors were present within the item content: approach and avoidance tendencies. Since these are also considered in the original conceptualization of the scale (Lopper et al., 2024), we decided to split the crafting factors further for our analyses. Thus, behavioral crafting is represented in the following analyses by the two factors *behavioral approach crafting* (BAP) and *behavioral avoidance crafting* (BAV), and cognitive crafting by *cognitive approach crafting* (CAP) and *cognitive avoidance crafting* (CAV).

An initial run of analyses also confirmed our decision to split the crafting factors more finely. Presumably, suppression effects emerged in the SEMs due to the high intercorrelations, with negative coefficients for some cross-lagged paths and simultaneous positive bivariate correlations. As Maassen and Bakker (2001) advised in this case, we tried to identify and remove the problematic variable to allow a meaningful interpretation of the remaining model. Further analyses in Mplus indicated this to be the case for cognitive avoidance crafting at T3, so we excluded this factor from further analyses.

Following the recommendations of De Beer et al. (2016) and Mackinnon et al. (2023) for cross-lagged designs, we subsequently ran multiple CFAs with increasingly strict constraints to test for measurement invariance. The results indicated that longitudinal measurement invariance holds for all our study variables.

Hypotheses testing

In total, we examined three structural equation models to test our hypotheses on the stability and reciprocal relations of crafting forms (H1-2), decision-making autonomy as an antecedent (H3), and person-job fit as an outcome (H4).

Stabilities & reciprocal relations of crafting forms (H1-H2)

Our hypothesized model included latent factors for all four job crafting factors (BAP, CAP, BAV, CAV) at all three times of measurement (except CAV, which was deleted at T3 for aforementioned problems with suppression), as well as all auto-regressive and cross-lagged paths. While displaying adequate fit ($\chi2$ = 10473.40, df = 5876, p = .0000; RMSEA = .052, SRMR = .087), none of the cross-lagged paths among the job crafting factors, representing reciprocal influences over time, were significant. The final adjusted model ($\chi2$ = 10528.57, df = 5889, p = .0000; RMSEA = .052, SRMR = .089) is depicted in Figure 1.

The depicted stability coefficients inform the further calculation of the Bayes factors for testing Hypothesis 1 (see Table 2). Against our expectations, a higher Bayes factor supports that behavioral crafting forms (BAP and BAV) are more stable over time than cognitive forms, thereby rejecting Hypothesis 1. However, a comparative Bayes factor of 1.125 (with a value of just above 1) indicates relatively weak evidence for this comparison (Wiley & Jarosz, 2014) and should be interpreted only cautiously.

Since none of the cross-lagged paths among the crafting factors reached significance in the SEM, no Bayes factor can be computed at this point, and we must reject both competing hypotheses (H2.1 and H2.2) concerning the strengths of reciprocal relationships.

Decision-making autonomy as an antecedent (H3)

To test our hypotheses on decision-making autonomy as an antecedent of the crafting forms (H3), we first extended the adapted SEM from H1 to include a latent decision-making autonomy factor at T1 and T2, each exerting cross-lagged paths to the subsequent crafting factors. We also controlled for the stability of decision-making autonomy. The model exhibits acceptable fit (χ^2 = 11339.26, df = 6459, p = .0000; RMSEA = .051, SRMR = .084). However, all cross-lagged paths from decision-making autonomy to the crafting factors remain non-significant. Thus, H3 was not supported. Table E1 of the electronic supplementary material (ESM) includes all parameter estimates.

Person-job fit as an outcome (H4)

A third longitudinal SEM included the four crafting factors, needs-supplies person-job fit, and demands-abilities person-job fit latent factors as outcome variables at T2 and T3. While displaying mediocre fit (χ^2 = 15251.84, df=7891, p = .0000; RMSEA = .057, SRMR = .108), the model only contained significant auto-regressive paths. None of the cross-lagged paths from the crafting forms to the person-job fit factors reached significance. Thus, hypotheses H4.1 and H4.2 were rejected. All parameter estimates are depicted in Table E2 of the ESM.

Additional analysis: Job crafting profiles

Our longitudinal analysis revealed remarkably little variance in all study variables. Thus, we were able to meet our aim of comparing the job crafting forms in their reciprocal relationships, antecedents, and outcomes only to a limited extent. Hence, we chose a person-centered approach for further analyses: Individuals may differ as to which crafting forms they use in conjunction, which may translate into job crafting profiles. With this level of inter-individual heterogeneity, we can examine the interplay of the four job crafting forms from a different perspective. As these additional analyses have not been pre-registered, contrary to the preceding parts of our study, we apply a more conservative significance level of $p < .01$ in the following.

Latent profile analysis

Based on guidelines from Nylund et al. (2007) and the widely used procedure in latent profile analysis (LPA) research (e.g., Spurk et al., 2020), we approached the number of profiles in an iterative process using Mplus 8.4 (Muthén & Muthén, 2013). Starting from two latent profiles, we assessed several fit indices – log likelihood (LL), Akaike information criterion (AIC), Bayesian information criterion, sample-size-adjusted BIC (SSA–BIC), Vuong-Lo-Mendell-Rubin test (VLMR), Bootstrapped likelihood ratio test (BLRT), and entropy – as well as theoretical plausibility (Gabriel et al., 2015; Hirschi & Valero, 2017). Table 3 presents all fit indices and associated tests for profile solutions at T1 and T2. We first defined a profile solution with data from T1 and then validated it with T2 data.

While LL, AIC, and BIC steadily decrease to six profiles, the BLRT converges on a five-profile solution. However, compared to the four-profile solution, it only shows a minimal increase in entropy and equally minimal decreases in LL, AIC, and BIC, indicating only a minor increase in explanatory power. Regarding content, five profiles reveal only a further quantitative differentiation and no qualitatively meaningful one. Accordingly, we opted for a four-profile solution. Analysis with T2 data validated this choice, as the BLRT converges for a 4-profile solution and shows the highest entropy value (see Table 3).

Figure 2 depicts the four profiles in more detail. Profile 1 is characterized by a below-average use of all four crafting forms and consequently labeled as *low crafters* (12%). The largest profile (55%) represents *average crafters* who engage in medium behavioral and cognitive approach crafting and slightly above-average behavioral and cognitive avoidance crafting. The third profile contains a qualitative distinction from the other three: the so-called *approach crafters* (26%) exhibit above-average behavioral and cognitive approach crafting while their use of avoidance forms is significantly below average. Another quantitative differentiation at the upper end is found in the smallest group (7%). The profile of *high crafters* makes strong use of all four JC strategies, whereby the far above-average use of the two avoidance forms is particularly striking.

In summary, we can distinguish four typical job crafting profiles that differ both quantitatively in the extent of the forms used and qualitatively in their relative composition, which parallels previous

few findings on job crafting profiles (Mäkikangas, 2018; Mäkikangas & Schaufeli 2021). However, our findings reveal a stricter quantitative differentiation (low, average, and high crafters) and only a specific approach profile, whereas Mäkikangas and Schaufeli (2021) also identified a separate avoidance-oriented one. In our study, by contrast, the strongest avoidance crafting manifestations occur in the profile of high crafters who use all job crafting forms to an above-average extent.

These findings provide two key insights into our differentiation of job crafting forms: First, behavioral and cognitive crafting go hand in hand in all profiles, indicated by consistently comparable mean levels. No profile displayed, for example, a clear preference for behavioral or cognitive crafting. Second, in distinguishing approach and avoidance-oriented crafting, we find a profile showing a strong approach preference but not a profile with a sole dominant avoidance tendency. The use of avoidance forms seems particularly strong among those who generally do a lot of job crafting (*high crafters*, profile 4.).

Furthermore, we examined whether the profiles are significantly linked to decision-making autonomy as an antecedent using the three-step R3STEP procedure (Asparouhov & Muthén, 2014; Vermunt, 2010) and person-job fit as an outcome with the DCON command (Lanza et al., 2013). We modeled T1 decision-making autonomy as an antecedent of T2 profile membership. Our results (Table 4) replicate the general finding within the job crafting literature that autonomy facilitates job crafting (Rudolph et al., 2017). Individuals with higher autonomy were significantly less likely to belong to the low crafters profile than to the other three. However, we do not find any distinction between average, approach, and high crafters. Thus, autonomy differentiates only between low and more crafters but not between average and high or particularly approach-oriented ones.

Finally, we tested whether the profiles exhibited differing person-job fit, with T1 profile membership predicting T2 needs-supplies and demands-abilities person-job fit (see Table 5). The overall Wald's $\chi 2$-Test indicated statistically significant differences for both fit dimensions. Approach and high crafters revealed the highest needs-supplies as well as demands-abilities fit, compared to low or average crafters. The latter two did not differ significantly (at the $p < .01$ significance level), nor did approach or high crafters in a direct pairwise-comparison.

Thus, we can conclude that particularly approach-oriented and high crafters experience a better person-job fit. It is particularly worth mentioning that high crafters make the most significant use of avoidance crafting forms, which in the previous literature are mainly associated with adverse outcomes (e.g., Fong et al., 2021). However, our person-centered approach indicates that they may also be constructive in combination with equally high approach crafting.

Discussion

Overview of study results

Job crafting is a currently relevant and popular construct for practical applications. It identifies individual levers for improving the work situation and thus influences global desirable outcomes such as well-being and performance (Lichtenthaler & Fischbach, 2018; Rudolph et al., 2017). However, this

popularity has led to a great deal of heterogeneity around the construct in terms of how it is operationalized theoretically and applied practically. Many studies either build on a global indicator (which already has been criticized, cf. Ebert & Bipp, 2022; Zampetakis, 2023) or single out effects of individual forms, for example, increasing social resources (e.g., Breevaart & Tims, 2019) or approach crafting (e.g., Teng et al., 2020). This might result in an oversimplified, generalized picture of job crafting or disconnected individual findings. Therefore, our paper's central aim was to juxtapose and better differentiate various forms of job crafting systematically. We compared four job crafting forms based on the integrative framework of Zhang and Parker (2019): behavioral approach crafting, behavioral avoidance crafting, cognitive approach crafting, and cognitive avoidance crafting. In sum, contrary to our expectations, we found no support for reciprocal relationships between the different crafting forms over time, nor for longitudinal associations with the antecedent decision-making autonomy and the outcome person-job fit. Instead, we discovered unexpectedly high stability in all job crafting forms across the three measurement points (four weeks time-lag each). Additional analyses using latent profiles provided another perspective on how these crafting forms can play together, identifying four quantitatively (low, average, and high crafters) and qualitatively (approach crafters) distinct profiles.

Theoretical contributions

The results of our pre-registered and analyses provide three central contributions to developing job crafting theory. First and foremost, our results challenge traditional assumptions about general antecedents and outcomes of job crafting. Both original models presume general autonomy as a central antecedent of job crafting (Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001), as does Zhang and Parker's integrative framework model (2019) on which we built our study. Previous meta-analytic evidence (Rudolph et al., 2017) also shows autonomy as the strongest correlated situational variable – however, based on purely cross-sectional data. There is similar agreement in the theoretical literature regarding increased person-job fit as a key outcome of job crafting (Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001). Again, this link has been observed only sporadically in longitudinal empirical studies, presenting mixed results. To our knowledge, our study is the first to thoroughly examine this causal order jointly for behavioral and cognitive crafting, empirically and in a longitudinal design, and the results presented certainly call it into question. In our findings, the specific facet of decision-making autonomy and both dimensions of person-job fit (needs-supplies and demands-abilities) appear merely as correlates of the job crafting forms but not as antecedents or subsequent outcomes over time. Once we differentiated job crafting more finely and jointly considered the four forms in our study, we did not find empirical support for the assumed antecedents or outcomes. Therefore, our findings suggest that previous job crafting models may make too broad assumptions about such relationships and do not account for individual mechanisms of different forms. For further development of the job crafting theory, it seems necessary to examine more differentiated relationships

between various job crafting forms and antecedents and outcomes causally in further studies to refine theoretical conceptions of job crafting, its occurrence and effects.

Second, we refine the structure of the construct job crafting, providing essential implications for its operationalization in research. Following current theoretical developments (Costantini et al., 2019; Ebert & Bipp, 2022; Zhang & Parker, 2019), we share the conclusion that the construct combines too many substantively distinct forms or definitions to be used as a general overall factor. Accordingly, we firmly oppose its use in the form of sum scores. Our results also provide insights into the interplay between the individual forms: Although positive cross-sectional correlations as well as comparable levels of expression in the profile analyses support the assumption of a positive, reciprocal relationship between behavioral and cognitive forms (e.g., Zhang & Parker, 2019), we did not find any reciprocal influences over time. Thus, within a longer job crafting process, the different forms may not necessarily go hand in hand, and a clearer understanding of their unique antecedents, mechanisms, and outcomes needs to be delineated in detail in the future. This separation appears even more pronounced when comparing approach and avoidance forms of job crafting, where correlations were in the lower range, and the profile analysis even showed a qualitatively differentiating profile (approach crafters). In sum, our results demonstrate that not all crafting is equal, and the literature needs a finer differentiation within the job crafting construct. We provide evidence for distinguishing behavioral and cognitive, as well as approach- and avoidance-oriented forms and present longitudinal as well as person-centric evidence that argues for more detailed explorations of the individual forms.

Third, all four job crafting forms proved highly stable over time. Within two intervals of four weeks each, stability coefficients ranged from β = .65 to .84, comparable to those of individual differences in terms of (motivational) traits in comparable time-frames (Payne et al., 2007). This finding contrasts previous work that frames job crafting as a highly variable construct and, for example, examines fluctuations at the daily level (Bakker & Oerlemans, 2019; Petrou et al., 2012). To our knowledge, evidence from a longer-time perspective on job crafting has been sparse so far. Besides the diary studies mentioned above, Tims et al. (2015) examined behavioral job crafting in a longitudinal setting but distinguished between job crafting intentions and actual job crafting. Thus, in our comprehensive consideration of four behavioral and cognitive job crafting forms over time, our study yields surprising findings of strong stability and challenges previous assumptions of job crafting as a spontaneous, proactive, and adaptable construct (Wang et al., 2016). Hence, the literature needs clarification on the precise nature of the temporal dimension of job crafting, such as the distinction proposed by Oldham and Hackman (2010) as to whether it operates more as one-off episodes or longer-term, iterative processes. At the same time, high stability might explain missing or generally small effects (Oprea et al., 2019) in previous intervention studies: interventions might need much stronger input to change the otherwise relatively stable use of job crafting forms.

Practical implications

First, the unexpectedly high stability of job crafting forms has important implications for practice: It may explain why many interventions have no effect on job crafting, only very small effects, or only effects on particular forms of job crafting (e.g., van den Heuvel et al., 2015; van Wingerden et al., 2017; Hulshof et al., 2020). Accordingly, significantly more effort, be it through longer or more intensive training, might be necessary to effectively and sustainably influence employees' job crafting. Instead of one-time workshops, organizations could provide ongoing support and resources for employees to engage in crafting. This could include regular check-ins with crafting suggestions via e-mail (cf. Knight et al., 2021) and resources like supervisors' feedback (Fisher & Costa, 2023) to help employees further adapt and refine their crafting strategies in the process. Another possibility is to turn individual job crafting into collective job crafting (Leana et al., 2009) by involving the social environment, for example, in team workshops. This would allow tasks or responsibilities to be directly redistributed and crafted together, while the commitment to set crafting goals might benefit from being shared with the group. A more intense engagement in interventions and stronger effects might also be achieved through more individually targeted interventions by adapting different exercises and suggestions based on personality traits, such as approach and avoidance temperament (Bipp & Demerouti, 2015), or context factors like workload (Knight et al., 2021).

Second, remaining with the specific content of interventions, the lack of reciprocal influences between job crafting forms over time has important implications. Since using one particular form is not necessarily associated with others, this also argues against overly generalized trainings to foster job crafting in general and for more tailored approaches. Thus, before designing training in practice, a thorough analysis should be made of exactly which form(s) might be most beneficial concerning the characteristics of the participants and the actual context of the application.

Third, our additional LPA approach also yielded novel insights: In terms of effective crafting (expressed by high associations with person-job fit), the profile of "high crafters" in particular stood out. High crafters use all four measured job crafting forms at an above-average level –particularly avoidance-oriented ones. This diverges from previous findings that associate avoidance crafting mainly with adverse consequences such as decreased engagement and performance (e.g., Lopper et al., 2024; Lichtenthaler & Fischbach, 2019; Weseler & Niessen, 2016). Our results, however, imply that avoidance crafting strategies can indeed be associated with favorable outcomes if combined with other approach strategies. In this case, our previous suggestion of targeted interventions of individual forms might not be advisable. Instead, avoidance crafting should always be combined with suggestions for additional, more approach-oriented strategies.

Limitations and directions for future research

Our study has some limitations, offering various starting points for future research. First, our study relied on a German sample and employed self-report measures of a scale initially developed in Germany (Lopper et al., 2024). As such, the generalizability to other countries and contexts may be

limited and subject to bias. Future research could benefit from incorporating multiple data sources (e.g., supervisor- or peer-ratings) and diverse cultural settings. Second, the extreme temporal stabilities across all variables and relatively small variances might have hindered detecting the assumed cross-lagged relationships over time.

Furthermore, the two four-week time lags could be too short to capture longer-term fluctuations in the job crafting forms. Although our study design followed recommendations for optimal time-lags in cross-lagged panel designs (Dormann & Griffin, 2015), future studies might consider longer time-frames or techniques like measurement burst designs (Stawski et al. 2015) that combine short-term variability and long-term change to explore how job crafting forms evolve over extended periods and whether the stability observed in this study holds true. Since Zampetakis (2021) also showed that general and daily job crafting measures vary in their associations with outcomes, future research needs to shed more light on this temporal variance in job crafting to understand, for example, if certain effects only occur in specific time periods.

In terms of future research, one of the most pressing findings of our study was the lack of relations over time between the job crafting forms, the antecedent decision-making autonomy, and the outcome person-job fit. Several studies highlight the multifactorial nature of autonomy (e.g., De Spiegelaere et al., 2016; Morgeson et al., 2006) and, in addition to the traditional perception as a resource (Bakker & Demerouti, 2007), also show rather paradoxical links with increased demands (e.g., Dettmers & Bredehöft, 2020). Thus, future research could carry on our approach and zoom into other autonomy facets (e.g., scheduling or method autonomy) to explore which aspects are actually crucial for promoting job crafting. The complex interplay between these variables and job crafting may also involve non-linear or indirect effects that were not part of our study, such as mediators between the job crafting forms and improved person-job fit (e.g., whether the attempted job crafting changes were perceived as successful), or a curvilinear relationship with autonomy, where a moderate level of autonomy might prove to be particularly favorable for later job crafting (Stiglbauer & Kovacs, 2018).

Conclusion

This study's central aim was to improve the differentiation of behavioral and cognitive crafting regarding their stability over time, their reciprocal relations, and their individual connections with antecedents and outcomes. Our research demonstrated that the stability of these crafting forms is remarkably high over two periods of four weeks each. Notably, our findings did not support the existence of reciprocal relationships between these job crafting forms over time, indicating distinct processes. Moreover, our study questions the presumed causal sequence linking antecedents, crafting forms, and outcomes, emphasizing the necessity for a more nuanced exploration of these relationships. In short, this research advances job crafting theory by refining the distinctions between different job crafting forms, highlighting their remarkable stability, and advocating for a critical re-evaluation of the causal assumptions embedded within theoretical frameworks of job crafting.

