

Making the Best of Workplace Diversity

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Making the Best of Workplace Diversity:

From the Management Level to the Employee Level

PROEFSCHRIFT

ter verkrijging van de graad van doctor aan de Technische Universiteit Eindhoven, op gezag van de rector magnificus prof.dr.ir. F.P.T. Baaijens, voor een commissie aangewezen door het College voor Promoties, in het openbaar te verdedigen op woensdag 10 juni 2022 om 11:00 uur

door

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geboren te Jinan, China

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Het onderzoek of ontwerp dat in dit proefschrift wordt beschreven is uitgevoerd in overeenstemming met de TU/e Gedragscode Wetenschapsbeoefening.

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Chapter 1 General Introduction

Contemporary organizations are witnessing increased workplace diversity, which represents diverse attributes such as generation, ethnicity, education, and functional background in the workplace (Jaiswal & Dyaram, 2020). It is now no longer possible to ignore the pervading influence of diversity in organizations (Kundu & Mor, 2017). The concept of diversity has transformed from being a governmental or legal obligation to a strategic priority (Allen et al., 2008). A European Union survey (2015) shows that 83% of European companies possess diverse employees holding different age, gender, and educational and functional backgrounds, aiming to boost organizational innovation and inclusion. In Asia, A PwC survey (2016) reported that 88% of employers have aligned their diversity and recruitment strategies. Among them, 71% of employers are actively trying to recruit more females, higher than their global counterparts. Studies show that diversity provides various benefits to organizations, such as retaining available talent, boosting creativity and innovation, making better strategic decisions, and overall organizational performance (Allen et al., 2008; Buyl et al., 2011; Dahlin et al., 2005; Hentschel et al., 2013). Therefore, the aim of attaining sustainable competitive advantage and the need to become an employer of choice has instigated organizations worldwide to embrace the concept of diversity (Foster & Harris, 2005).

However, diversity does not always yield beneficial outcomes to organizations. Past research suggests that working in a diverse work environment (department, team, unit) creates higher instances of interpersonal conflicts, resulting in withdrawal, emotional exhaustion, and job dissatisfaction (Guillaume et al., 2017; Van Knippenberg et al., 2004). A PwC survey (2020) revealed that while 76% of European organizations see workforce diversity as a valued strategy and practice, 36% of the respondents still feel diversity is a barrier to employee performance and well-being. Diversity researchers refer to this phenomenon as a “double-edged sword” (Guillaume et al., 2017), which means that diversity is a complex phenomenon and a mere diverse representation is not a sufficient condition to yield the diversity benefits (Kundu & Mor, 2017). Organizations need to think about what strategies/actions they can do to maximize the benefits of diversity and positively respond to the challenges presented by diversity. This thesis will answer this

question by looking into *how* and *in what conditions* leaders/top management (a manager perspective) and employees themselves (an employee perspective) make the best of diversity in the workplace, unlocking its potentials and overcoming its risks.

In the following sections, we will first review the relevant literature on workplace diversity and identify research gaps; we will then formulate research questions and describe how we design our studies to answer the questions.

Workplace diversity

Workplace diversity can be described as differences based on any characteristic on which employees differ or perceive themselves to be different from their co-workers (Guillaume et al., 2017). Some researchers express diversity in broad terms as a mix of people in one social system who have distinctly different, socially relevant group affiliations (Taylor Cox, 1991; Van Dick et al., 2008). Typologies around diversity note demographic diversity as surface level owing to their readily observable characteristics such as age, gender and ethnicity (Bell et al., 2011). Another type of diversity highly relevant in organizations is task-related diversity, often known as knowledge diversity, which indicates differences among individuals on task-related knowledge, experience, and functional background (Chen et al., 2019; Gabaldon et al., 2018). A review article of workplace diversity (Guillaume et al., 2017) indicates that workplace diversity can refer to any form that relational demography (i.e., individual-level dissimilarity from peers), work group diversity, and organizational diversity may take (e.g., separation, variety, and disparity, Harrison & Klein, 2007; actual and perceived diversity, Liao et al., 2008; and fault-lines, Richard et al., 2019).

The literature demonstrates the double-edged effects of diversity, which are mainly grounded in the information processing perspective (Dahlin et al., 2005) and the social categorization perspective (Van Knippenberg et al., 2004). The information processing perspective posits that a diverse workplace (group, team, unit) likely has a larger resource pool of task-relevant knowledge, skills, abilities, opinions, and perspectives for making decisions and analyzing work problems (Patrick et al., 1999). By reconciling and integrating the diverse information and perspectives, diverse workplaces can process the information and knowledge more deeply and thoroughly