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Table 1

Descriptive statistics and correlations of study variables

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. BAP T1	3.45	.67	(.85)																	
2. CAP T1	3.37	.70	.75***	(.86)																
3. BAV T1	2.52	.73	.18**	.14*	(.86)															
4. CAV T1	2.68	.66	.15*	.20***	.77***	(.81)														
5. DMA T1	3.54	.98	.40***	.40***	.06	.00	(.91)													
6. BAP T2	3.39	.73	.75***	.67***	.05	.06	.35***	(.87)												
7. CAP T2	3.34	.72	.60***	.75***	.08	.14*	.38***	.81***	(.87)											
8. BAV T2	2.54	.74	.08	.06	.67***	.54***	.04	.11	.15*	(.86)										
9. CAV T2	2.72	.66	.02	.09	.47***	.53***	-.04	.12	.23***	.74***	(.81)									
10. DMA T2	3.52	1.00	.39***	.39***	.06	.02	.81***	.40***	.42***	.06	-.04	(.90)								
11. N-S Fit T2	3.45	.98	.28***	.45***	-.07	.00	.49***	.35***	.46***	-.12	-.07	.50***	(.91)							
12. D-A Fit T2	3.70	.90	.32***	.41***	-.08	-.06	.44***	.34***	.39***	-.12*	-.13*	.45***	.70***	(.87)						
13. BAP T3	3.37	.72	.66***	.56***	.11	.07	.37***	.74***	.58***	.07	.01	.37***	.27***	.29***	(.86)					
14. CAP T3	3.34	.71	.60***	.72***	.12	.14*	.37***	.68***	.75***	.11	.10	.36***	.39***	.35***	.78***	(.87)				
15. BAV T3	2.51	.77	.06	.06	.64***	.53***	.03	-.02	.04	.74***	.55***	.04	-.17**	-.17**	.07	.13*	(.89)			
16. CAV T3	2.74	.70	.04	.08	.52***	.60***	-.08	.05	.12	.56***	.60***	.00	-.12	-.16**	.18**	.20***	.70***	(.83)		
17. N-S Fit T3	3.50	.99	.31***	.42***	-.06	.01	.51***	.35***	.41***	-.11	-.08	.44***	.77***	.62***	.37***	.51***	-.13*	-.09	(.92)	
18. D-A Fit T3	3.76	.91	.27***	.32***	-.06	-.06	.50***	.26***	.30***	-.16*	-.18**	.42***	.64***	.73***	.31***	.37***	-.14*	-.16*	.80***	(.87)

Note. N = 262-284. *** p < .001. ** p < .01. * p < .05. Cronbach's α coefficients in brackets. T1 = measurement at time 1, T2 = measurement at time 2, T3 = measurement at T3.

BAP = Behavioral approach crafting; CAP = Cognitive approach crafting; BAV = Behavioral avoidance crafting; CAV = Cognitive avoidance crafting; DMA = d

Decision-making autonomy, N-S Fit = Needs-supplies Person-Job fit, D-A Fit = Demands-abilities Person-Job fit.

Table 2

Results of Bayesian informative hypothesis testing (H1)

Hypothesis	Complexity	Model Fit	Bayes Factor	BF comp.
H1.1 (*Cognitive forms more stable*)	.011	.012	0.112	
H1.2 (*Behavioral forms more stable*)	.011	.013	0.126	1.125

Note. $N = 284$. BF comp. = Comparison of Bayes Factors vs. competing hypothesis.

Table 3

Fit statistics for latent job crafting profiles at T1 and T2

T1 No. of profiles	LL	FP	AIC	BIC	SSA-BIC	VLM R(*p*)	BLRT (*p*)	Entropy	Latent profile proportions %
1	-1190.31	8	2396.61	2425.806	2400.438	-	-		100
2	-1119.72	13	2265.44	2312.872	2271.649	.050	< .001	0.747	73/27
3	-1064.53	18	2165.06	2230.746	2173.667	.013	< .001	0.729	34/16/50
4	-1013.36	23	2072.73	2156.651	2083.717	.044	< .001	0.809	12/55/26/7
5	-981.90	28	2019.78	2121.970	2033.181	.017	<.001	0.814	6/33/30/30/1
6	-954.72	33	1975.43	2095.849	1991.204	.061	<.001	0.820	5/9/35/23/1/27
T2 No. of profiles									
1	-1210.81	8	2437.62	2466.73	2441.36	-	-	-	100
2	-1146.23	13	2318.45	2365.75	2324.53	<.001	<.001	.88	10/90
3	-1075.72	18	2187.44	2252.93	2195.85	.01	<.001	.84	64/9/27
4	-1027.51	23	2101.03	2184.71	2111.778	.17	<.001	.85	18/65/9/9
5	-1006.82	28	2069.63	2171.50	2082.71	.69	<.001	.81	6/16/52/20/6

Note. N_1 = 284, N_2 = 281. LL = log-likelihood; FP = free parameters; AIC = Akaike information criterion; BIC = Bayesian information criterion; SSA-BIC = sample-size adjusted Bayesian information criterion; VLMR = Vuong-Lo-Mendell-Rubin test; BLRT = Bootstrapped likelihood ratio test.

Table 4

Decision-making autonomy (T1) as an antecedent of job crafting profiles (T2)

	Low vs. Average crafters	Low vs. Approach crafters	Low vs. High crafters	Average vs. Approach crafters	Average vs. High crafters	Approach vs. High crafters
DMA	-0.88***	-2.0**	-1.87***	-1.12	-0.99	0.13

Note. $N = 272$. DMA = decision-making autonomy. All values are estimates from the R3STEP logistic regression analyses and compare the influence of the antecedent DMAs for two profiles at a time. Negative values indicate that higher values on the antecedent make a person more likely to be in the second compared profile. Positive ones suggest higher values on the antecedent go hand in hand with a higher likelihood for the first profile.

** $p < .01$. *** $p < .001$.

Table 5

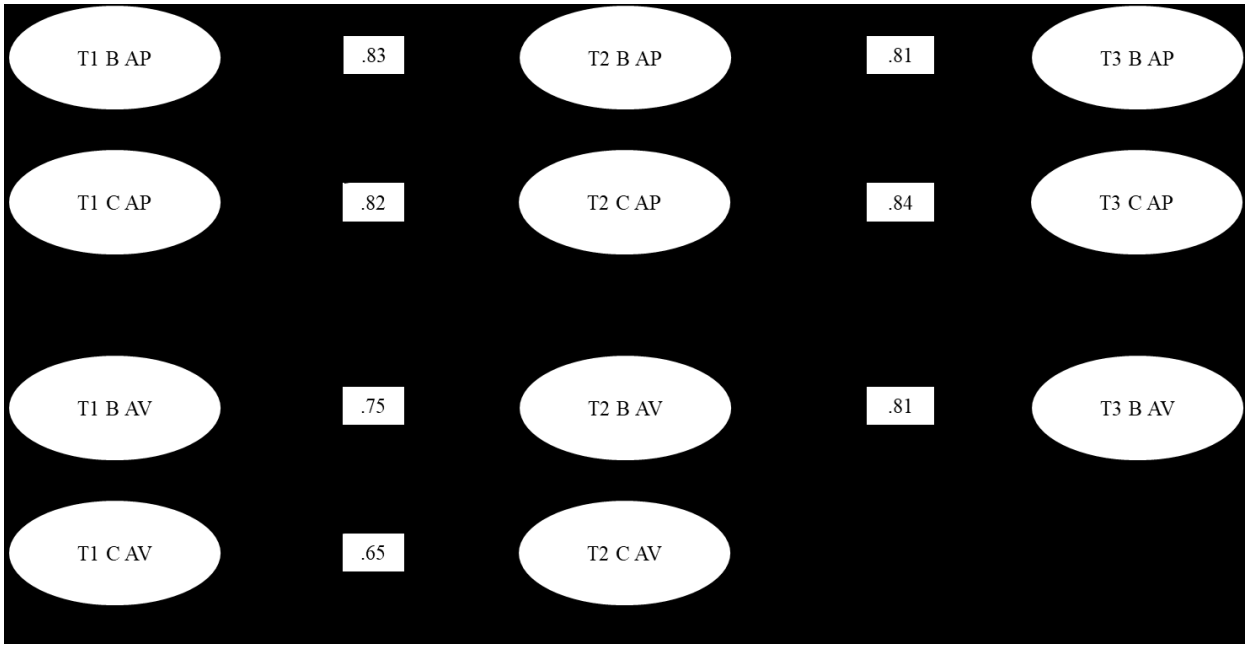
Differences of job crafting profiles (T1) in person-job fit (T2)

	1) Low crafters *M (S.E)*	2) Average crafters *M (S.E)*	3) Approach crafters *M (S.E)*	4) High crafters *M (S.E)*	Wald's $\chi 2$/ *p*-value	Profile differences
N-S Fit	2.81 (0.19)	3.21 (0.08)	3.94 (0.09)	4.05 (0.16)	62.99, $p < .001$	1 < 3***, 4*** 2 < 3***, 4***
D-A Fit	3.35 (0.16)	3.45 (0.07)	4.18 (0.07)	4.27 (0.14)	68.35, $p < .001$	1 < 3***, 4*** 2 < 3***, 4***

Note. $N = 281$. ** $p < .01$. *** $p < .001$. All analyses were run utilizing the DCON procedure in Mplus. N-S Fit = needs-supplies Person-Job fit, D-A Fit = demands-abilities Person-Job fit.

Figure 1

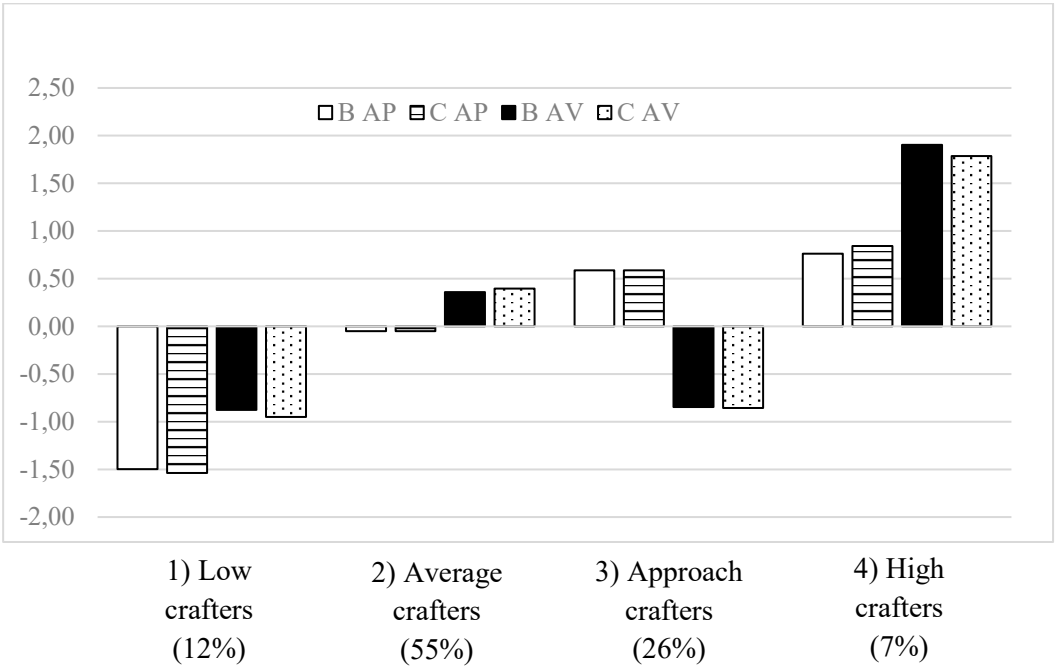
Structural equation model of auto-regressive and cross-lagged relations between crafting forms (H1-2)



Note. $N = 267$-284. Standardized solution. All presented coefficients are significant at $p < .01$ level. Non-significant paths in dashed lines. Factors were allowed to correlate within time points. Measurement model omitted to simplify presentation.

Figure 2

Latent job crafting profiles



Note. *N* = 284, profiles at T1. Y-Axis refers to standardized means of job crafting forms. B AP = behavioral approach crafting, C AP = cognitive approach crafting, B AV = behavioral avoidance crafting, C AV = cognitive avoidance crafting.

Electronic Supplementary Material

Table E1

Parameter estimates of antecedent structural equation model (decision-making autonomy and job crafting forms)

Structural regressions	Standard estimate	*SD*	*p*	Lower	Upper
Stability of DMA					
DMA (T1) → DMA (T2)	.914	.039	<.001	.837	.992
DMA (T2) → DMA (T3)	.936	.042	<.001	.855	1.018
Cross-lagged effects of DMA on Crafting T1 → T2					
DMA (T1) → B AP (T2)	.042	.034	.106	-.024	.108
DMA (T1) → C AP (T2)	.083	.044	.290	-.030	.174
DMA (T1) → B AV (T2)	-.049	.055	.169	-.165	.050
DMA (T1) → C AV (T2)	-.033	.054	.266	-.136	.077
Cross-lagged effects of DMA on Crafting T2 → T3					
DMA (T2) → B AP (T3)	-.014	.111	.447	-.243	.197
DMA (T2) → C AP (T3)	-.057	.133	.326	-.341	.194
DMA (T2) → B AV (T3)	-.086	.141	.275	-.363	.191
Cross-lagged effects of DMA on Crafting T1 → T3					
DMA (T1) → B AP (T3)	.080	.115	.226	-.134	.317
DMA (T1) → C AP (T3)	.077	.137	.273	-.177	.368
DMA (T1) → B AV (T3)	.111	.190	.255	-.242	.530

Note. B AP = behavioral approach crafting, C AP = cognitive approach crafting, B AV = behavioral avoidance crafting, C AV = cognitive avoidance crafting. *SD* = posterior standard deviation; lower and upper = 95% credibility interval. Cognitive avoidance crafting factor at T3 was excluded from analyses due to suppression effects.

Table E2

Parameter estimates of outcome structural equation model (job crafting forms, needs-supplies person-job fit, and demands-abilities person-job fit)

Structural regressions	Standard estimate	*SD*	*p*	Lower	Upper
Stabilities of person-job fit					
N-S fit (T1) → N-S fit (T2)	.762	.074	<.001	.616	.906
N-S fit (T2) → N-S fit (T3)	.651	.064	<.001	.525	.780
D-A fit (T1) → D-A fit (T2)	.616	.071	<.001	.481	.758
D-A fit (T2) → D-A fit (T3)	.608	.072	<.001	.467	.746
Cross-lagged effects of Crafting on N-S fit					
B AP (T1) → N-S fit (T2)	-.052	.144	.346	-.340	.231
C AP (T1) → N-S fit (T2)	.089	.156	.289	-.216	.394
B AV (T1) → N-S fit (T2)	.047	.204	.409	-.362	.455
C AV (T1) → N-S fit (T2)	-.149	.215	.234	-.588	.271
B AP (T2) → N-S fit (T3)	-.021	.132	.429	-.280	.236
C AP (T2) → N-S fit (T3)	.119	.134	.190	-.151	.379
B AV (T2) → N-S fit (T3)	.001	.131	.496	-.258	.261
C AV (T2) → N-S fit (T3)	-.041	.127	.371	-.295	.210
B AP (T1) → N-S fit (T3)	.017	.179	.462	-.338	.356
C AP (T1) → N-S fit (T3)	.011	.184	.476	-.344	.378
B AV (T1) → N-S fit (T3)	.036	.248	.440	-.424	.539
C AV (T1) → N-S fit (T3)	-.088	.256	.355	-.624	.392
Cross-lagged effects of Crafting on D-A fit					
B AP (T1) → D-A fit (T2)	.006	.150	.484	-.289	.290
C AP (T1) → D-A fit (T2)	.121	.156	.210	-.184	.441
B AV (T1) → D-A fit (T2)	-.039	.218	.435	-.462	.401
C AV (T1) → D-A fit (T2)	-.053	.231	.405	-.512	.297
B AP (T2) → D-A fit (T3)	-.052	.141	.356	-.325	.227
C AP (T2) → D-A fit (T3)	.117	.141	.209	-.165	.389
B AV (T2) → D-A fit (T3)	-.001	.137	.497	-.279	.261
C AV (T2) → D-A fit (T3)	-.131	.135	.179	-.384	.133
B AP (T1) → D-A fit (T3)	-.014	.191	.466	-.388	.362
C AP (T1) → D-A fit (T3)	-.004	.191	.491	-.374	.375
B AV (T1) → D-A fit (T3)	.131	.257	.299	-.347	.666
C AV (T1) → D-A fit (T3)	-.117	.266	.326	-.671	.363

Note. N-S fit = Needs-supplies person job fit; D-A fit = Demands-abilities person-job fit.

B AP = behavioral approach crafting, C AP = cognitive approach crafting, B AV = behavioral avoidance crafting, C AV = cognitive avoidance crafting. *SD* = posterior standard deviation; lower and upper = 95% credibility interval. Cognitive avoidance crafting factor at T3 was excluded from analyses due to suppression effects.

Chapter 4 – Paper 3

Crafting with a focus – Two intervention studies on specific job crafting forms and content

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Abstract

As organizations strive to enhance employee proactivity, job crafting interventions have emerged as a promising tool. However, existing interventions exhibit inconsistent effects and often lack specificity in targeting diverse job crafting forms. This two-study research introduces a novel, form- and content-specific approach to job crafting interventions. In Study 1, a modular online intervention targets various job crafting forms individually, including both behavioral approach and avoidance as well as cognitive approach and avoidance forms. Within a randomized control group design among German employees (N = 173), our findings demonstrate for the first time the particular effectiveness of cognitive approach crafting. Building on this novel insight, Study 2 delves into the specific underlying mechanisms of cognitive approach crafting, by illustrating its impact in crafting a specific, ambivalent job characteristic (work-scheduling autonomy). Results of this second e-intervention (N = 105) underscore the effectiveness of cognitive approach crafting and demonstrate its mechanisms in changing the perceived level of work-scheduling autonomy as well as its appraisal as more of a resource. In sum, this research advances job crafting theory and its application in interventions by offering a rigorous examination of various job crafting forms and their individual effectiveness, resulting in a more differentiated approach. The success of cognitive approach crafting strategies for fostering positive coping with work-scheduling autonomy exemplifies the potential for more specific interventions in the future.

Keywords: Job crafting; intervention study, cognitive crafting, work autonomy

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Compliance with ethical standards

All studies were conducted in accordance with the ethical standards of the APA. Informed consent was obtained (according to the guidelines of the German Psychological Society, DGPs) after participants received information about the voluntariness of their participation, protection of data privacy, and usage of anonymized data.

Disclosure of interests

The authors report no conflict of interest.

Crafting with a focus – Two intervention studies on specific job crafting forms and content

Job crafting, a widely embraced tool for individual job re-design, has repeatedly shown positive effects on well-being and performance-related outcomes (Boehnlein & Baum, 2020; Lichtenthaler & Fischbach, 2018; Rudolph et al., 2017). While meta-analytical evidence supports the general effectiveness of job crafting interventions, especially in the forms of seeking challenges and reducing demands (Oprea et al., 2019), the literature possesses a significant heterogeneity. There are major discrepancies as to whether and which job crafting forms actually change through interventions (e.g., Dubbelt et al., 2019; Hulshof et al., 2020; Kooij et al., 2017) as well as concerning their effects on outcomes, such as work engagement or performance (Oprea et al., 2019). In addition, the vast majority of interventions rely on the so-called resource perspective that adopts purely behavioral crafting forms (Tims & Bakker, 2010; Tims et al., 2012), resulting in a noticeable gap concerning the role of cognitive mechanisms. Furthermore, Oprea et al. (2019) assess the overall quality of existing intervention studies as unclear and identify several risks (e.g., primarily quasi-experimental designs) compromising internal validity.

Although individual findings certainly offer promising results and support the potential of job crafting in the context of training, the literature so far lacks a coherent, differentiated picture of which specific forms can be trained effectively and how their exact change mechanisms operate. Consequently, there is a risk of wasting potential for more impactful and specific interventions or adhering to practices that may not achieve intended outcomes. Against this backdrop, our two intervention studies seek to advance the hitherto limited understanding of key factors within job crafting training. We build upon the integrative framework of Zhang and Parker (2019), representing the broadest range of crafting forms up to date (behavioral approach, behavioral avoidance, cognitive approach, and cognitive avoidance crafting) and introduce a novel form- and content-specific training approach. First, we aim to evaluate the individual effectiveness of four separate job crafting forms (Study 1) and, second, illustrate one specific cognitive underlying process (Study 2).

Job crafting interventions

The following section provides a comprehensive overview of the literature on job crafting interventions. We identify three central issues that have so far complicated conclusions about critical factors of effectiveness: 1) A limited representation of possible job crafting forms with a strong focus on behavioral crafting, 2) inconsistent and partially contradictory effects of trainings on job crafting and further outcomes, 3) methodological limitations in designs, samples, and procedures of the studies.

Strong behavioral focus and range of included job crafting forms

Like the broader job crafting literature, intervention studies draw on different theoretical frameworks with distinct job crafting forms and mechanisms (Ebert & Bipp, 2022; Zhang & Parker, 2019), resulting in significant differences in what they aim to train. Given that Tims and Bakker's (2010) integration of job crafting into the established Job Demands-Resources model (JD-R; Bakker &

Demerouti, 2007; Demerouti et al., 2001) facilitated the quantitative examination of the construct within a broader theoretical context, this perspective is by far the most frequently used basis for interventions. In this context, job crafting serves to align resources and demands with personal preferences. Through interventions, participants are guided to *increase their structural and social resources, seek new challenges* and *reduce hindering demands* (Demerouti et al., 2021; Demerouti et al., 2017; Dubbelt et al., 2019; Gordon et al., 2018; Hulshof et al., 2020; Knight et al., 2021; Kuijpers et al., 2020; Van Wingerden et al., 2016; Van Wingerden, Bakker, et al., 2017).

This so-called resources perspective (Bruning & Campion, 2018; Zhang & Parker, 2019) understands crafting purely as behavior and explicitly excludes cognitive changes (Tims & Bakker, 2010; Tims et al., 2012), which represents the most substantial contrast to a second theoretical stream – the role perspective and original conceptualization of job crafting according to Wrzesniewski and Dutton (2001). Alongside behavioral changes in *tasks* and *relations*, they also attribute a crucial role to intentional *cognitive* changes in how people view their work, for example, by reframing challenging aspects and emphasizing positive ones, perceiving the job as a whole instead of isolated tasks, or recognizing the meaning of their work for others and society (Berg et al., 2013; Vuori et al., 2012; Wrzesniewski, 2003; Wrzesniewski & Dutton, 2001). Despite this vital role in the original concept of the construct, qualitative research indicating that employees use a variety of cognitive crafting strategies (Lazazzara et al., 2020), and findings that reveal a close relationship between behavioral and cognitive crafting and thus possibly automatic side-effects (Ebert & Bipp, 2022), the cognitive form has so far only been considered in very few intervention studies (Sakuraya et al., 2020; Sakuraya et al., 2016; Verelst et al., 2021).

A significant step towards achieving more construct clarity among the aforementioned theoretical streams is the integrative framework by Zhang and Parker (2019), which also provides the theoretical basis for our studies. The model unites previous theoretical currents and their various postulated job crafting forms in a hierarchical structure. It distinguishes between behavioral (altering behaviors at work) and cognitive crafting (altering views and cognitions about work) as well as between approach (moving towards positive end-states) and avoidance (moving away from negative end-states) orientation. At the lowest level, a further distinction is made between crafting resources vs. demands, though this categorization is less distinctive and more covariant (Bakker et al., 2005; Lopper et al., 2024). Although this conceptual development reflects the broadest possible spectrum of job crafting to date, it has not yet made its way into interventions. While existing studies and the job crafting forms they target can be partially classified within the framework, their very narrow scope becomes apparent: The vast majority of existing studies do not train job crafting in its entirety, but specifically behavioral crafting, such as increasing structural or social resources and challenges (e.g., Van den Heuvel et al., 2015; Van Wingerden, Bakker, et al., 2017). They also address significantly more approach-oriented forms, while an avoidance orientation is only explicitly considered in the limited sense of decreasing hindering demands (e.g., Demerouti et al., 2017; Dubbelt et al., 2019).

Regarding training specificity, intervention studies have only fostered the whole range of possible job crafting forms to a limited extent. As far as we could trace, participants most of the time received an "all-inclusive job crafting package" with information and suggestions combined across various job crafting forms. They were then left to decide for themselves which strategies or forms they would like to implement. This procedure corresponds to the individual, bottom-up original idea of job crafting (Wrzesniewski & Dutton, 2001). It allows each individual to select the strategies that make the most sense for their case. However, at the same time, this format complicates the realistic evaluation of which job crafting forms can be trained successfully and which are primarily relevant for effects on other outcomes. This results in a sort of black box problem (Biron, 2012; Pawson & Tilley, 1997) – even if interventions influence further work-relevant outcomes, we cannot precisely determine which factors of the training underlie these effects. To our knowledge, a targeted differentiation and evaluation of job crafting strategies has been missing so far.

In summary, previous job crafting interventions have only addressed a narrow spectrum of the construct and usually combined different forms in training, complicating conclusions about individual effects. In our following studies, we build on Zhang and Parker's (2019) framework and thus incorporate the broadest range of job crafting in an intervention to date (behavioral approach, behavioral avoidance, cognitive approach, and cognitive avoidance), as well as applying a novel modular approach to train single forms individually.

Effectiveness in training job crafting and influencing further outcomes

Oprea et al. (2019) provide a broad overview of the effectiveness of job crafting interventions within the resource perspective (including only behavioral forms) in their meta-analysis of 14 studies. They identify overall positive effects of overall job crafting ($g = 0.26$), as well as for the specific forms of seeking challenges ($g = 0.19$) and reducing demands ($g = 0.44$). This important organization of the literature therefore supports the application of job crafting as an individual and proactive work design tool (Oldham & Fried, 2016; Wrzesniewski & Dutton, 2001). However, individual findings on training job crafting are strikingly heterogeneous, with the meta-analytic findings also indicating inconsistent effects (Oprea et al., 2019). Several intervention studies do not achieve an actual change in the job crafting of their participants (Hulshof et al., 2020; Kuijpers et al., 2020; Sakuraya et al., 2020; Van den Heuvel et al., 2015), meaning that any effects on other outcomes cannot be attributed to the measured job crafting mechanisms. Furthermore, individual job crafting forms appear inconsistent across different studies. While both studies draw on Wrzesniewski and Dutton's (2001) framework, Sakuraya et al. (2016) successfully stimulate *cognitive crafting*, but not *task* or *relational crafting*, whereas Verelst et al. (2021) show the opposite with an effect on *task*, but not on *cognitive crafting*. In other studies, for example, only the facet *seeking challenging demands* proves to be successful (Van Wingerden, Bakker, et al., 2017), while in others it is precisely this form that fails to change (Van Wingerden, Derks, et al., 2017).

There is a similar variation regarding other work-related outcomes of the interventions. While both meta-analytical evidence (Oprea et al., 2019) and several individual findings (Dubbelt et al., 2019; Sakuraya et al., 2016; Van Wingerden, Bakker, et al., 2017; Van Wingerden, Derks, et al., 2017) indicate positive effects on work engagement, this impact is also absent in numerous other studies (e.g., Sakuraya et al., 2020; Van Wingerden et al., 2016). The picture is also inconclusive concerning links with performance, ranging from positive effects on self-rated performance (Gordon et al., 2018), no effects on performance in general (Hulshof et al., 2020; Van Wingerden, Derks, et al., 2017), or even a decrease in in-role performance at one point in time (Van Wingerden et al., 2016).

In addition, the question arises as to which underlying mechanisms are responsible for any effects in job crafting interventions. Some studies that could not achieve an effect on job crafting itself assume, for example, that instead increased positive affect (Demerouti, 2017), enhanced self-efficacy and reduced negative affect (Van den Heuvel et al., 2015), or even a general Hawthorne effect led to the influence on the further investigated outcomes (Kuijpers et al., 2020). However, theoretical models and the broader job crafting literature suggest that job crafting also has specific operating mechanisms, such as changes in work characteristics (Holman et al., 2023; Knight & Parker, 2019), the satisfaction of basic needs according to social determination theory (Demerouti et al., 2019; Ryan & Deci, 2000), or that it is a way to strengthen psychological ownership in a job (Wang et al., 2016). These assumed underlying psychological processes have rarely been examined in interventions. In a very general sense of mechanisms, some studies have shown that changes in job crafting through their interventions (partially or fully) mediated effects on other work-related outcomes, such as needs-supplies person-job fit (Verelst et al., 2021), work engagement (Dubbelt et al., 2019), or performance (Gordon et al., 2018). In more detail, Van Wingerden et al. (2016) demonstrated that their intervention increased the job resources feedback and opportunities for development. However, these effects only became apparent as sleeper effects over a one-year period and not directly after the training. Another intervention study (Van Wingerden, Bakker, et al., 2017) supports a process via social determination theory, showing that increased basic need satisfaction mediated the effect of job crafting on work engagement. However, only the form of seeking challenging demands was successfully increased within this intervention. To our knowledge, specific cognitive underlying mechanisms in job crafting interventions have not yet been considered at all.

Overall, it remains unclear which individual job crafting forms can be effectively trained in interventions and what specific changes are involved. We therefore examine the individual effectiveness of four individual forms (Study 1) and explicitly illustrate a cognitive underlying psychological process (Study 2).

Limited generalizability and specificity due to methodical constraints

Virtually all existing interventions work with a control group pre-test-post-test design. However, only a few of these are experimentally rigorous in using a randomized control group (Kooij et al., 2017; Sakuraya et al., 2020; Verelst et al., 2021). For practical and economic reasons, the majority

resort to a quasi-experimental approach without randomization, for example, by using cohorts (Knight et al., 2021) or location differences (Van Wingerden et al., 2016; Van Wingerden, Bakker, et al., 2017) to allocate groups, allowing participants to decide for themselves whether they want to complete the training or just a questionnaire (Kuijpers et al., 2020), or participants passing the questionnaire on to colleagues with similar jobs who are then considered as a control group (Van den Heuvel et al., 2015). Such procedures no longer allow effects to be clearly attributed to the interventions and threaten internal validity (Cook & Campbell, 1986; Oprea et al., 2019).

Furthermore, the samples often reveal particular characteristics. Many trainings were carried out in specific organizations (Demerouti et al., 2021; Hulshof et al., 2020; Kuijpers et al., 2020; Sakuraya et al., 2016; Wang et al., 2023), with a strong focus on educational contexts involving teachers or university employees (Dubbelt et al., 2019; Van Wingerden et al., 2016; Van Wingerden, Bakker, et al., 2017; Van Wingerden, Derks, et al., 2017) and the healthcare sector (Gordon et al., 2018; Kuijpers et al., 2020). Some interventions also apply to particular external circumstances, such as organizational changes (Demerouti et al., 2021; Demerouti et al., 2017) or working mothers' work-life balance (Verelst et al., 2021).

Although their effectiveness has not been fundamentally established, most existing interventions involve high time and economic demands. Most interventions up to date consist of face-to-face workshops in groups, guided by a trainer (Dubbelt et al., 2019; Gordon et al., 2018; Hulshof et al., 2020; Kuijpers et al., 2020; Van Wingerden, Bakker, et al., 2017) that range from one multi-hour workshop (Demerouti et al., 2017; Dubbelt et al., 2019; Van den Heuvel et al., 2015) to multiple inputs over several weeks (Gordon et al., 2018; Kuijpers et al., 2020; Van Wingerden et al., 2016). To our knowledge, only two job crafting-related trainings have been implemented as e-interventions so far, one particularly concerning the crafting of networks (Wang et al., 2023) and one study by Verelst et al. (2021) that trained participants online in task, relational and cognitive job crafting. Those two digital trainings also spanned over three weeks each, with a total training duration of 75 minutes on average (Verelst et al., 2021) or several short inputs and mini-assignments (Wang et al., 2023).

Overall, previous job crafting interventions exhibit limitations in implementing rigorous experimental designs and often only relate to highly specific samples, severely limiting the effects' generalizability and robustness. Furthermore, modern approaches to the digital implementation of interventions, which could make training more low-threshold accessible to a broader range of participants and more cost-effective, have been used sparingly.

Summary of resulting aims

As a result of varying theoretical focuses, training specificity, and limited experimental testing, the literature so far lacks a coherent understanding of which job crafting forms can be effectively trained and what the exact underlying mechanisms are. These two questions represent the focus of our two intervention studies. In Study 1, we introduce a novel modular intervention approach that individually trains four different job crafting forms according to the integrative framework of Zhang and Parker

(2019) and rigorously tests their effectiveness in an experimental design. Building upon this, Study 2 focuses on the specific form of cognitive approach crafting and applies a content-specific training to illustrate one underlying mechanism of change.

Study 1: Form-specific approach

Previous interventions address the diversity within the job crafting construct only to a limited extent, as they usually combine all forms in a general job crafting training program, making it difficult to examine individual effects and specific underlying processes. A stronger distinction could, therefore, not only provide important information about which job crafting strategies determine the effectiveness of an intervention but also pose the starting point for using particular crafting forms in more targeted interventions. We aim to lay the foundation for this with our innovative modular intervention approach: Building on the integrative job crafting framework (Zhang & Parker, 2019), we assess whether we can train four job crafting forms individually and independently of each other and test their respective effectiveness: *Behavioral approach, behavioral avoidance, cognitive approach, and cognitive avoidance crafting* (see Table 1 for definitions and examples). To implement this as rigorously as possible, each module corresponds to a single intervention group – participants only receive training in one specific job crafting form.

Behavioral approach crafting

During behavioral approach crafting, employees actively seek out or gain positive aspects in their work by allocating more time and energy to the tasks they enjoy doing or that match their interests and strengths (Lopper et al., 2024; Zhang & Parker, 2019). Successful implementation of this strategy in everyday working life should result in an increased person-job fit, as crafters have changed the actual composition and characteristics of their work to align them better with their abilities and needs (Kristof-Brown et al., 2005). Furthermore, by changing tasks and relationships in line with their personal preferences, individuals can experience new job resources or stimulating challenging demands and, therefore, feel more engaged in their work (Bakker et al., 2023).

Since the majority of existing interventions involve strategies that can at least roughly be regarded as behavioral approach crafting, there is broad evidence for these assumptions. Meta-analytic evidence (Oprea et al., 2019) supports the effectiveness of *seeking challenges*, a particularly approach-oriented behavioral form of crafting, and a generally positive, small effect on work engagement. Further individual studies were successful in training facets like *seeking structural and social resources,* which in turn led to higher work engagement (Dubbelt et al., 2019; Van Wingerden, Derks, et al., 2017), or *task crafting* that directly improved (needs-supplies) person job fit (Verelst et al., 2021).

> *Hypothesis 1:* Employees participating in the *behavioral approach* module will report higher levels of a) behavioral approach crafting, as well as b) person-job fit and c) work engagement after the intervention compared to the control group.

Behavioral avoidance crafting

While training approach-oriented forms seem apparent due to their documented positive outcomes (Bruning & Campion, 2018; Rudolph et al., 2017), avoidance-oriented crafting has so far played a minimal role in interventions. The few findings to date on avoidance crafting have so far mainly shown inconclusive or negative effects on outcomes like work engagement (Petrou et al., 2012; Tims, Bakker, & Derks, 2013) or job satisfaction (de Beer et al., 2016) – raising the fundamental question of whether they should be part of interventions at all. However, avoidance crafting has previously been operationalized narrowly as solely *reducing demands crafting* (Dubbelt et al., 2019; Gordon et al., 2018; Van den Heuvel et al., 2015). As findings suggest that it does not necessarily lead to decreased job demands (Tims, Bakker, & Derks, 2013), this form often does not seem to prove successful or constructive, which might be a possible explanation for negative or ambiguous findings. Given general work intensification (Korunka et al., 2015) and ever-changing demands (Korunka & Kubicek, 2017) in modern workplaces, we are convinced that there is a need for a more reduction-focused perspective on job crafting – in contrast to the widespread approach crafting, which can also go hand in hand with excessively increased workload and resulting burnout (Harju et al., 2021; Lebel et al., 2023). In such circumstances, avoidance crafting offers a valuable tool for curbing overwhelm and directing energy more purposefully and efficiently (Demerouti & Peeters, 2018).

Nevertheless, we also recognize the challenge of maintaining the proactive core of job crafting despite an avoidance perspective and not focusing purely on negative aspects, thus impairing well-being (Elliot, 2006). We therefore adopt principles of wise proactivity (Parker et al., 2018) and assume that avoidance crafting can be constructive as long as it retains a learning focus. While the initial orientation remains avoidance – for example of a previously unpleasant task – the subsequent crafting focuses not purely on preventing it in the future but rather on dealing with it more effectively (Demerouti & Peeters, 2018; Zhang & Parker, 2022), by optimizing those tasks to save time or limiting time and energy spent on a particular task (e.g., checking e-mails only at specific times). In doing so, these initially negative aspects should become less prominent in the work or even more enjoyable (for example, by simplifying a strenuous process), which is intended to increase employees' person-job fit and work engagement.

> *Hypothesis 2:* Employees participating in the *behavioral avoidance* module will report higher levels of a) behavioral avoidance crafting, as well as b) person-job fit and c) work engagement after the intervention compared to the control group.

Cognitive approach crafting

Approaching and gaining positive aspects at work can also take on the form of crafting on a purely cognitive level: by strategies like re-framing negative or demanding factors (Batova, 2018), recognizing the job as an integrated whole instead of separated tasks (Bruning & Campion, 2018), actively looking for and creating sense and meaning in one's work (Berg et al., 2013; Berg, Grant, et al., 2010), or cognitively emphasizing positive aspects or those that align the closest with a person's interests and strengths (Vuori et al., 2012). As these cognitions actively shift the focus to those aspects

of the job that are perceived as more positive, meaningful, and suitable for an individual's preferences, they should contribute to an increased person-job fit (Li et al., 2023; Niessen et al., 2016). Furthermore, we expect cognitive approach crafting to also lead to higher work engagement because particularly motivating aspects are recognized more clearly, and the perceived meaning of one's work increases (Berg et al., 2013).

Compared to the vast array of behavioral crafting trainings, to our knowledge, there are only two interventions that include cognitive crafting, which do not differentiate between an approach/avoidance orientation. Verelst and colleagues (2021) explicitly included cognitive besides task and relational crafting in the contents of their e-intervention and guided participants to set specific goals for each form. However, their intervention ultimately only showed effects on general job crafting and task crafting. A second intervention study by Sakuraya et al. (2016) also included cognitive besides task and relational crafting, but as far as recognizable mainly within general job crafting exercises without teaching specific cognitive strategies. This intervention increased cognitive crafting in the intervention group over time, however, there was no control group in the study. The remaining majority of existing job crafting interventions partly contain instructions for reflection that might stimulate cognitive processes (Van den Heuvel et al., 2015) but do not explicitly guide them and focus instead on implementing behavioral crafting goals. Our intervention thus represents the first approach to training cognitive approach crafting specifically and without merging it with other forms, as well as investigating its differentiated effects on the above-mentioned outcomes.

> *Hypothesis 3:* Employees participating in the *cognitive approach* module will report higher levels of a) cognitive approach crafting, as well as b) person-job fit and c) work engagement after the intervention compared to the control group.