which benefits decision making and performance (Van Knippenberg et al., 2004). Thus, based on this perspective, the expectation would be that diverse groups outperform homogeneous groups. And indeed, some studies found diversity to be positively related to better decision-making (Simons et al., 1999), creativity (Chen et al., 2019), and organizational performance (Blouch & Azeem, 2019). Conversely, the negative consequences of diversity can be explained by the social categorization perspective which argues that individuals use salient similarities and differences as the basis for categorizing themselves and others (Van Knippenberg et al., 2004). People can induce several potential bases for such us-versus-them distinctions (e.g., men vs. women, old vs. young, sales vs. production). They tend to favor, trust, and cooperate with individuals who have the similar social identities (Zhang, 2016). Therefore, in groups where people have similar backgrounds people perceive their cooperation as smoother and experience less conflicts compared to those where members have different backgrounds (Phillips et al., 2009; Van Dick et al., 2008). For example, some studies show that perceived deep-level dissimilarity was negatively related to an individual's helping behavior (Liao et al., 2008), lower levels of job satisfaction and higher levels of turnover intentions (Cunningham, 2007), and less commitment to the team (Graves & Elsass, 2005). Hobman et al. (2003) found that deep-level dissimilarity had a positive association with task and relationship conflict. Therefore, these two processes (i.e., the information processing process and the social categorization process) are present in diverse workplaces and that one or the other is likely to dominate in certain circumstances. That is why some studies find positive effects of workplace diversity whereas others do not or only find negative effects.

Given these inconsistent findings, scholars realized that it is more important and insightful to investigate the underlying mechanisms (i.e., mediators) and conditions (i.e., moderators) of diversity in relation to beneficial or detrimental outcomes (see reviews, Guillaume et al., 2017; Shemla et al., 2016; van Knippenberg & Schippers, 2007). For example, Hentschel et al. (2013) found that compared to work groups that hardly perceived differences among group members, groups that perceived to be composed of very different individuals experienced more relationship conflict and lower group identification via experiencing higher negative

affect. The latter relationship was found to be less strong when the group had positive diversity beliefs. Thus, this study illustrated the central role of shared affect and diversity beliefs in determining whether work group diversity is an asset or a liability. Kearney and Gebert (2009) found that team diversity (e.g., age, nationality, and educational background) can increase team performance via elaboration of task-relevant information. Moreover, they found that transformational leadership played a moderating role such that information elaboration process became more successful under a higher level of transformational leadership. Thus, this study suggests that transformational leadership can foster the utilization of the potential benefits entailed by both demographic and informational/cognitive team diversity. Van Dijk (2022) provided an insight into that the reason why diverse teams fail to reach their potential is because they rely on inaccurate stereotypes, and that increasing cohesion and inclusion might be the key to unlock the potential of diverse teams. Likewise, other scholars found the mediating roles of task reflexivity (Chen et al., 2019) and decision comprehensiveness (Mitchell et al., 2009), and the moderating roles of organizational support (Chen et al., 2019), inclusion (Downey et al., 2015), and positive diversity beliefs (Van Dick et al., 2008) in the diversity-outcomes relationship. Van Knippenberg et al. (2004) incorporated both the social categorization and information processing perspectives in their categorization-elaboration model (CEM) of work group diversity including essential mediators and moderators. They pointed out that information elaboration and social categorization processes interact in that the intergroup biases that may result from social categorization disrupt elaboration of task-relevant information and perspectives (Van Knippenberg et al., 2004). Thus, diversity can bring in positive outcomes only if information-processing and decision-making components (e.g., task motivation, task ability) are guaranteed, and only if the intergroup biases that may result from social categorization are well managed (e.g., increasing identification, cohesion, inclusion). Lastly, some researchers employ a temporal perspective and argue that the effect of diversity may depend on time factor (Harrison et al., 2002; Li et al., 2018; van Knippenberg & Schippers, 2007). That said, initially, (demographically) diverse groups tend to have fewer effective processes and emergent states. But as time

passes, diverse groups will catch up and would be able to outperform homogeneous groups (Acar, 2010; Pelled et al., 1999). This is because with time, people tend to shift their social categorization from surface-level demographic attributes to more deep-level psychological attributes (Harrison et al., 2002; van Knippenberg & Schippers, 2007).

Research gaps

Although the workplace diversity literature has provided valuable insights (e.g., essential mediators and moderators) to advance our understanding of both positive and negative consequences of diversity based on the information processing and social categorization perspectives, the majority of studies focused on the effect of workplace diversity on team-level outcomes (e.g., team performance, identification, conflict, cohesion, and collaboration) (see reviews, Guillaume et al., 2017; Shemla et al., 2016; van Knippenberg & Schippers, 2007). We still know relatively little about how (workplace) diversity attributes can contribute to the success of organizational-level outcomes (an organizational strategic perspective). That said, given the potential benefits of diversity, how and in what conditions the top management of an organization can make use of diversity attributes to make better organizational strategy, and in turn, increase organizational performance in terms of operation, profitability, and social responsibilities. What is even more missing from the current literature is how workplace diversity can relate to individuals' motivation and behaviors to mobilize individuals' job resources, and in turn, enhance *individual-level* outcomes (an individual behavioral perspective). This is an important omission because it is employees that are the core human capital of a team, department, or organization. Examining the effect of workplace diversity on the employee level can help us to understand how employees redesign their jobs and balance their job resources and job demands presented by a diverse workplace, which further reaches a higher level of performance and well-being. We will explain below.