Cognitive avoidance crafting

Until now, cognitive avoidance crafting has received virtually no attention in the general job crafting literature or interventions (Zhang & Parker, 2019). In general, avoidance-oriented crafting is usually understood strictly as *reducing demands*, which primarily results in detrimental outcomes (Demerouti et al., 2015; Rudolph et al., 2017) and seems to result less in actual reduction of stress than in vicious cycles with exhaustion (Petrou et al., 2015). So far, this form has also been mostly regarded as purely behavioral. In contrast, cognitive avoidance strategies are theoretically framed only as passive acceptance (Lazazzara et al., 2020) or withdrawal (Bruning & Campion, 2018). However, similar to behavioral avoidance crafting, we argue that this form should be considered in a more general, constructive, and proactive way (Parker et al., 2018) as *cognitive changes to reduce or reframe negative aspects at work*. To stimulate actual crafting rather than passive coping, we adhere to an initial avoidance focus (on aspects of the job that are currently perceived as unfavorable), which is followed by a proactive change of these perceptions: for example, by realizing that, although unpleasant, a task makes an essential contribution to society (Wrzesniewski, 2003), or cognitively reframing a role and its impacts (Hommelhoff et al., 2021; Kossek et al., 2016). This is also seen in the example within Table 1: "a

doctor who consciously reframes every serious diagnosis as a starting point for important treatment so that he sees himself less as a bearer of bad news." In doing so, job crafters can reframe those aspects of work that they formerly perceived as negative by broadening their focus on more meaningful impacts, or focusing on individual features of their job that match their needs, thereby enhancing their perceived fit with the job. These changes could also offer new perspectives within previously demotivating circumstances and thus increase work engagement.

> *Hypothesis 4:* Employees participating in the *cognitive avoidance* module will report higher levels of a) cognitive avoidance crafting, as well as b) person-job fit and c) work engagement after the intervention compared to the control group.

Reciprocal effects between different forms

As mentioned above, evidence shows that different forms of job crafting are positively related to varying degrees (Ebert & Bipp, 2022; Slemp & Vella-Brodrick, 2013; Zhang & Parker, 2019) but also differ significantly in their antecedents and outcomes (Niessen et al., 2016; Weseler & Niessen, 2016). Previous intervention studies generally have trained different forms jointly, complicating the evaluation of individual effectiveness. Our approach examines whether we can train job crafting forms independently for the first time. We therefore pose a supplementary research question:

> *Research Question:* Can we train four different job crafting forms separately, or do the individual modules also show side effects on other forms?

Method

Participants

The study was conducted with German employees who were invited via professional and personal networks and voluntarily registered to participate. No external incentives were presented for participation; the training itself was marketed as an opportunity for personal development and improvement in one's own job. An inclusion criterion was a minimum of 10 hours of work per week. The final sample consisted of $N = 173$ participants, attrition throughout training is illustrated in Figure 1. Drop-out analyses indicated no systematic drop-out among the five groups. The ages of participants ranged from 20 to 66 *(*$M = 36.05$, $SD = 13.75$), 64.2% were female, and on average, they worked 34.03 hours per week ($SD = 14.03$). Most people were employed in the education sector (18.5%), followed by health/social (9.2%) and consulting (8.7), with 16.2% reporting managerial positions.

Procedure and contents of the intervention

In general, we opted for adherence to practices that have been established in existing intervention studies, such as the Michigan Job Crafting Exercise (Berg et al., 2008) or the implementation of Job Crafting Boosts in the application phase (Knight et al., 2021). At the same time, we advance intervention practices with a stronger differentiation in terms of content by applying the integrative job crafting framework (Zhang & Parker) as a theoretical basis and implementing it as individual intervention modules for the various job crafting forms.

In contrast to most existing interventions, we conducted an asynchronous online training. Digital interventions generally provide cost-effective and accessible tools that reach many potential participants while considering their time and resource constraints (Hewitt et al., 2020). Our participants were thus able to complete the training at their own pace after registering via an individualized link and also pause it in between (on average, participants spent 33 minutes on their training module). Overall, digital interventions do not seem to differ in their effectiveness from face-to-face interventions (Andrews et al., 2018). Verelst et al. (2021), and Wang et al. (2023) have already shown initial effective applications with job crafting.

Figure 1 provides a schematic illustration of the procedure, which we explain in more detail in the following. All questionnaires and the training modules were conducted online within the platform Unipark. We applied an experimental design with four intervention groups and one waiting-list control group to answer our central question of individual effectiveness.

Participants signed up online after receiving information about the training procedure and giving informed consent. They received a personalized link to track their progress in the training, meaning they could also interrupt it at any time and resume it later. Following registration, respondents immediately received the questionnaires for the first measurement point (job crafting, person-job fit, work engagement, demographic questions). Subsequently, the participants were randomly assigned to the four intervention groups (behavioral approach – *B AP*; behavioral avoidance – *B AV*; cognitive approach – *C AP*; cognitive avoidance – *C AV*) or the waiting list control group (*CG*) by the online tool used for the study.

All four intervention groups first received a short informative video on job crafting, its possible applications, and illustrated examples, derived from the literature (Demerouti et al., 2019; Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001; Zhang & Parker, 2019). Comparable to existing job crafting interventions (Knight et al., 2021; Kooij et al., 2017; Van Wingerden et al., 2016; Van Wingerden, Bakker, et al., 2017), the following part of the intervention was based on the Michigan Job Crafting Exercise (Berg et al., 2008). Participants in all intervention modules first carried out a *job analysis*. During this process, all common work tasks related to the current job were listed and organized according to the time and energy spent on individual tasks. Afterward, participants conducted a *person analysis*, in which personal values, strengths, and interests prevailing at work were collected. This process provided the participants with a clear overview of their current jobs and increased their awareness of possible starting points for improvement (Van Wingerden et al., 2016).

In the next step, the four intervention groups worked differently with the results of their job and person analysis to apply the respective job crafting forms in practice (Table E1 in the electronic supplementary material, ESM, provides an overview of the key elements of the individual modules). Both behavioral groups (*behavioral approach* and *behavioral avoidance*) were instructed to create an *ideal scenario* of ranking their work tasks in terms of how they would prefer to spend their time and energy. They then compared this sketch with the previously created *status quo* list of work tasks.

Hereafter, the behavioral groups differed as follows: The *behavioral approach* group was instructed to choose one to three tasks that had moved higher in their ideal scenario compared to the status quo, whereas the *behavioral avoidance* group focused on tasks that had moved down in the ranking.

The two cognitive groups were presented with their collected tasks and personal strengths/interests/values. These were subsequently grouped into superordinate *roles*, meaning a perceived group of tasks, responsibilities, skills, and interests (Graen & Scandura, 1987; Wrzesniewski, 2003; Wrzesniewski & Dutton, 2001). We illustrated the concept of roles with concrete examples (e.g., "Amy believes that in her work as a doctor, she acts as *someone who makes a positive difference in the lives of others*. She achieves this through her tasks of examining and operating on patients, communicating with them and their relatives, and always being friendly, approachable, and knowledgeable. She sometimes also has to be a *bearer of bad news*. Amy would assign the following tasks and aspects to this role: examining and diagnosing patients, talking to them and their relatives, providing emotional support and explanation of medical diagnoses, remaining empathetic but professional…"). The *cognitive approach* group then selected one to three roles they particularly enjoy taking on, while the *cognitive avoidance* module selected those they enjoy less.

After choosing the tasks or roles they wanted to focus on, participants of all intervention groups were guided with specific questions (see also Table E1 within ESM 1) to set crafting goals for the next two weeks. They also received information on how to formulate their goals in a concrete, motivating, and realistic way (Frates et al., 2011; Locke & Latham, 1990) to foster implementation in their everyday work (Arneson & Ekberg, 2005; Gollwitzer & Sheeran, 2006).

The following application phase of two weeks was supported after one week with a *boost mail*. We adapted this concept inspired by the approach of Knight et al. (2021), who have already used job crafting boosts – concise, complementary activities during the action phase of an intervention – to maintain participant engagement. The boost emails included a reminder of the individual job crafting goals and an inspirational question relating to the completed training module (see Table E1 in ESM 1 for examples).

At the end of their individual two-week application phase, participants were invited by email to complete the post-questionnaire (T2; job crafting, person-job fit, work engagement) and were given the opportunity to reflect on their goals as well as receive access to the other intervention modules. After the post-questionnaire, the waiting list control group had access to all four intervention modules.

Measures

We surveyed all constructs at both measurement times; the sequence between the scales and within the items was randomized.

Job crafting. The job crafting forms were measured using the German Approach-Avoidance Job Crafting Scale (AAJCS) by Lopper and colleagues (2024). The questionnaire assesses behavioral approach crafting (e.g., "I actively develop relationships with other people"), behavioral avoidance crafting (e.g., "I spend less time working on tasks that don't really interest me"), cognitive approach

crafting (e.g., "I concentrate on the positive aspects of my work"), and cognitive avoidance crafting (e.g., "I take mental distance from tasks that put an emotional strain on me.") with ten items each. Answers were indicated on a five-point Likert scale (totally disagree to totally agree). The German version of the items has been validated in several studies (Lopper et al., 2024)

Person-job fit. We applied the person-job fit scale by Cable and DeRue (2002). A forward-backward translation of the altogether six items (e.g., "The job that I currently hold gives me just about everything that I want from a job", "My abilities and training are a good fit with the requirements of my job") into German has been adopted in prior studies of the research group with good psychometric quality. Participants rated their answers on a five-point Likert scale (totally disagree to totally agree).

Work engagement. Work engagement was assessed using the German short version of the Utrecht Work Engagement Scale (Schaufeli et al., 2003). Three items each represent vigor, dedication, and absorption (e.g., "At this work, I feel bursting with energy", $\alpha = .96$) and were answered on a seven-point Likert scale.

Results

The intervention groups are combined for intercorrelations and internal consistencies in Table 2 for a simplified overview. Table 3 presents descriptive statistics of the central study variables for all four intervention and control groups.

We applied mixed analyses of variance (ANOVA; within-factor time x between-factor group) in IBM SPSS (Version 27) to test all hypotheses. To determine the individual effects of every module group, each intervention group was tested against the control group. Table 4 displays the effects of the individual modules on the respective job crafting form (manipulation check) and on the outcomes of person-job fit and work engagement. Statistics for main effects of time are included in the ESM, Table E3.

Hypothesis 1 examined the effects of the *behavioral approach crafting* module. Results of the ANOVAs indicated no significant change in behavioral approach crafting (rejecting H1a) or person-job fit (rejecting H1b). There was a significant interaction effect for work engagement over time and compared with the control group ($F(1, 67) = 4.69$, $p = .034$), thereby supporting H1c (figure of interaction effect is included in ESM 1, Figure E2).

Within the *behavioral avoidance crafting* group (H2), we found no significant changes in either behavioral avoidance crafting, person-job fit, or work engagement (see Table 4). Therefore, hypothesis 2 is rejected entirely.

In the *cognitive approach crafting* group, we found a significant intervention effect, indicating that the training, consistent with H3a), significantly increased the intended cognitive approach crafting compared to the control group ($F(1,67) = 7.60$, $p = .007$). Figure 2 depicts the intervention effect. No significant effects emerged for the outcomes of person-job fit and work engagement in this group, meaning that H3b) and H3c were rejected.

Hypothesis 4 addressed the effects of the *cognitive avoidance crafting* module, for which we found no significant results for cognitive approach crafting, person-job fit, or work engagement, thus rejecting H4a-c). However, there was a significant main effect of time for cognitive avoidance crafting ($F(1,64) = 7.36$, $p = .007$), indicating an increase between T1 and T2 regardless of the group.

As part of our additional research question on the independence of the modules and the occurrence of cross-effects on the other job crafting forms, we conducted further mixed ANOVAs. Due to the exploratory nature of the analysis, we apply a significance level of $p = .01$. The results revealed one significant interaction effect: the *behavioral approach crafting* group showed a significant increase in cognitive approach crafting compared to before the intervention and the control group ($F(1,67 = 7.87$, $p = .007$). There were no significant effects on the other job crafting forms within the remaining three modules (all statistics are included in the ESM, Table E4).

Discussion

Our first study aimed to provide a stronger differentiation in analyzing the effectiveness of job crafting interventions. For this purpose, we presented a novel modular intervention approach in which we trained four job crafting forms individually and in a rigorous experimental design. Within our short, asynchronous online intervention, particularly cognitive approach crafting increased effectively. Our intervention was ineffective in changing behavioral (approach and avoidance) crafting. However, cognitive approach crafting also increased in the behavioral approach group, suggesting side effects between those forms and that cognitive change processes were stimulated here, even if there were no behavioral changes (yet). In the cognitive avoidance group, we found a main effect over time, with increasing values in both the intervention and the control group. Therefore, the confrontation with the items that both groups received at the first measurement time might have already sparked introspection and cognitive reflective processes (Lapping-Carr & Heavey, 2017) in the following two-week application phase.

In contrast to previous interventions (Gordon et al., 2018; Kooij et al., 2017; Sakuraya et al., 2016; Van Wingerden, Bakker, et al., 2017) and meta-analytical findings (Oprea et al., 2019; Rudolph et al., 2017), our intervention largely did not affect participants' person-job fit or work engagement. Solely, the behavioral approach group demonstrated a significant increase in work engagement. However, as the manipulation check of the intervention was not significant in this module, we cannot attribute this effect to the intended job crafting strategies but, for example, to a more general Hawthorne effect (Fernald et al., 2012) or other mechanisms that got triggered by the intervention. These findings highlight the urgent need for more specificity in analyzing the effectiveness and underlying mechanisms of interventions in practice, as we could not confirm traditionally assumed outcomes once we trained and examined job crafting forms separately rather than mixed. Therefore, the effects found so far in some of the literature do not appear to be generally valid for job crafting as a whole. More detailed investigations are required into exactly which aspects are triggered in interventions.

We further respond to current developments away from time-consuming and economically extensive face-to-face workshops and towards more efficient, individually adaptable e-interventions, which have become established in related fields such as health psychology (Chipps et al., 2017; Klein, 2010; Prosser et al., 2018), and demonstrate one of the first applications to the field of job crafting (Verelst et al., 2021; Wang et al., 2023). Our developed training stands out in particular due to its concise timeframe and asynchronous execution, making it more accessible to a broader audience. Furthermore, the novel modular approach involving experimental testing provides the first differentiated analysis of individual job crafting forms' effectiveness within an intervention. For the first time, we draw on the theoretical framework by Zhang and Parker (2019) and thus incorporate a previously unseen range of job crafting forms, both in terms of behavioral and cognitive strategies, as well as considering approach and avoidance motivation. The successful cognitive approach crafting module represents the first example of an effective and fast way to train this specific facet, which has received minimal attention in previous job crafting research and interventions.

Study 2: Content-specific approach

In our modular approach of Study 1, cognitive approach crafting has proven effective. However, we found no effects on traditional, more distal outcomes such as person-job fit and work engagement, which have been primarily associated with behavioral crafting forms (Rudolph et al., 2017). Thus, it remains unclear which underlying processes are involved in these specific cognitive changes. As cognitive crafting has hardly been addressed in the existing literature and interventions (Lazazzara et al., 2020; Zhang & Parker, 2019), we focus on this issue in Study 2 and explore more detailed one possible mechanism of cognitive crafting to develop a broader and more differentiated job crafting literature in the future. To map this mechanism as concretely as possible, we introduce a further novel intervention approach and specify the form of training (cognitive approach crafting) and the content. By focusing the training content on crafting a specific job characteristic, we can more accurately capture associated changes through job crafting rather than the variety of individual processes that a more general training might trigger.

Focusing intervention content: cognitive crafting of autonomy

Autonomy represents a key work characteristic or resource traditionally considered to have a significant impact on employees' motivation, performance, or job satisfaction (Demerouti et al., 2001; Fried & Ferris, 1987; Humphrey et al., 2007). As a result of the increasingly digital and flexible world of work, employees today report significantly more autonomy in their jobs than in the past (Wegman et al., 2018). Nevertheless, this is not a purely positive trend: in contrast, excessive levels of autonomy have been shown to entail negative consequences in terms of impaired well-being (Stiglbauer & Kovacs, 2018) or leading to increasing job demands (Dettmers & Bredehöft, 2020). The concept of the *autonomy paradox* has thus become established in the literature (Day et al., 2019; Mazmanian et al., 2013), illustrating that autonomy may constitute both a resource and a demand in today's world of work.

Due to this ambivalent nature of the job characteristic autonomy, we anticipate a particular potential for achieving positive changes with cognitive crafting strategies. Following calls for a more nuanced discussion of autonomy in the workplace (Parker, 2014) with its various facets (De Spiegelaere et al., 2016; Humphrey et al., 2007), we focus on the specific form of *work-scheduling autonomy*, defined as "the extent to which workers feel they can control the scheduling / sequencing / timing of their work activities" (Breaugh, 1985, p. 556). The general trend of increasing autonomy is particularly strong for this facet (Stiglbauer & Kovacs, 2018). Increasingly flexible working environments are thus handing over more and more responsibility for scheduling their work to the employees themselves. We apply cognitive approach crafting in our training to mitigate any adverse effects of this possible demand and enable participants to perceive work-scheduling autonomy as a helpful resource.

Unraveling an underlying psychological mechanism

To specify a possible underlying mechanism of cognitive approach crafting, we draw on general job crafting (Wrzesniewski & Dutton, 2001; Zhang & Parker, 2019) as well as JD-R theory (Bakker & Demerouti, 2007) and expand upon cognitive mechanisms (Cavanaugh et al., 2000; Lazarus & Folkman, 1984; LePine et al., 2005). Most theoretical job crafting perspectives incorporate one central mechanism of change – job crafters alter the task, relational or cognitive boundaries of their work (Wrzesniewski & Dutton, 2001) or balance the resources and demands of their job to suit their personal preferences (Tims & Bakker, 2010). In other words, they proactively change the design and, thus, the characteristics of their individual job (Knight & Parker, 2019). Meta-analytical evidence (Holman et al., 2023) also supports this bottom-up job design impact of behavioral crafting forms on actual work characteristics.

While the original conceptualization of the JD-R argued against a subjective interpretation of work characteristics (Demerouti et al., 2001), empirical findings reveal individual variations. Qualitative analyses by Yanchus et al. (2013) showed that employees assess job resources and demands depending on the situational context. Findings on daily fluctuations in job demands and resources (Bakker, 2014; Ilies et al., 2015) might also be due to changes in the working environment and the subjective perception of the individual. Therefore, we expand this mechanism of job crafting through changing job resources and demands and assume not only tangible changes in terms of altered tasks or relationships but also in the cognitive form of changing perceptions and appraisals of work characteristics (Demerouti et al., 2019).

Concerning the nature of this cognitive crafting mechanism, we draw on basic principles of cognitive models of stress and demands (Cavanaugh et al., 2000; Lazarus & Folkman, 1984; LePine et al., 2005) and postulate a two-part process. First, we assume a change in the *perception* of work-scheduling autonomy regarding its level – whether and to what extent it is present in the individual's work. As cognitive crafting involves general meta-cognition (Bruning & Campion, 2018), actively changing perspectives on tasks or relations (Berg, Wrzesniewski, et al., 2010; Lazazzara et al., 2020) and shifting to a view of the job as a whole rather than several separate tasks (Wrzesniewski & Dutton,

2001), we assume that via these reflective processes, individuals grasp a larger overall picture of their work and recognize areas of freedom that may previously have been unaware.

Hypothesis 1: Employees participating in the intervention will report higher levels of work-scheduling autonomy after the intervention compared to the control group.

Second, we postulate an *appraisal* process – the degree to which work-scheduling autonomy is perceived as a resource and/or a demand. According to Bakker and Demerouti (2014), focusing on individual resources and strengths within interventions has motivating, resource-enhancing potential and builds resilience in dealing with work demands. Therefore, we expect both a positive influence of cognitive approach crafting on the appraisal of work-scheduling autonomy as a resource, and a decrease in its appraisal as a demand. As cognitive approach crafters emphasize the positive aspects of their work (Vuori et al., 2012), build new resources such as enhanced meaningfulness of their work (Wrzesniewski, 2003; Wrzesniewski & Dutton, 2001), and portray challenges in a more optimistic way, (Berg, Wrzesniewski, et al., 2010; Kossek et al., 2016), they create a more resource-oriented view on the work-scheduling autonomy aspects of their job. By raising awareness of their personal and work-related resources (Devotto & Wechsler, 2019) and taking on a more proactive perspective (Ohly & Fritz, 2010), individuals feel more in control (Zhang & Parker, 2022) and strenuous aspects of work-scheduling autonomy also become more manageable and less of a demand.

Hypothesis 2: Employees participating in the intervention will report a) higher levels of resource-appraisal and b) lower levels of demand-appraisal of work-scheduling autonomy after the intervention compared to the control group.

Method

Participants

Corresponding to Study 1, participants were recruited over professional and private networks with the only inclusion criterion of having an occupation of at least 10 hours/per week. Of the 226 persons who initially signed up for the training, $N = 105$ completed the training and post-measurement, representing the final sample ($N = 47$ in the intervention group, $N = 58$ in the control group). Drop-out between the groups did not differ systematically. Figure 3 depicts the schematic process of the intervention, including attrition. Within the final sample, 69 people identified female gender, 34 male, and one person did not specify. Participants' ages ranged from 21 to 63 years ($M = 40.84$, $SD = 13.26$), and they worked for 35.23 hours per week on average ($SD = 12.55$). The majority indicated working in the IT Sector (20.8%), administration (12.9%), or consulting (11.9%), and 21.8% reported having management responsibilities.

Procedure and contents of the intervention

Maintaining the strengths of the intervention from Study 1, we also implemented this study as an asynchronous online intervention with an experimental design for testing its effectiveness. After signing up for the training and receiving an individualized link, participants received the T1 questionnaires. Since these also contained items on cognitive approach crafting and work-scheduling

autonomy, we subsequently implemented a 6-day waiting phase before access to the training. In this way, we could reduce the risk of spill-over effects from the questionnaires, which could stimulate reflection on the topics and thus represent a mini-intervention, into the actual training (Godin et al., 2008; Lapping-Carr & Heavey, 2017).

The training consisted of several explanatory videos, exercises, and illustrative examples comparable to Study 1 (see Figure 3 for an illustration of the intervention procedure). The overarching goal was to foster a differentiated reflection in the participants' work to identify both resources and demands related to work-scheduling autonomy so that they could proactively change this appraisal using cognitive approach crafting strategies. Participants were introduced to the concepts of demands and resources at work, job crafting with a focus on cognitive crafting, and work-scheduling autonomy with its potential risks and benefits. The design of the exercises was, as in Study 1, primarily based on the Michigan Job Crafting Exercise (JCE; Berg et al., 2013), which has been established in a large number of studies before (Knight et al., 2021; Van Wingerden et al., 2016, 2017). In practical terms, a person analysis was performed to gather work-related resources, and a job analysis identified aspects of work-scheduling autonomy in the individual's work. These were then individually evaluated to determine whether they represented more of a resource or a demand for the participant. To actively craft this, participants engaged in exercises directing them to allocate personal and work-related resources that could support them in dealing with challenging autonomy aspects. In this way, they were encouraged to shift their perspective towards a resource- and solution-oriented focus and a more self-effective attitude when dealing with work-scheduling autonomy. Unlike existing job crafting interventions, no subsequent action plan was designed to bring about behavioral changes (Demerouti et al., 2019; Gordon et al., 2018; Knight et al., 2021). Instead, participants were instructed to use the previous exercises and reflections to derive and write down specific key phrases or thoughts about their work that could help them to use work-scheduling autonomy more positively in their day-to-day work.

As soon as they completed the training, participants in the intervention group received the questionnaire for T2 to assess immediate effects. The control group received the post-questionnaire simultaneously and subsequently gained access to the training.

Measures

Cognitive approach crafting. In line with Study 1, we applied the AAJC from Lopper et al. (2024), specifically, the cognitive approach resources crafting subscale that corresponds most clearly to the intervention's recourse- and coping-oriented perspective. Participants indicated their answers to five Items (e.g., “I concentrate on the positive aspects of my work” on a five-point Likert scale (totally disagree to totally agree); Cronbach’s alpha was $\alpha = .70$ at T1 and $\alpha = .74$ at T2.

Work-scheduling autonomy. Work-scheduling autonomy was assessed using the corresponding subscale of Stegmann et al.'s German version of the Work Design Questionnaire (WDQ, 2010). It consists of three items (e.g., "The job allows me to plan how I do my work") and was measured on a five-point Likert scale from 1 = strongly disagree to 5 = strongly agree presenting good reliabilities (α_{T1} = .85, α_{T2} = .86).

Resource- and demand-appraisal of work-scheduling autonomy. Building upon the work of Gerdenitsch et al. (2015), we used two items for the appraisal of work-scheduling autonomy. These were posed directly after each of the three WDQ items: "To what extent do you experience this aspect as a resource of your work?" and "To what extent do you experience this aspect as a demand of your work?" Participants responded on a five-point Likert scale (" little to very much"). As a result, three items each indicated *resource-appraisal* of work scheduling autonomy and three *demand-appraisal* with high internal consistencies (ranging from α = .87 to α = .93).

Results

All analyses were carried out in IBM SPSS (Version 27). Table 5 presents descriptive statistics of the central study variables for the intervention and control group (Intercorrelations are depicted in the ESM 2, Table E5).

To test our hypotheses on the effectiveness of the cognitive approach crafting intervention in changing the perception (H1) as well as the resource- (H2a)/demand- (H2b) appraisal of work-scheduling autonomy, we conducted several ANOVAs, considering the within-factor time (pre-training, post-training) and the between-factor group (intervention, control).

As a manipulation check, results presented a significant interaction effect ($F(1,103) = 4.36$, $p = .039$), suggesting that participants in the intervention group reported significantly higher levels of cognitive approach crafting after the training and compared to the control group. An effect size of partial $\eta^2 = .041$ indicates a small to medium effect (Cohen, 1988).

A further ANOVA was employed to assess the intervention's effects on the perceived level of work-scheduling autonomy. Again, there was a statistically significant main effect for time ($F(1, 101) = 8.82$, $p = .004$) and the interaction between time and group ($F(1,101) = 17.919$, $p < .001$, partial $\eta^2 = .15$) with the intervention group reporting higher levels of work-scheduling autonomy after the intervention ($M(SD)_{T1} = 3.73$ (.97); $M(SD)_{T2} = 4.04$ (.86)), see also Figure 4. Hypothesis 1 was thereby supported.

Regarding the appraisal of work-scheduling autonomy, the intervention led to significantly increased resource-appraisal compared to the control group ($F(1, 101) = 5.99$, $p = .016$, partial $\eta^2 = .056$, depicted in Figure 4), providing support for H2a. We also found a significant main effect of time ($F(1, 101) = 9.59$, $p = .003$). In contrast, we found no evidence for changes in the perception of work-scheduling autonomy as a demand ($F(1, 101) = .25$, $p = .617$, partial $\eta^2 = .002$) and have to reject H2b.

Discussion

Following the effective training of cognitive approach crafting in the previous study, we aimed to illustrate an underlying mechanism of change in a second intervention. Our short, content-specific online training successfully increased cognitive approach crafting. We were also able to support our hypothesized two-part cognitive mechanism of change: Participants reported significantly higher levels of perceived work-scheduling autonomy as well as an increased appraisal as a resource directly after the intervention. However, the training did not affect the appraisal of work-scheduling autonomy as a demand.

We significantly expand the job crafting literature, which has focused almost exclusively on behavioral forms (Oprea et al., 2019; Rudolph et al., 2017), by demonstrating a detailed cognitive change process. However, our novel approach only involved immediate effects directly after the approximately 30-minute online training. More long-term effects, for example, on distal outcomes such as well-being or performance, need to be considered in future research. Likewise, it remains unclear whether these initially purely cognitive changes in the perception and appraisal of work characteristics might subsequently lead to behavioral ones in the sense of reciprocal relationships between cognitive and behavioral crafting (Zhang & Parker, 2019).

General Discussion

The central aims of our two distinct but connected intervention studies were to advance the understanding of key factors of training success regarding (1) the individual effectiveness of specific forms of job crafting (Study 1) and (2) their underlying psychological mechanism of change (Study 2).

In Study 1, we presented a novel modular approach to train different job crafting forms individually and independently in a short, asynchronous online training. In contrast to existing interventions (Demerouti et al., 2021; Gordon et al., 2018; Oprea et al., 2019; Van den Heuvel et al., 2015a; Van Wingerden, Bakker, et al., 2017) that strongly focus behavioral and approach-oriented crafting, we drew on the framework of Zhang and Parker (2019). We thus implemented a significantly broader range of job crafting forms *(behavioral approach, behavioral avoidance, cognitive approach,* and *cognitive avoidance crafting)*. To move beyond issues related to internal validity in previous job crafting interventions, we evaluated the modules in a rigorous experimental design to assess individual effectiveness. We found this approach to be particularly effective for cognitive approach crafting. However, as the intervention did not yield any further effects on the traditionally assumed job crafting outcomes of person-job fit and work engagement (Rudolph et al., 2017; Zhang & Parker, 2019), indicating distinct processes of individual forms, we examined cognitive approach crafting in more detail in Study 2 to unravel its specific underlying psychological mechanism. To illustrate this as clearly as possible, the content of this second e-intervention was focused on the cognitive approach crafting of work-scheduling autonomy. Again, the intervention proved to be effective in stimulating cognitive approach crafting. In addition, we demonstrated a two-part mechanism of change, as both the participants' perceived level of autonomy increased as well as their appraisal of it as a resource.

Theoretical contributions

Our novel form- and content-specific approaches for job crafting interventions present four central theoretical contributions.

First, we proposed a novel modular approach since our studies follow the notion that job crafting should never be applied as a one-size-fits-all concept (Ebert & Bipp, 2022; Zampetakis, 2021). In contrast to existing intervention studies, which carry out all-inclusive, general training and can, therefore, include interactions and spill-over effects between job crafting forms, we performed a rigorous experimental examination of the individual effectiveness of four different forms. Thus, we follow urgent calls for more construct clarity in dealing with proactive constructs in general (Potočnik & Anderson, 2016) and job crafting in particular (Hu et al., 2020; Zhang & Parker, 2019). The differential impact of a modular intervention across crafting forms improves the knowledge of unique dynamics within job crafting and allows us to make more precise conclusions about effectiveness in the future.

Second, we designed interventions that explicitly focused on training cognitive crafting for the first time and successfully stimulated it in two separate intervention studies in the form of cognitive approach crafting. We thus provide the first specific training of this form, addressing calls for a more thorough consideration of this hitherto neglected job crafting facet and demonstrating a more comprehensive range of applications of the construct (Lazazzara et al., 2020; Oprea et al., 2019). Cognitive approach crafting, involving conscious changes in perspective and reframing, emerged as a potent mechanism in shaping employees' perception and appraisal of work characteristics. Therefore, our studies contribute to advancing job crafting theory by highlighting the role of so far unexplored cognitive processes. Former theoretical models and their applications often focus solely on behavioral changes (Rudolph et al., 2017; Tims & Bakker, 2010) and the incorporation of cognitive crafting as a distinct and impactful dimension (Berg et al., 2013; Wrzesniewski & Dutton, 2001) enriches the conceptualization of job crafting.

Third, we successfully trained cognitive approach crafting for the first time and explicitly delved into a possible underlying psychological mechanism. While a mechanism via changes in job characteristics has already been assumed and investigated for behavioral crafting forms (Holman et al., 2023), we have extended this perspective to cognitive crafting and take up the idea that cognitive crafting can be expressed in the subjective perception and change of perspective on job characteristics (Wrzesniewski & Dutton, 2001; Zhang & Parker, 2019). We thereby drew on both the JD-R model and its central dichotomy of resources and demands (Bakker & Demerouti, 2007; Demerouti et al., 2001), as well as on cognitive appraisal processes (Cavanaugh et al., 2000; Lazarus & Folkman, 1984; LePine et al., 2005) and were able to demonstrate a two-part mechanism of cognitive approach crafting: changes in the *perception* and *appraisal* of work characteristics. We therefore provide a first detailed account of how cognitive crafting could operate. Participants not only became more aware of autonomy aspects in their work but also shifted their appraisal towards viewing them more as resources. The participants'

demand-appraisal remained unchanged, which may have been partly due to the intervention's clear focus on resources. An additional possibility for breaking down specific demand-related cognitive crafting processes even better in the future could be the further differentiation between challenging and hindering demands (Cavanaugh et al., 2000; Zhang & Parker, 2022), as this was not part of our initial study.

Fourth, focusing the training content in Study 2 on the cognitive crafting of autonomy also provides new perspectives and explanations for paradoxical effects of autonomy (Day et al., 2019; Stiglbauer & Kovacs, 2018) and how these can be proactively influenced. Our results demonstrate that cognitive approach crafting can transform both the perceived level of work-scheduling autonomy as well as enhance its appraisal as more as a resource, emphasizing the role such cognitive processes might play in determining whether autonomy goes hand in hand with positive or detrimental effects.

Practical implications

We want to emphasize two perspectives on the practical implications of our research. The central and novel contribution, contrasting the existing behavioral-focused literature, is that we can effectively train cognitive approach crafting, and we can do so quite easily (with an asynchronous e-intervention) and quickly (average duration of the intervention module approx. 30min, immediate effects afterward in Study 2). In this process, both the perception of the level of a job characteristic, in our study work-scheduling autonomy, and the appraisal of it as a resource increased. This provides organizations and employees with a simple and effective tool for individual cognitive job re-design and the opportunity to apply it to other specific work characteristics, opening the way for more tailored training programs. Organizations could adopt a more flexible approach in applying interventions in the future, recognizing employees' unique needs and targeting specific facets of job crafting. While we have demonstrated the unique potential of cognitive crafting and want to encourage its practical application, we also wish to issue a clear caveat. Cognitive crafting strategies of consciously and proactively changing perception and appraisal should never be misused solely to gloss over prevailing detrimental work circumstances, such as excessive demands or lack of support at the workplace. In this case, threats to the health and well-being of employees naturally remain. Therefore, we want to emphasize that cognitive crafting approaches should always be used in conjunction with principles of general motivational and responsible top-down work design (e.g., Parker & Knight, 2023).

A second focus of possible practical applications lies in dealing with autonomy and its paradoxical effects (Stiglbauer & Kovacs, 2018; Dettmers & Bredehöft, 2020). Our content-specific training in Study 2 presents a concrete tool for using cognitive crafting strategies to address autonomy-related challenges and adopt a more resource-oriented perspective. Thus, both individuals who struggle with a highly restricted, non-autonomous work environment and who can use the training to realize previously unknown opportunities could benefit from the increase in the perceived level of autonomy, as well as those who struggle with excessive autonomy and the associated demands and could learn to deal with them in a more resource-oriented way.

Limitations & Future Research

The rigorous experimental evaluation of our modular intervention (Study 1) marked an important first step towards making more reliable statements on what and how specific forms actually work in job crafting interventions. However, it does entail some limitations. Regarding our first central aim – to train the four job crafting forms individually – we only found effects for one, namely cognitive approach crafting. Our intervention neither increased behavioral crafting (approach and avoidance) nor avoidance-oriented cognitive crafting. These findings contradict the existing literature, which mainly reports intervention effects on behavioral forms (Oprea et al., 2019; Rudolph et al., 2017). A decisive role here could be the implementation of a short online training, in contrast to existing face-to-face workshops. While existing trainings use a group setting and explicitly consider social cognitive theory and social exchange as a learning mechanism (Bandura, 1989; Demerouti et al., 2019), participants in our e-intervention completed the course alone and solely from an individual perspective. Future digital implementations could incorporate more aspects of social interaction and feedback, for example, through additional virtual meetings. However, in their job crafting e-intervention, Verelst et al. (2021) demonstrated effects only on behavioral crafting. Instead, they assumed that the digital approach, with its commonly shorter time frame, could be less suitable for stimulating and depicting cognitive changes and that these might occur later on as a consequence of behavioral ones (Zhang & Parker, 2019). In contrast, our two studies revealed an increase in cognitive approach crafting two weeks after training (Study 1) and immediately afterward (Study 2). Future intervention studies should pay greater attention to the circumstances (e.g., digital or face-to-face, the content of the exercises, duration of the training, and characteristics of the participants) and analyze comparatively under which one or another form of crafting might be particularly effective. The same applies to the intentional training of avoidance-oriented crafting, which could, for example, become more constructive if not trained on its own but in combination with approach strategies (Seppälä et al. 2020).

A further issue, stemming from randomized assignment to one of the crafting modules, lies in the risk of a mismatch between the needs of the participants and the content of our intervention modules. While general job crafting is widely accepted as beneficial for broad groups of different backgrounds, jobs, or hierarchies (Wrzesniewski & Dutton, 2001), in a targeted training of individual forms it certainly plays a more significant role whether the respective strategies match the motivation and situation of the participants. For instance, individuals with already high workloads are more likely to show crafting by decreasing demands (Knight et al., 2021), while this strategy would be considered less helpful for participants who feel bored and crave new challenges at work. Future studies should focus even more on the individual needs of job crafters and could thus achieve greater goal adherence and more straightforward implementation through more tailored, motivation-matched interventions (Bock et al., 2001; Marcus et al., 1998).

Future research might also focus even more on long-term impacts and sustainability of effects. The present studies primarily examined immediate and short-term (time lag of two weeks) post-

intervention effects. While these findings highlight how easily and quickly cognitive approach crafting can be trained and results in positive changes, the long-term impact remains unclear. As such, we did not find any effects on the more distal outcomes of person-job fit and work engagement. Future studies could use multi-wave follow-up surveys to determine whether effects may only become apparent in the longer term or whether cognitive crafting might also influence more specific outcomes, such as the meaning of work (Berg et al., 2013), resilience (Van Wingerden & Poell, 2019), future coping strategies (Gardner & Fletcher, 2009), or role clarity (Devotto et al., 2020). More knowledge about the temporal nature of job crafting processes, more as one-off episodes or longer-term, iterative processes (Oldham & Hackman, 2010), could ultimately influence the fundamental use of interventions: Either as short impulses from time to time, for example, to respond quickly to current challenges, or more substantial employee development programs that teach skills from which employees benefit in the long term.

Our novel approach to content-specific training is a final inspiration for subsequent research. While the cognitive crafting of autonomy offered itself in a first step due to existing paradoxical effects of autonomy in the workplace, the idea of tailoring an intervention to specific use cases can be transferred to many others, such as joint crafting within teams (Mäkikangas et al., 2017; Tims, Bakker, Derks, et al., 2013), crafting of work-home boundaries (Demerouti et al., 2020; Haun et al., 2023) or crafting of networks (Wang et al., 2023).

Conclusion

In our aim of improving differentiation within job crafting interventions, our two interconnected studies offer a comprehensive exploration of individual effectiveness and underlying processes. Within our form- and content-specific approaches, we provide novel insights into the specific effectiveness of job crafting forms and significantly broaden the scope of existing interventions by targeted training of behavioral and cognitive as well as approach and avoidance-oriented job crafting forms. Cognitive approach crafting emerges as a powerful and effective strategy within our short, asynchronous online trainings. The effects of both studies underscore its potential as a practical means to instigate positive changes in employees' perspectives on their work. Delving deeper into the psychological process underlying cognitive approach crafting, we demonstrate a two-part change mechanism in the perception and appraisal of work characteristics. We emphasize the significance of more specific job crafting interventions in the future, recognizing the diversity within the job crafting construct and its potential for fostering positive changes in the workplace.