First of all, since diversity is seen as a strategic priority for organizations (Allen et al., 2008), by what means and in what conditions can top management capitalize on the diversity to make high-quality strategies and achieve organizational goals and performance? Research shows that a top management team (TMT),

referring to the relatively small group of most influential executives at the apex of an organization (Homberg & Bui, 2013), plays the main role of making decisions and schemes for the organization, which can influence organizational profitability, acquisition and merge, internationalization, and sustainable development (Carpenter et al., 2004; Hambrick & Mason, 1984; Miller et al., 1998). However, we still know relatively little about how and in what conditions diverse-composed TMTs can contribute to better decision making and organizational goal attainment. For example, organizations currently are facing a new challenging goal: improving environmental performance (referring to the extent to which an organization reduce and minimize its impact on the natural environment and attain environmental-friendly development; Dixon-Fowler et al., 2017). These novel and ill-defined issues are emerging constantly and pushing the top management to formulate profitable and more environmental-friendly, sustainable strategies. Homogeneous TMTs may not comprehensively identify, evaluate, and solve complex environmental-related issues. Thus, this thesis attempts to examine whether (functional) diversity in TMTs is positively related to high-quality environmental-related strategy-making, and in what conditions organizations can benefit more from a diverse TMT. By doing so, we provide insights into how diversity attributes can be used at the management level, which, in turn, tackle the novel, complex challenges contemporary organizations are facing.

Second, besides understanding how the effect of diversity on the top management level results in organization-level outcomes, it is also important to gain insights into its effect on the employee level. Organizations nowadays increasingly rely on employees' personal initiatives to deal with constantly changing job circumstances (Bakker et al., 2020; Oldham & Fried, 2016). Workplace diversity, however, provides employees with more room and urgency to adjust their own job conditions. We connect to the job demands-resources model (Bakker & Demerouti, 2017) arguing that workplace diversity, on the one hand, provides employees with available job resources such as different perspectives from colleagues with different functional backgrounds, more learning opportunities from colleagues with different educational backgrounds, and more prior (successful or failed) experience from

colleagues with different ages and tenures. On the other hand, diversity brings employees with unexpectedly increased job demands. For example, when employees face different colleagues with different functional backgrounds providing different opinions, they have to invest extra time and energy to understand, digest, and process different information, and think of how to make optimal use of different information to facilitate work. Even, employees may need to deploy more hours to negotiate, communicate with different colleagues on the precise understanding of different knowledge. Thus, this poses a vital question: how and in what conditions employees can engage in self-customized, goal-directed behaviors to make use of the job resources in a diverse work environment but also positively respond to increased job demands.

Unfortunately, the existing literature did not pay much attention to these employee bottom-up approaches but simply showed some organizational top-down approaches such as inclusiveness programs (Jaiswal & Dyaram, 2020), justice and equity policies (Blouch & Azeem, 2019), and diversity-friendly climate (Jaiswal & Dyaram, 2020; Singh et al., 2013) aiming to facilitate employee performance and well-being in a diverse work environment. We argue that the bottom-up approach initiated by employees themselves is also important and beneficial because organizations may not always be able to systematically pre-specify and pre-assign the job resources employees need in a diverse work environment. Instead, employees need to take the initiative to precisely seek what they want based on their personal interests, goals, and preferences (Demerouti et al., 2015). Even, employees may need different job resources on different days and weeks when working in a diverse work environment, which implies that employees need to take micro, timely adjustments and actions on a daily basis (Tims et al., 2013). Thus, a bottom-up, self-initiated, ongoing action that employees take based on their own needs could be a more flexible and powerful way to navigate in a diverse work environment. This thesis is going to examine how and in what conditions the bottom-up approach can enable employees to capitalize on the benefits of diversity and overcome its detriments, and in turn, enhance their performance and well-being.