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Table 1

Definitions and examples for the four job crafting forms included in the intervention of Study 1 (adapted from Zhang & Parker, 2019)

Job Crafting Form	Definition	Example
Behavioral Approach Crafting	Actions to seek out and gain positive aspects at work	*A doctor investing more time and energy in learning new treatment techniques*
Behavioral Avoidance Crafting	Actions to reduce or mitigate negative aspects at work	*A doctor who teams up with a colleague for paperwork to utilize synergy effects and make the unloved task more enjoyable through social interaction*
Cognitive Approach Crafting	Cognitive changes to seek out and achieve positive aspects at work	*A doctor who consciously reminds herself regularly of positive feedback from patients to see herself more in the role of a person who initiates positive changes in the lives of others.*
Cognitive Avoidance Crafting	Cognitive changes to reduce or reframe negative aspects at work	*A doctor who consciously reframes every serious diagnosis as a starting point for important treatment, so that he sees himself less as a bearer of bad news.*

Table 2

Correlations among study variables within intervention groups combined (Study 1)

	1	2	3	4	5	6	7	8	9	10	11	12
1. B AP T1	(.77)											
2. B AV T1	-.05	(.72)										
3. C AP T1	.63**	-.03	(.73)									
4. C AV T1	.01	.53**	.13	(.70)								
5. PJ Fit T1	.33**	-.02	.34**	-.14	(.90)							
6. WE T1	.43**	-.20*	.49**	-.15	.76**	(.94)						
7. B AP T2	.69**	.01	.53**	-.02	.23**	.39**	(.84)					
8. B AV T2	.03	.66**	.01	.39**	-.02	-.14	.01	(.76)				
9. C AP T2	.49**	.07	.66**	.03	.32**	.40**	.69**	.08	(.81)			
10. C AV T2	.05	.40**	.07	.46**	-.02	-.06	.01	.51**	.16	(.74)		
11. PJ Fit T2	.27**	-.1	.35**	-.23**	.76**	.61**	.38**	-.14	.47**	-.16	(.93)	
12. WE T2	.42**	-.14	.36**	-.21*	.72**	.83**	.46**	-.16	.52**	-.07	.71**	(.94)

Note. $N = 136$, all four intervention groups combined. *** $p < .001$. ** $p < .01$. * $p < .05$. Cronbach's α coefficients in brackets. T1 = measurement at time 1, T2 = measurement at time 2. BAP = Behavioral approach crafting; CAP = Cognitive approach crafting; BAV = Behavioral avoidance crafting; CAV = Cognitive avoidance crafting; PJ Fit = Person-job Fit; WE = Work engagement.

Table 3

Descriptive statistics among all intervention groups and the control group (Study 1)

	Behavioral approach crafting group (B AP, *N* = 33)		**Behavioral avoidance crafting group** (B AV, *N* = 38)		**Cognitive approach crafting group** (C AP, *N* = 36)		**Cognitive avoidance crafting group** (C AV, *N* = 29)		**Control Group** (*N* = 37)	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
B AP T1	3.85	.71	3.85	.62	4.05	.45	3.75	.52	3.86	.51
B AP T2	3.90	.63	3.70	.73	3.96	.58	3.77	.61	3.75	.56
B AV T1	2.84	.67	2.45	.52	2.73	.58	2.61	.62	2.78	.43
B AV T2	2.71	.73	2.57	.52	2.72	.50	2.74	.60	2.87	.57
C AP T1	3.46	.65	3.58	.63	3.68	.54	3.52	.59	3.56	.48
C AP T2	3.73	.64	3.60	.71	3.92	.60	3.68	.54	3.50	.51
C AV T1	2.50	.55	2.30	.56	2.64	.41	2.37	.56	2.64	.39
C AV T2	2.76	.66	2.50	.53	2.75	.51	2.62	.64	2.72	.50
PJ Fit T1	3.43	1.01	3.70	.97	3.34	.99	3.54	.82	3.54	.97
PJ Fit T2	3.43	.91	3.46	1.08	3.37	1.00	3.53	.98	3.40	1.07
WE T1	4.18	1.39	4.31	1.21	4.11	1.31	4.35	.94	4.48	1.03
WE T2	4.37	1.22	4.14	1.20	4.08	1.25	4.29	1.06	4.28	1.18

Note. T1/T2 = measurement time 1 and 2 (pre- & post-intervention). B AP = Behavioral approach crafting (BAP), B AV = Behavioral Avoidance Crafting, C AP = Cognitive approach crafting, C AV = Cognitive avoidance crafting, PJ Fit = Person-job fit, WE = Work engagement.

Table 4

Analyses of variance (ANOVAs) for manipulation checks (effects of every group on corresponding job crafting form) and effects on person-job fit and work engagement (Study 1)

	F (df, df_{error})	p	Partial η^2
Behavioral approach crafting group (B AP)			
Behavioral approach crafting	2.30 (1, 67)	.134	.033
Person-job fit	1.06 (1, 67)	.307	.016
Work engagement	4.69 (1, 67)	.034	.065
Behavioral avoidance crafting group (B AV)			
Behavioral avoidance crafting	.067 (1, 73)	.797	.001
Person-job fit	.54 (1, 73)	.467	.007
Work engagement	.52 (1, 73)	.820	.001
Cognitive approach crafting group (C AP)			
Cognitive approach crafting	7.60 (1, 71)	.007	.097
Person-job fit	1.78 (1, 70)	.187	.025
Work engagement	2.08 (1, 69)	.154	0.29
Cognitive avoidance crafting group (C AV)			
Cognitive avoidance crafting	1.92 (1, 64)	.170	.029
Person-job fit	1.47 (1, 64)	.229	.022
Work engagement	2.07 (1, 63)	.155	.032

Note. Every group was tested separately against the control group, listed are interaction effects (time x group). N_{BAP} = 33, $N_{B\,AV}$ = 38, N_{CAP} = 36, $N_{C\,AV}$ = 29, $N_{control\ group}$ = 37.

Table 5

Descriptive statistics of study variables for the intervention and control group (Study 2)

	Intervention group *(N = 47)*		**Control group** *(N = 58)*	
Variable	*M*	*SD*	*M*	*SD*
Cognitive approach crafting T1	3.75	.66	3.57	.79
Cognitive approach crafting T2	4.01	.60	3.56	.76
Work-scheduling autonomy T1	3.73	.97	3.85	.86
Work-scheduling autonomy T2	4.04	.86	3.81	.83
Resource-appraisal of work-scheduling autonomy T1	3.72	1.24	4.00	.91
Resource-appraisal of work-scheduling autonomy T2	4.20	1.04	4.13	.91
Demand-appraisal of work-scheduling autonomy T1	2.71	1.15	2.80	1.28
Demand-appraisal of work-scheduling autonomy T2	2.33	1.12	2.37	1.28

Note. T1/T2 = measurement time 1 and 2 (pre- & post-intervention).

Figure 1

Illustration of the intervention procedure (Study 1)

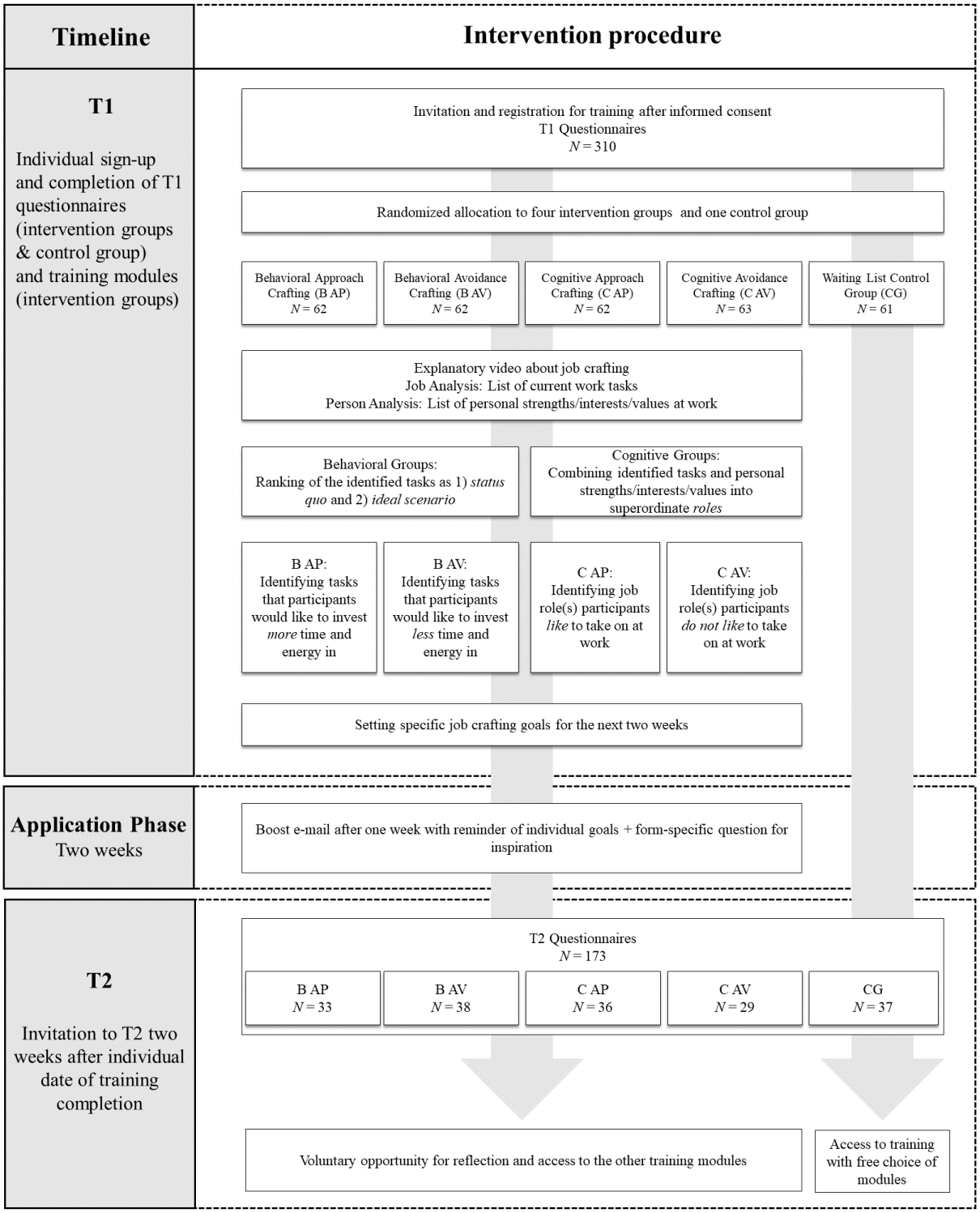
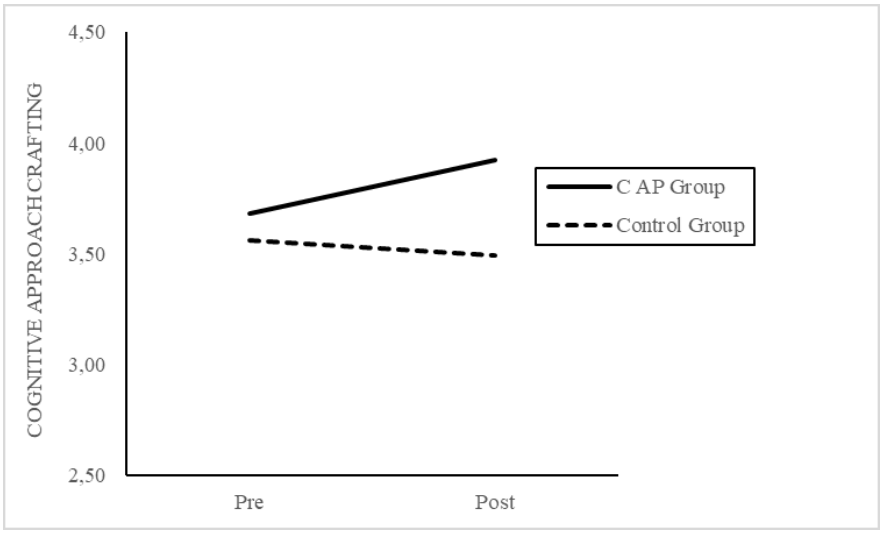


Figure 2

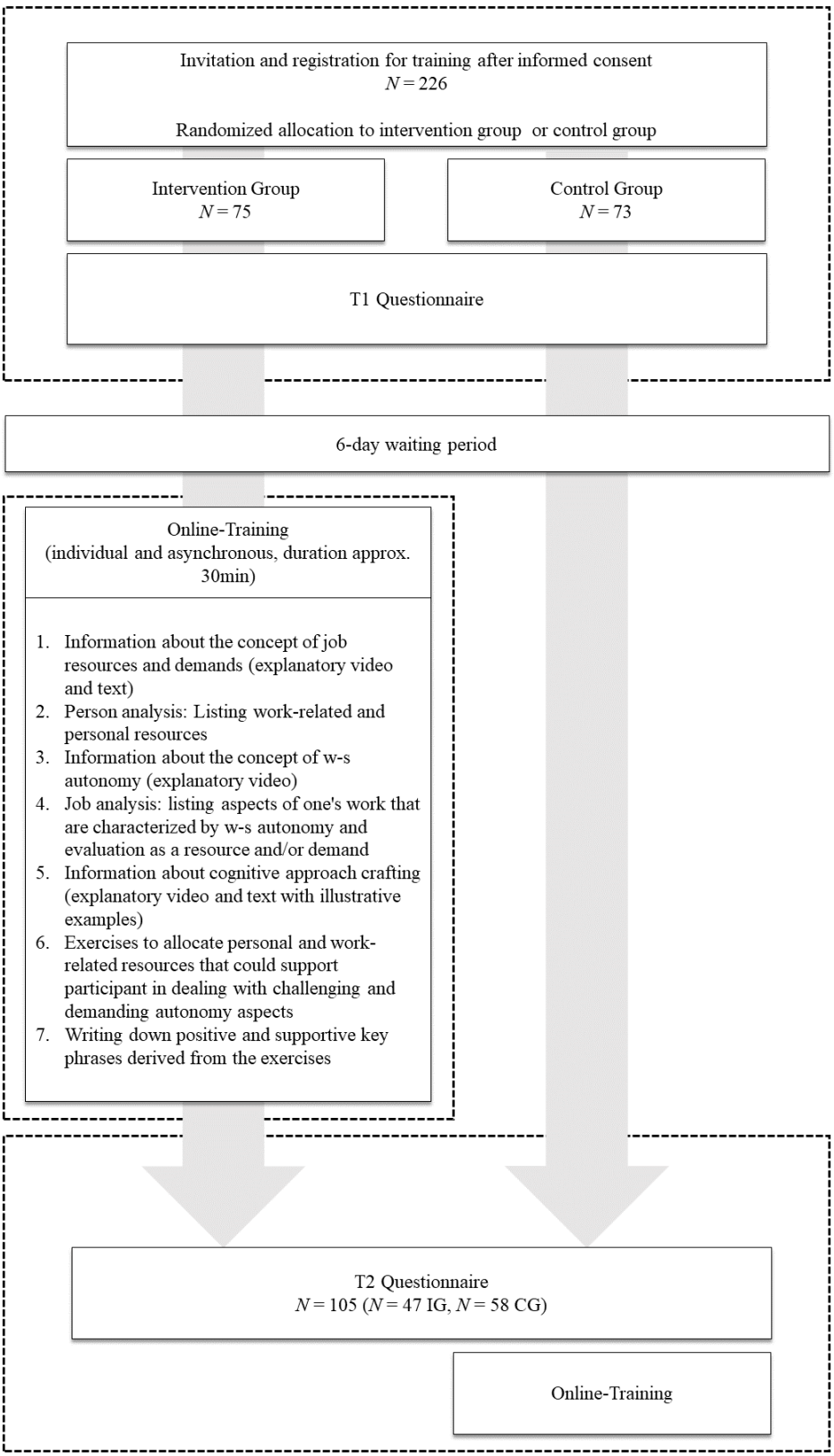
Interaction effect of group (cognitive approach crafting intervention and control group) and time (T1 and T2) for cognitive approach crafting (Study 1)



Note. *N* CAP group = 36, *N* Control group = 37.

Figure 3

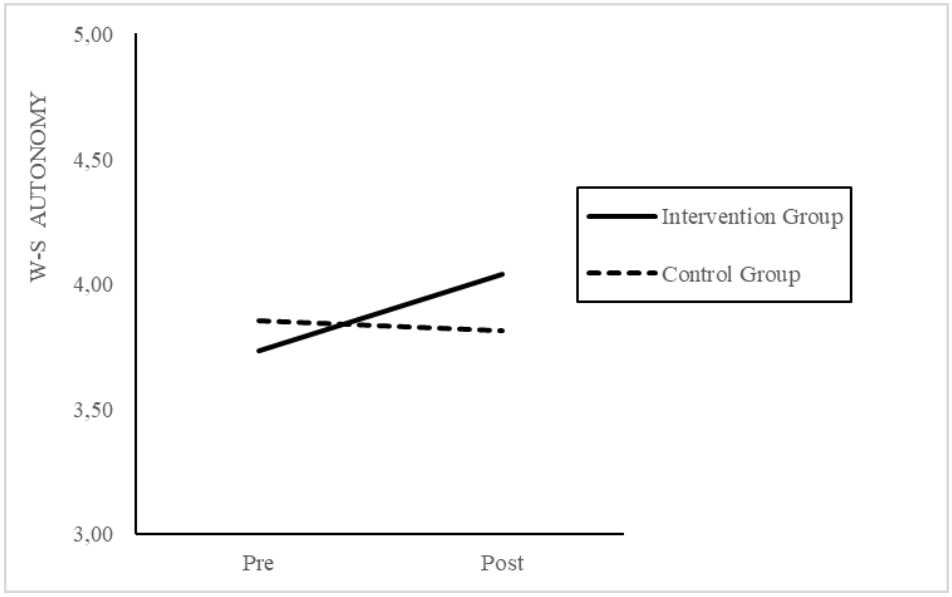
Procedure for intervention and control group (Study 2)

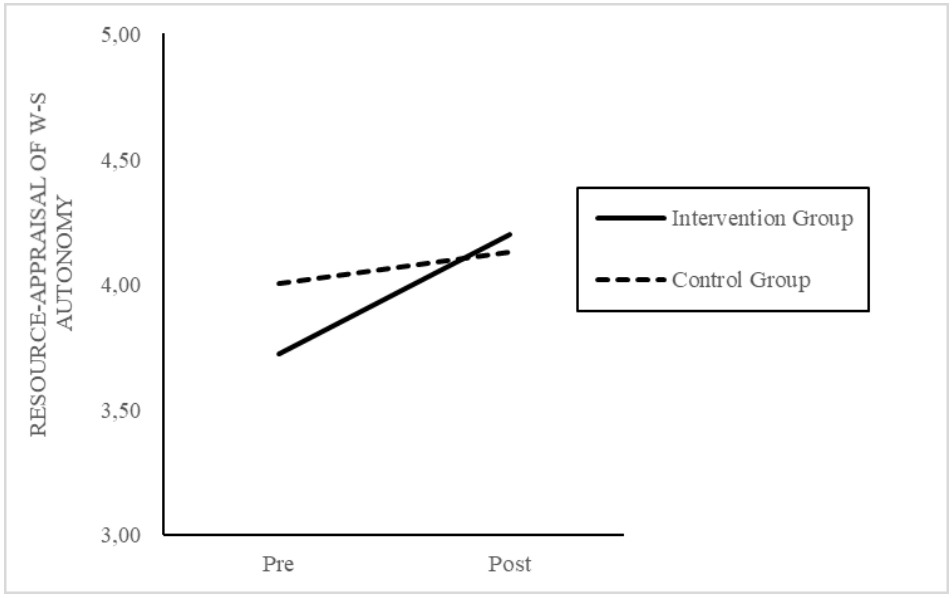


Note. W-s autonomy = work-scheduling autonomy.

Figure 4

Interaction effects of group (cognitive approach crafting intervention and control group) and time (pre and post) for work-scheduling autonomy and resource-appraisal of work-scheduling autonomy (Study 2)





Note. *N* Intervention group = 47, *N* Control group = 58. W-s autonomy = work-scheduling autonomy.

Electronic supplementary material 1 (Study 1)

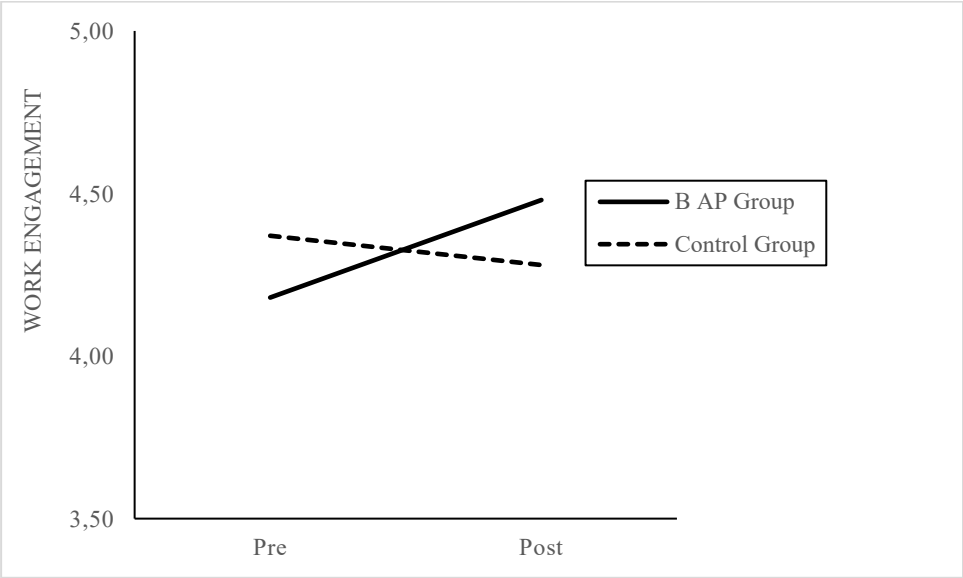
Table E1

Content and key elements of the different intervention groups/modules (Study 1)

Module	Examination of task & person analysis	Identification of focus tasks/roles	Example questions for setting goals	Boost in application phase (two weeks following the intervention)
Behavioral Approach Crafting	▪ Creating an ideal scenario regarding prioritization of work tasks	▪ Take a particular look at the tasks that have moved up in your ideal scenario compared to the status quo. You would like to devote more time and energy to these tasks in your day-to-day work. Please select the 1-3 most important of these tasks for you.	▪ Can you initiate new projects/ideas/tasks or join existing ones to make the task more central to your work? ▪ Are there any people who could support you in investing more time and energy in the task?	▪ Is there a work task that interests you but that you have never done before? Think about how you could integrate this task into your current work.
Behavioral Avoidance Crafting	▪ Creating an ideal scenario regarding prioritization of work tasks	▪ Take a particular look at the tasks that have moved down in your ideal scenario compared to the status quo. You would like to devote less time and energy to these tasks in your day-to-day work. Please select the 1-3 most important of these tasks for you.	▪ How could you modify the task or aspects of the task to make it more compatible with your interests, values, and strengths? ▪ Are there people who could support you in investing less time and energy in the task? Can you hand over tasks or certain aspects of tasks?	▪ Are there any tasks in your work that could be simplified? Think about what the first step could be.
Cognitive Approach Crafting	▪ Grouping similar tasks, values, interests, and strengths into superordinate roles	▪ Below you can see the roles you currently take on at work. Please select the 1-3 role(s) you particularly enjoy or that you would like to assume more often.	▪ Which aspects of your work make a significant contribution? How can you make yourself particularly aware of this? ▪ What thoughts (e.g. in the form of short sentences) help you to perform your desired role more often?	▪ Are there aspects of your work that best reflect your interests? Think more about how these aspects fit particularly well with your identity.
Cognitive Avoidance Crafting	▪ Grouping similar tasks, values, interests, and strengths into superordinate roles	▪ Below you can see the roles you currently take on at work. Please select the 1-3 role(s) in which you would rather not see yourself at work or which you would like to take on less.	▪ Are there aspects of your work that you can look at from a different perspective so that they better suit you, your interests and strengths and you perceive them more positively? ▪ Are there people who could help you perceive your role at work less negatively?	▪ What would stop working in your organization if you no longer performed your job? Think about how even activities that you may perceive as less positive can have a significant impact on the overall success of your organization.

Figure E2

Interaction effect of group (behavioral approach crafting intervention and control group) and time (T1 and T2) for work engagement (Study 1)



Note. *N* B AP group = 33, *N* Control group = 37.

Table E3

Analyses of variance (ANOVAs) for manipulation checks (effects of every group on corresponding job crafting form) and effects on outcomes, including main effects (time) and interaction effects (time x group)

	F (df, df_{error})	p	Partial η^2
Behavioral approach crafting group (B AP)			
B AP crafting *(main effect time)*	0.90 (1, 67)	.765	.001
B AP crafting *(interaction time x group)*	2.30 (1, 67)	.134	.033
Person-job fit (main effect time)	.50(1, 67)	.480	.007
Person-job fit (interaction time x group)	1.06 (1, 67)	.307	.016
Work engagement (main effect time)	.01(1, 67)	.922	.000
Work engagement (interaction time x group)	4.69 (1, 67)	.034	.065
Behavioral avoidance crafting group (B AV)			
B AV crafting *(main effect time)*	3.41 (1, 73)	.069	.045
B AV crafting *(interaction time x group)*	.067 (1, 73)	.797	.001
Person-job fit (main effect time)	7.39(1, 73)	.008	.092
Person-job fit (interaction time x group)	.54 (1, 73)	.467	.007
Work engagement (main effect time)	8.16 (1, 73)	.006	.100
Work engagement (interaction time x group)	.05 (1, 73)	.820	.001
Cognitive approach crafting group (C AP)			
C AP crafting *(main effect time)*	2.78 (1, 71)	.099	.038
C AP crafting *(interaction time x group)*	7.60 (1, 71)	.007	.097
Person-job fit (main effect time)	1.36 (1, 70)	.248	.019
Person-job fit (interaction time x group)	1.78 (1, 70)	.187	.025
Work engagement (main effect time)	2.92 (1, 69)	.092	.041
Work engagement (interaction time x group)	2.08 (1, 69)	.154	.029
Cognitive avoidance crafting group (C AV)			
C AV crafting *(main effect time)*	7.36 (1, 64)	.007	.107
C AV crafting *(interaction time x group)*	1.92 (1, 64)	.170	.029
Person-job fit (main effect time)	1.73 (1, 64)	.193	0.26
Person-job fit (interaction time x group)	1.47 (1, 64)	.229	.022
Work engagement (main effect time)	2.85 (1, 63)	.096	.043
Work engagement (interaction time x group)	2.07 (1, 63)	.155	.032

Note. Every group was tested separately against the control group. $N_{BAP} = 33$, $N_{B\,AV} = 38$, $N_{CAP} = 36$, $N_{C\,AV} = 29$, $N_{control\ group} = 37$.

Table E4

Analyses of variance (ANOVAs) for side effects of intervention modules (effects of every group on job crafting forms of other modules). including main effects (time) and interaction effects (time x group)

	F (df, df_{error})	p	Partial η^2
Behavioral approach crafting group (B AP)			
B AV crafting *(main effect time)*	.28 (1, 67)	.596	.004
B AV crafting *(interaction time x group)*	3.79 (1,67)	.056	.054
C AP crafting *(main effect time)*	3.48 (1, 67)	.067	.049
C AP crafting *(interaction time x group)*	7.87 (1, 67)	.007	.105
C AV crafting *(main effect time)*	6.15 (1, 67)	.016	.084
C AV crafting *(interaction time x group)*	1.54 (1, 67)	.219	.022
Behavioral avoidance crafting group (B AV)			
B AP crafting *(main effect time)*	6.81 (1, 73)	.011	.085
B AP crafting *(interaction time x group)*	.72 (1, 73)	.679	.002
C AP crafting *(main effect time)*	.12 (1, 73)	.73	.002
C AP crafting *(interaction time x group)*	.78 (1, 73)	.379	.011
C AV crafting *(main effect time)*	4.22 (1, 73)	.044	.055
C AV crafting *(interaction time x group)*	.72 (1, 73)	.399	.010
Cognitive approach crafting group (C AP)			
B AP crafting *(main effect time)*	3.98 (1, 71)	.060	.053
B AP crafting *(interaction time x group)*	.02 (1, 71)	.889	.000
B AV crafting *(main effect time)*	.54 (1, 71)	.465	.008
B AV crafting *(interaction time x group)*	.64 (1, 71)	.428	.009
C AV crafting *(main effect time)*	2.49 (1, 71)	.119	.034
C AV crafting *(interaction time x group)*	.044 (1, 71)	.834	.001
Cognitive avoidance crafting group (C AV)			
B AP crafting *(main effect time)*	.66 (1, 64)	.420	.010
B AP crafting *(interaction time x group)*	1.27 (1, 64)	.264	.019
B AV crafting *(main effect time)*	7.64 (1, 64)	.007	.107
B AV crafting *(interaction time x group)*	1.92 (1, 64)	.170	.029
C AP crafting *(main effect time)*	.83 (1, 64)	.365	.013
C AP crafting *(interaction time x group)*	3.80 (1, 64)	.056	.056

Note. Every group was tested separately against the control group. $N_{BAP} = 33$, $N_{B\,AV} = 38$, $N_{CAP} = 36$, $N_{C\,AV} = 29$, $N_{control\ group} = 37$.

Electronic supplementary material 2 (Study 2)

Table E5

Descriptive statistics and Intercorrelations among study variables in the overall sample of Study 2 (intervention and control group combined)

	M	*SD*	1	2	3	4	5	6	7	8
1. C AP CraftingT1	3.67	.75	(.70)							
2. C AP Crafting T2	3.76	.73	.74**	(.74)						
3. W-S Autonomy T1	3.75	.91	.10	.07	(.85)					
4. W-S Autonomy T2	3.90	.84	.14	.26**	.83*	(.86)				
5. Resource-Appraisal of W-S Autonomy T1	3.87	1.12	.13	.10	.75**	.60**	(.87)			
6. Resource-Appraisal of W-S Autonomy T2	4.16	.97	.11	.24*	.66**	.72**	.67**	(.92)		
7. Demand-Appraisal of W-S Autonomy T1	2.67	1.25	-11	.07	-.29**	-.25*	-.30**	-.24*	(.88)	
8. Demand-Appraisal of W-S Autonomy T2	2.35	1.20	-.01	.02	-.35**	-.30**	-.22*	-.31*	.47**	(.93)

Note. $N = 105$. ** $p < .01$. * $p < .05$. Cronbach's α coefficients in brackets. T1 = measurement at time 1, T2 = measurement at time 2. CAP = Cognitive approach crafting; W-S autonomy = work-scheduling autonomy.

Chapter 5 – General Discussion

1. Summary of results

This dissertation's central aim was to advance differentiation within the job crafting construct, focusing on theoretical perspectives, different job crafting forms, and their unique underlying mechanisms. Through a series of diverse studies, I critically examined the existing frameworks and methodologies in the job crafting literature, offering new insights and directions for future research. The overall findings of this dissertation can be summarized across the three focuses of the included papers:

(1) *Theoretical perspectives on job crafting*: One of the dissertation's core findings is the clear distinction between the role and resource perspectives on job crafting. Discrepancies in their individual and shared factorial structures, as well as missing relationships between theoretically assumed closely related sub-dimensions, demonstrated that these perspectives do not represent a uniform job crafting construct and should not be used interchangeably. Instead, the results underpin the value of recent theoretical integrative efforts and demonstrate the suitability of two possibilities of over-arching factors (theoretically driven *approach and avoidance* crafting; inductively derived *targets of crafting*).

(2) *Different forms of job crafting:* The joint examination of behavioral (approach and avoidance) and cognitive (approach and avoidance) crafting forms revealed that while these forms are positively related, they do not seem to exhibit reciprocal influences over time. This suggests that different crafting forms might be governed by distinct processes. The exceptional stability of all examined forms and the absence of causal links to traditionally assumed antecedents and outcomes underscore the need for a deeper exploration of individual mechanisms and highlight the importance of employing longitudinal and experimental studies to unravel the specific processes of different job crafting forms.

(3) *Individual effectiveness and mechanisms in interventions:* Contrary to previous time-consuming and broadly focused interventions, this thesis demonstrated that job crafting forms can also be effectively trained individually through a short, asynchronous, and modular online intervention. Specifically, two intervention studies successfully trained *cognitive approach crafting* for the first time. While focusing the training on the specific work characteristic of autonomy, participants' perceived level of work-scheduling autonomy and its appraisal as a resource increased, providing novel evidence of a two-part mechanism of cognitive crafting.

2. Theoretical contributions

Across a total of five cross-sectional, longitudinal, and intervention studies among German and English-speaking employees, this dissertation challenges and refines existing assumptions in the job crafting literature, offering a more differentiated understanding of the construct within three overarching contributions to job crafting theory.

Critical re-evaluation and refinement of the job crafting construct

Due to their rapid development within modern work contexts, many proactivity-, change- or innovation-related constructs suffer from a lack of "construct clarity" – unclear overlaps and discrepancies between different constructs as well as within the operationalizations and conceptualizations of individual constructs (Tornau & Frese, 2013). This also holds true for the job crafting literature as it comes with several theoretical models, a variety of different measurement instruments and operationalizations (e.g., as a general construct or via individual facets), and a growing number of conceptually related extensions such as career crafting (Tims & Akkermans, 2020), study crafting (Körner et al., 2021), or leisure crafting (Petrou & Bakker, 2016). In this context, Potočnik and Anderson (2016) identify the dysfunctions of *construct confusion* – interchangeable use or unclear definition of concepts – and *construct drift* – shifting the investigated focus of a phenomenon over time, changing the exact content aspects so that the construct becomes something quite different. The parallel existence of different theoretical perspectives that postulate distinct forms and mechanisms is a clear example of construct confusion within the job crafting literature, while the overarching strong focus on behavioral, approach-oriented forms symbolizes a significant construct drift. They entail severe limitations on the construct's validity as well as the comparability and generalizability of evidence, and can thus be reasons for ambiguous or puzzling results in the literature, as can be clearly recognized for example in the inconsistent evidence of job crafting interventions.

The nuanced exploration of job crafting presented in this research, drawing upon the original theoretical perspectives (Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001), a variety of different measurement instruments (Demerouti & Peeters, 2018; Lopper et al., 2024; Petrou et al., 2012; Vogt et al., 2015; Weseler & Niessen, 2016; Wrzesniewski et al., in preparation) and integrative approaches (Bruning & Campion, 2018; Zhang & Parker, 2019) refines the construct to better capture its complexity. The findings on internal and shared structures of measurement instruments stemming from the different theoretical perspectives (Paper 1), as well as on the dynamics between various job crafting forms (Paper 2) clarify the construct‘s structure as multifaceted with distinct sub-forms that can be integrated via overarching factors (such as approach and avoidance crafting), but not into a general overall job crafting factor (Lopper et al., 2024; Zampetakis, 2021; Zhang & Parker, 2019). The specific and empirical comparison of the original role and resource perspectives, which prove to be fundamentally different conceptions of job crafting and are not as interchangeable as previously thought, is a pivotal contribution that complements and reinforces recent integrative theoretical efforts and impacts the evaluation and comparison of existing evidence.

In sum, this work encourages a shift towards employing overarching higher-order factors, such as approach and avoidance crafting, or focusing more precisely on specific forms of job crafting in future research endeavors (e.g. cognitive approach crafting), enhancing the understanding for more accurate theoretical explorations and empirical investigations.

Systematic exploration of different job crafting forms and their mechanisms

In contrast to the stark focus of the existing literature on behavioral and approach-oriented forms of job crafting (Oprea et al., 2019; Rudolph et al., 2017), this dissertation significantly broadens the scope by examining various specific forms of job crafting, both in their joint dynamics and in relation to their individual effects and underlying mechanisms.

The comparison of the original theoretical perspectives (Paper 1) already indicated some positive relations between different forms of job crafting. However, these were considerably smaller than theoretically assumed, especially between forms of different perspectives (e.g., between cognitive crafting and different behavioral forms of the resource perspectives). A differentiated investigation of behavioral (approach and avoidance) and cognitive (approach and avoidance) crafting in a joint, longitudinal approach (Paper 2) could replicate positive correlations between the forms, but found no reciprocal influences over time. This provides an indicator that the different job crafting forms may exhibit rather distinct processes, the individual mechanisms of which still need to be examined more precisely. Also, the lack of causal links to autonomy and person-job fit in this study highlights the need for a deeper inquiry into the individual processes of different job crafting forms. The traditionally assumed causal sequences of job crafting antecedents and outcomes have so far been largely grounded in cross-sectional data (e.g., Rudolph et al., 2017). As they did not hold up in our adequate longitudinal setting, we pose the question of whether the postulated relationships are really causal in nature or mere correlates of job crafting. Linked to the need for a more precise differentiation of the change mechanisms behind different job crafting forms is the unexpected finding of their high stability, as it particularly challenges the notion of job crafting as inherently flexible and dynamic (Bakker & Oerlemans, 2019; Petrou et al., 2012). This insight suggests that job crafting strategies may represent a rather stable aspect of individuals' interaction with their work, necessitating a re-evaluation of how interventions are traditionally designed and implemented.

In the subsequent intervention studies of Paper 3, we adopted an innovative and differentiated approach by aiming to train four job crafting forms individually for the first time. Compared to existing generic, overall job crafting interventions (Hulshof et al., 2020; Kuijpers et al., 2020; Sakuraya et al., 2020; Van Wingerden, Bakker, et al., 2017), this novel approach allowed us to gain more precise knowledge about the individual effectiveness of different job crafting forms. We provided the first evidence of specifically training cognitive approach crafting, which represents a major advancement next to the strongly behavior-focused existing interventions (Oprea et al., 2019), as we demonstrate that such cognitive crafting strategies can be externally influenced and thus explicitly trained, separately from behavioral crafting. In addition, we advance the realistic evaluation of effectiveness with a rigorous

experimental design. Generalized training programs that mix different forms of job crafting have long been the status quo within job crafting interventions (e.g., Van den Heuvel et al., 2015; Van Wingerden et al., 2016; Dubbelt et al., 2019) and have led to some kind of "black box problem" (Biron, 2012; Pawson & Tilley, 1997): While intervention studies focus strongly on work-related outcomes such as work engagement or performance and some indeed indicate positive effects, we are unable to pinpoint their underlying causes within the trainings due to methodological limitations and a lack of specificity in terms of content. This need for greater differentiation in the context of interventions becomes apparent in our results. When clearly separating modules for individual crafting forms, the training yielded only the aforementioned effect on cognitive approach crafting, none on behavioral (approach or avoidance) or cognitive avoidance crafting. These findings cast doubt on a general effect within interventions and imply that a "job crafting intervention" in a general sense might not actually exist, as only individual specific forms take effect. Thereby, this research demonstrates that the job crafting intervention literature urgently needs to move beyond an overgeneralized understanding of the construct and instead apply more differentiated frameworks incorporating a more precise treatment of individual forms and their specific mechanisms.

Although the literature contains a wide range of findings on work-related outcomes of job crafting, such as work engagement, job satisfaction, or performance (Frederick & VanderWeele, 2020; Lichtenthaler & Fischbach, 2019; Rudolph et al., 2017), there is significantly less knowledge on the exact mechanisms behind different job crafting forms. Influenced by the dominance of the resource perspective and its link to the JD-R model, a person-environment fit process has often been assumed. This suggests that crafters increase their fit with the job by proactively changing their work characteristics, a mechanism that has already been demonstrated empirically for individual behavioral forms (Demerouti et al., 2015; Tims et al., 2013). In this thesis, this general principle is extended by the first detailed exploration of an underlying psychological mechanism of cognitive approach crafting in terms of a changed *perception* and *appraisal* of a work characteristic, another contribution that will be discussed in more detail in the following section.

In conclusion, this thesis demonstrates the necessity of differentiating various forms of job crafting regarding their individual processes and effectiveness and contributes to the illustration of one novel and specific mechanism of change. Thereby, I contribute to the future development of a more coherent job crafting theory by demonstrating that existing traditional and integrative theoretical frameworks do not yet adequately explain how different forms of job crafting emerge, operate, and what individual outcomes they entail.

Emphasizing and illustrating cognitive processes in job crafting

Whether job crafting can also take place on a purely cognitive level is a central divide in the literature to date. The theoretical resource perspective explicitly excludes cognitive crafting and frames it more as passive coping with external circumstances instead of proactive change (Tims & Bakker, 2010). This, in turn, has led to purely behaviorally focused measurement instruments and a strong

emphasis on crafting behaviors throughout the empirical literature. Qualitative studies (Lazazzara et al., 2020) and individual findings (Hommelhoff et al., 2021; Hornung, 2019), on the other hand, repeatedly demonstrate that employees use a variety of cognitive crafting strategies, such as reframing perceptions or emphasizing the meaningfulness of a job, to craft their jobs, reinforcing the pivotal role of cognitive crafting postulated in the original role perspective (Wrzesniewski & Dutton, 2001). Recent integrative frameworks (Bruning & Campion, 2018; Zhang & Parker, 2019) and corresponding measurement instruments (Lopper et al., 2024) meanwhile also reflect cognitive crafting explicitly, underscoring the need for a deeper examination of its peculiarities.

The research conducted for this dissertation underpins the importance of examining cognitive crafting as a distinct form of job crafting. While positive correlations between cognitive and behavioral crafting forms were found in several studies of this thesis (Paper 1, 2, and 3), the different forms seem to operate rather separately and do not influence each other when investigated longitudinally (Paper 2). Furthermore, cognitive crafting in this study showed no causal links with theoretically central antecedents and outcomes, i.e., autonomy and person-job fit, both of which have been demonstrated for behavioral crafting forms in previous studies (Tims et al., 2016; Vanbelle et al., 2017). Although the differences between behavioral and cognitive crafting in terms of varying antecedents and outcomes could only be shown to a limited extent in this research, the results nevertheless stress the need to dissect specific processes more precisely in the future.

Going beyond previous very extensive behavioral job crafting interventions (Gordon et al., 2018; Van den Heuvel et al., 2015; Van Wingerden et al., 2016), this thesis furthermore demonstrates the first successful specific training of cognitive approach crafting – using an asynchronous and brief (approx. 30 minutes) e-intervention resulting in immediate effects afterward. Using a novel approach of specifying the content of another intervention (on the cognitive crafting of autonomy), we were also able to illustrate a specific underlying process behind cognitive approach crafting through this explicit example, resulting in a two-part mechanism of change: Participants increased their perceived level of autonomy, as well as their appraisal of it as more as a resource. Thus, we demonstrated for the first time a cognitive continuation of a central mechanism of change that had previously only been shown for behavioral crafting (Holman et al., 2023). Not only can work characteristics be altered directly (e.g., in the form of increased or new resources), but their perception and appraisal can also be actively changed through cognitive crafting. These findings advance both the comparison of behavioral and cognitive crafting, and the illustration of concrete underlying processes of cognitive crafting, which will contribute to a more precise theoretical understanding of this previously neglected form in the future.

By emphasizing hitherto unexplored cognitive processes, this thesis not only advocates for a conceptual understanding of job crafting that includes cognitive forms, but also illustrates a unique mechanism of these strategies in fostering positive changes in employees' perceptions and appraisal of their work.

3. Practical implications

Several practical implications arise from the results of the present dissertation regarding construct validity, the differentiation of various job crafting forms, and the potential and uniqueness of cognitive crafting.

Ensuring construct validity in job crafting applications

Like researchers, organizations and practitioners seeking to foster job crafting among their employees must pay careful attention to the applied job crafting models, measures, and interventions, as well as the generalizability of the literature on which they rely. The diversity within the job crafting literature suggests that not all initiatives labeled as *job crafting* target the same behaviors, cognitive changes, or outcomes. This variance highlights the importance of precisely naming and applying job crafting concepts in organizational practices. Organizations should ensure that the specific aspects of job crafting they wish to promote are clearly defined and communicated, aligning intervention goals with the desired form of job crafting (behavioral or cognitive, approach or avoidance) to maximize effectiveness.

Adopting a process perspective on job crafting

The unexpected stability of job crafting behaviors and cognitions over time, as revealed in Paper 2 of this thesis, suggests that significant changes in job crafting practices may require substantial input. Minor tweaks or general interventions may not suffice to alter established job crafting patterns. For organizations, this underscores the necessity of designing interventions with strong, targeted inputs that can effectively stimulate the desired changes. Such interventions may need to be more intensive in their input (for example, through active exercises like role plays to foster implementation, reminders of ongoing crafting goals, or reflections throughout the process to identify and deal with hindrances) or more personalized to meet the specific needs and preferences of individual employees. For example, the cognitive approach crafting intervention in Paper 3 was successful even though it was very short, possibly because it was easily accessible and could be carried out completely at an individual pace through its implementation as an asynchronous e-intervention. Organizations might also encourage employees to view job crafting as a continuous process and general tool rather than a one-time action (Bruning & Campion, 2018). They should implement support structures that allow for reassessment and adjustment of job crafting goals and strategies, utilizing social and supervisory support effects on crafting (Audenaert et al., 2020; Wang et al., 2020). Besides these implications for training, high stability also implies that individuals who engage in a lot of job crafting will always tend to do so. Organizations should therefore consciously include employee proactivity in their practices. For example, through the design of jobs that are as flexible as possible to allow room for crafting, and in implementing strategies to align an individual's crafting with organizational goals through feedback and managerial support (Dierdorff & Jensen, 2018; Oprea et al., 2019).

Advancing specificity in job crafting interventions

The overall findings of this thesis advocate for a more nuanced and specific approach to job crafting interventions, with the demonstration of novel methodological approaches in terms of form- and content-specific training. Compared to existing purely behavioral interventions, which place high time and economic demands on organizations taking days to several weeks, organizations could consider interventions that only promote specific types of job crafting. In light of this research's findings, particularly focusing on cognitive strategies that employees can easily adopt and that show immediate effects, turns out to be recommendable. Furthermore, digital implementations offer an accessible medium for interventions in the future, allowing employees to engage with job crafting exercises at their convenience and pace (Derouin et al., 2005; Verelst et al., 2021; Wang et al., 2023). This approach not only makes job crafting more accessible but also enables a personalized experience where employees can focus on the crafting strategies most relevant to their needs.

Responsibility considerations in the application of (especially cognitive) crafting strategies

The great strength of the job crafting construct is its focus on individual, proactive change, which also poses a risk of shifting the full responsibility for work design onto individual employees. Evidence on antecedents and boundary conditions (Petrou et al., 2012; Rofcanin et al., 2019; Rudolph et al., 2017; Slemp et al., 2015), however, demonstrates that circumstances play a role in the occurrence and success of job crafting. Furthermore, not every job crafting effort results in actual, successful changes to the job. For example, the form of reducing demands, which could be an appropriate remedy for excessive workload, does not actually succeed in decreasing work demands (Tims et al., 2013). This may be because it goes beyond the influence of individual job crafters, and they always operate within the boundaries of predefined tasks, responsibilities, and interdependencies.

Given the potential of cognitive job crafting to influence employee perceptions and appraisal of possible detrimental work characteristics, such as paradoxical effects of autonomy (Paper 2 of this thesis), similar applications can be envisaged in relation to high workload (Knight et al., 2021), emotionally demanding labor (Yang et al., 2022), or turnover intentions (Hommelhoff et al., 2021). In doing so, there might be a risk of using such strategies to gloss over persistent detrimental work situations. This thesis issues a clear warning against such strategies, as threats to the health and well-being of employees naturally remain. A combination of job crafting with top-down work design approaches is particularly powerful and necessary (Parker & Knight, 2023). It is especially advisable for organizations to establish clear ethical guidelines for the application of cognitive job crafting strategies, ensuring they contribute positively to employees' job perceptions without negating the necessity for tangible improvements in work conditions.

4. Limitations and future research

The following section identifies limitations of the presented studies and complements them with derived suggestions for future research.

Further differentiation of job crafting forms

This thesis advanced job crafting research by emphasizing the significance of a more differentiated understanding of the construct. Still, further elaborations are needed to carry on a comprehensive distinction of various job crafting forms. Although the first joint and longitudinal examination in Paper 2 provided significant insights into reciprocal influences and the stability of behavioral (approach and avoidance) and cognitive (approach and avoidance) crafting, the lack of associations between all investigated crafting forms and the presumed antecedent of autonomy and outcome person-job fit limited the planned comparison of respective influences. Previous evidence for such theoretically assumed causal sequences (Tims & Bakker, 2010; Wrzesniewski & Dutton, 2001) is often based on purely cross-sectional data (Rudolph et al., 2017) and mainly exists for the resource perspective and thus behavioral, rather approach-oriented crafting forms (Tims et al., 2015a). Future research should, therefore, focus on investigating the complexity of distinct antecedents, outcomes, and mechanisms for a broader range of job crafting forms (Zhang & Parker, 2019), utilizing adequate longitudinal or experimental methods to draw conclusions. I will illustrate specific examples in the following.

So far, the literature already provides some evidence for rather contrasting antecedents and outcomes of approach and avoidance crafting (Hakanen et al., 2018; Lichtenthaler & Fischbach, 2019; Lopper et al., 2024; Zhang & Parker, 2019). In the future, more consideration should be given to behavioral versus cognitive forms in order to illuminate, for example, in which jobs or environments cognitive crafting can be most useful or which outcomes might be particularly easily influenced by it (Zhang & Parker, 2019). This issue also needs to be clarified in the context of intervention studies. While Verelst et al. (2021), for example, assume that cognitive crafting is more difficult or slower to train as its effects may take longer to unfold, in Paper 3 of this thesis, cognitive approach crafting appeared to be particularly effective in the context of a short, asynchronous e-intervention, whereas behavioral crafting forms were unchanged by it. One potential explanation for this is that behavioral crafting in interventions especially benefits from the incorporation of social contexts (Oprea et al., 2019), which is also reflected in the consideration of social cognition theory aspects in many existing interventions (Demerouti et al., 2019). They explicitly utilize group settings, discussions among participants, and sharing of personal stories as possible learning mechanisms (Van den Heuvel et al., 2015), whereas our e-intervention related purely to the perspective of the individual. The modular training approach introduced in this research could be expanded in the future to identify when, for whom, and in which contexts specific job crafting trainings prove to be effective. This could include both personal and circumstantial factors. Since the basic personality tendencies approach and avoidance temperament have already been associated with the corresponding approach and avoidance crafting (Bipp & Demerouti, 2015), future studies could also consider better matching the motivational tendencies of participants with the orientation of the training. Job crafting in general has also proven to be a helpful tool for employees in times of organizational change (Demerouti et al., 2021). Since such situations are

particularly associated with emotional challenges to employees' identities (Van Dijk & Van Dick, 2009), future research could shed light on the potential of cognitive crafting in this context. These strategies could offer a concrete way to proactively deal with changing roles and thus mitigate threats to well-being.

While the focus of this research was primarily on beneficial outcomes, future studies should also examine possible associated risks of different crafting forms. There is already evidence that behavioral approach crafting might also lead to excessive demands and burnout (Harju et al., 2021; Lebel et al., 2023) and that behavioral avoidance crafting tends to be detrimental to performance or job satisfaction (Demerouti et al., 2015; Lichtenthaler & Fischbach, 2019). Such possible negative effects are still unclear in terms of cognitive forms. Theoretical models primarily point to the positive impact of cognitive crafting on the meaningfulness of a job (Berg et al., 2013; Wrzesniewski & Dutton, 2001), and this thesis has also shown a positive role for a resource-oriented handling of challenging work characteristics. However, there are also potential ways in which (especially high levels of) cognitive crafting may lead to negative consequences. For example, the mental examination of one's job could go so far that it tips over into rumination (Sanz-Vergel et al., 2023), and that these thoughts cannot be turned off after work, thus hindering detachment and crossing work-home-boundaries (Sonnentag & Niessen, 2020). Especially when stimulating cognitive crafting in future interventions, such possible harmful effects should be considered and addressed. If the cognitive examination of the job and its meaningfulness ends up being rather negative (because an individual realizes that the job is much less suited to them than they thought, or they become aware of a lack of meaningfulness), this may ultimately lead to an intention to quit. On another note, cognitive crafting strategies could be used to gloss over stressful, unchangeable working conditions, making employees stay longer in an unsuitable or stressful job instead of quitting (Hommelhoff et al., 2021).

Furthermore, the studies within this dissertation only examined direct and linear effects. In the future, the consideration of individual moderators and mediators may also help to differentiate distinct mechanisms of crafting forms, for example, the influence of personality factors such as the need for cognition (Cacioppo & Petty, 1982) and characteristics of the job such as interdependence (Dust & Tims, 2020) or workload (Knight et al., 2021). Other possibilities for further research include the investigation of non-linear relationships. Initial evidence of such exists for behavioral forms, such as u-shaped relations between crafting social resources and work engagement (Lopper et al., 2022) or between overall behavioral crafting and performance-related outcomes (Dierdorff & Jensen, 2018). For cognitive crafting, by contrast, an inverted u-shaped relationship with outcomes such as performance or job satisfaction could also be conceivable, which posits moderate use to have positive potential for increasing meaningfulness or reframing demands without tipping over into possible negative side effects such as rumination.

Conceptual distinction between occurrence and results of job crafting

Although a strength of the present work lies in integrating various existing job crafting measurement instruments, a general conceptual limitation becomes apparent when these are put side by side. The distinction between the *mere occurrence* of job crafting behaviors or cognitions and their *results* or *success* in achieving desired outcomes is reflected variably across measurement instruments. Item wordings such as "I try to…" (Tims et al., 2012), "I actively develop…" (Lopper et al., 2024), "I have tried to…" (Wrzesniewski et al., in preparation), or "I find personal meaning in…" (Niessen et al., 2016) range along a continuum from planning to attempt crafting strategies, over state-of-the-moment snapshots, to a retrospective look at successful crafting. This issue has also contributed to the development of new, related constructs such as *job crafting intentions* (Tims et al., 2015b), *job crafting competencies* (Bruning & Campion, 2021), or *job crafting self-efficacy* (Roczniewska et al., 2020). For the future, there is an urgent need for conceptual and empirical clarification of what constitutes the core of the job crafting construct and which aspects belong to preceding and subsequent processes and concepts. In this way, more precise explorations of causal sequences with antecedents and outcomes become possible without effects like changed work characteristics or perceived fit being reflected in both job crafting measures and outcomes.

This goes hand in hand with limitations in terms of the time-lags of the presented studies. Depending on how long the time frame of a measure or the time-lag between two points of measurement is in a study, different elements of crafting may be considered in participants' rating (plans and intentions for crafting, actual ongoing crafting processes, and successful or failed implementations of changes). Zampetakis (2021) demonstrated that general and daily job crafting measures relate differently to outcomes. The studies in this dissertation were conducted within rather short time frames with four-week (Paper 2) and two-week intervals (Paper 3) and are therefore more likely to reflect the beginning of crafting processes and short-term changes. Future studies should systematically explore different time frames with techniques such as *measurement burst* designs (Stawski et al., 2019) or *continuous-time modeling* (Hecht et al., 2023), that consider both short-term variations and long-term changes. Such methods could meaningfully integrate existing evidence on the short-term fluctuations, such as in diary studies (Demerouti et al., 2015; Demerouti et al., 2019) and long-term effects of job crafting (Tims et al., 2015a; Van Wingerden et al., 2016) and provide insights into whether certain relationships only occur in particular time frames.

Collective job crafting and social interactions

This dissertation primarily considers an individual perspective on job crafting. However, this does not fully reflect the working reality of most employees, as most jobs are embedded in work-related social relations (Kilduff & Brass, 2010) and rarely consist of truly isolated tasks. Accordingly, there is significant potential in exploring job crafting within social contexts and its interactions with the work environment.

Tims and Parker (2019) provide a comprehensive model of job crafting in social contexts and generally conclude that coworkers' responses to job crafting influence the individuals' affective work outcomes of crafting. Empirically, such social influences have so far mainly been shown for behavioral approach crafting, such as the beneficial role of coworkers' emotional support (Shin et al., 2020) or supportive leadership styles (Hetland et al., 2018; Lichtenthaler & Fischbach, 2018). Furthermore, such crafting behaviors have been shown to cross over between coworkers (Bakker et al., 2016; Peeters et al., 2016). For behavioral avoidance crafting, mainly in the form of reducing demands, evidence points to negative spill-over effects on co-workers in terms of lower work engagement (Bakker et al., 2016) or higher levels of workload and burnout (Tims et al., 2015b), indicating that coworkers have to compensate an individuals' reduction-focused crafting.

Since cognitive crafting is by its nature less perceptible from the outside and has also shown weaker links with work characteristics (Niessen et al., 2016), such considerations have so far been lacking for this form. A key outcome of cognitive crafting lies in a changed work identity (Wrzesniewski & Dutton, 2001), meaning the way individuals perceive themselves and their roles at work. Since interactions with others play a vital role in reflecting back and validating identity (Miscenko & Day, 2016), future research could illustrate how aspects of social interactions, feedback, or modeling dynamics might help or hinder reshaping perceptions via cognitive crafting.

Furthermore, future interventions could explore the implementation and effects of collective job crafting, as found by Leana et al. (2009), where team-based crafting led to improved outcomes in interdependent work contexts. This approach could not only facilitate information sharing and team learning but also directly encourage the implementation of crafting strategies, such as task swapping, and increase goal commitment through communication.

5. Conclusion

Job crafting can be an individual and valuable tool for the proactive work re-design of employees. However, this dissertation reveals that the construct's conceptualization and application are far from universal and more complex than previously illustrated in the literature. Central findings across three research papers underscore the necessity of a more differentiated approach to job crafting, highlighting its diverse nature and the importance of recognizing distinct forms and mechanisms. From the comparative analysis of theoretical job crafting perspectives (Paper 1) to the joint examination of behavioral and cognitive forms in a longitudinal process (Paper 2) and the successful implementation of a modular, online intervention focusing especially on cognitive approach crafting (Paper 3), this research collectively stresses the need for more specificity in both understanding and applying job crafting. These insights argue against an oversimplified view of the construct: Instead, I advocate for the use of higher-order factors or specific forms rather than a general job crafting factor, investigating distinct dynamics of different forms like behavioral and cognitive crafting, and more specific interventions that allow for precise evaluations of effectiveness.

In conclusion, this dissertation contributes a refined perspective on job crafting that acknowledges the complexity within the construct, urging a shift towards more clarity and precision in theory and research, and individualized, evidence-based applications in practice.

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Appendix

Personal contribution to the publications of this dissertation

Hereby, I declare that I have not submitted or had not submitted this dissertation in any form to another faculty.

Further, I certify that I have written this dissertation independently and without unauthorized assistance, that I have only used the sources indicated, and that I have indicated text passages taken verbatim or in spirit from the literature.

Moreover, I confirm that I have made the lead contribution to the articles produced under joint authorship included in this dissertation. For example, I wrote the first draft of every manuscript, did the formal data analysis, data curation, reviewing, and editing of the manuscripts, and made the lead contribution to conceptualization and methodology. Therefore, I am the first author of all three included articles.

Stuttgart, 16.04.2024

Declaration in accordance to § 8 (1) c) and d) of the doctoral degree regulation of the Faculty

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