Third, identifying the importance of employee bottom-up approaches to deal with diversity at work, we still lack some insights on how organizations could train and teach employees to engage in these bottom-up approaches to navigate in a diverse work environment. That is, whether these bottom-up approaches are trainable by developing a structural, effective intervention program, so that employees could learn them and make better use of the job resources and optimize the challenging demands presented by a diverse work environment. This is an important omission from the past literature as previous studies predominantly uncovered whether the bottom-up behaviors are effective or not (e.g., networking) in making use of network diversity using a cross-sectional or longitudinal study design (Volmer & Wolff, 2018; Wolff & Kim, 2012; Wolff & Moser, 2009), but did not answer the question of how to stimulate such behaviors using a quasi-experimental intervention design. We argue that an intervention study is important not only because it can increase the causality of the tested relationships but also because it provides essential steps and guidelines for people to practice and strengthen a newly learned behavior and gives leaders a framework to motivate and cultivate their employees in the daily work basis (Demerouti et al., 2020; Hulshof et al., 2020). In a diverse work context, it becomes more important to teach and train employee certain effective strategies because employees can then clearly know where they can find diverse job resources, how to use them to facilitate performance and well-being, and how to give their own resources to facilitate others' work as well. As a result, employees can gain the actual benefits from diversity; organizations can gain the actual benefits from more proactive, self-managed employees. This thesis will develop an intervention aiming to stimulate employee network crafting behaviors, so that they know how to smartly and strategically make optimal use of diverse contacts in the network and reap associated work and career related benefits.

Research aims and questions

The above research gaps give rise to a critical research question:

“How, when, and from whom is workplace diversity linked to positive employee and organizational outcomes, and can we intervene in this process?”

To solve the puzzle, we investigated how and when diversity attributes (e.g., functional diversity) facilitate *the decision-making process* at the management level. That is, how and in what conditions functional diversity within TMTs can enhance the strategy-making, which further increase organizational performance. Also, we investigated how and when individuals' bottom-up strategies (e.g., help-seeking, job crafting, network crafting) can efficiently capitalize on the benefits of workplace diversity and overcome its risks on the daily work basis, which focuses more on *the behavioral process* at the employee level. Three main research questions have been formulated to direct our studies in this dissertation.

Q1: At the management level, does (functional) diversity of the top management team (TMT) contribute to the attainment of contemporary organizational goals (e.g., sustainably environmental performance) and in what condition is TMT diversity more beneficial?

One of the important contemporary organizational goals is to balance the economic benefits and environmental damages during the production, sell, and use processes. Research shows that pursuing environmental achievements can satisfy customers' needs and expectations and keep competitive positions in business markets (Tsai & Liao, 2017). Thus, organizations need to make more sustainable environmental-friendly strategies to improve environmental performance. Recently, organizations realize that a high-quality environmental-friendly strategy made by the top management team (TMT) might be the first step for the enhancement of environmental performance (Nuber & Velte, 2021). However, given that environmental issues are full of uncertainty, novelty, and flexibility (Delmas & Blass, 2010), a critical question is whether diversity (including a variety of different knowledge and perspectives) within TMTs can play a beneficial role in achieving organizational environmental goals. Based on the information processing perspective (Carpenter & Sanders, 2004), we argue that diverse-composed TMTs can integrate a more variety of information, knowledge, and experience (Roh et al., 2019; Zhang, 2016). By exchanging diverse information, TMTs can make a more comprehensive decision and reduce decision bias and groupthink (Boone & Hendriks, 2009; Cannella et al., 2008). Subsequently, according to the upper echelon theory (Hambrick &

Mason, 1984), organizational-level performance can be a result of TMT-level decisions, actions, and personalized interpretations of the situations they face. Thus, this thesis will provide insights into how the top management capitalizes on the benefits of diversity to facilitate the decision-making process, and in turn, attain organizational goals.

Furthermore, we aim to understand in what conditions the diverse-composed TMTs can play a *more* beneficial role. The diversity literature indicates that diversity, on the one hand, can facilitate information elaboration and decision making (Boone & Hendriks, 2009; Homberg & Bui, 2013); but on the other hand, it could lead to potential conflicts, risks, and make the decision implementation more difficult (Boone & Hendriks, 2009; Wu et al., 2011). Following this logic, although the diverse-composed TMTs can make high-quality, comprehensive environment-oriented strategies, this process might be time-consuming, risky, and difficult to implement (Huang et al., 2019). Thus, it is important to understand in what conditions organizations can safeguard and support the decision-making process within the diverse-composed TMTs. Based on the resource-based view (Eisenhardt & Martin, 2000; Russo & Fouts, 1997), we aim to examine to what extent external resources (e.g., external financial resources from government subsidies) facilitate the decision-making process within the diverse-composed TMTs. We argue that if organizations gain more external resources (e.g., government subsidies), they would be able to offset the risks and detriments that a diverse-composed TMT may bring in and motivate TMT members to engage in more environmental-relevant thinking and actions. This is because, according to the resource-based perspective (Michalisin et al., 2004; Sanchez, 1995), resources, in general, can be used to deal with challenges, task requirements, and stress. So far, the first research question aims to understand how and in what conditions the top management can utilize the benefits of knowledge-based diversity attributes to attain contemporary organizational goals.

Q2: At the employee level, what behaviors and characteristics of employees can help them to obtain benefits from a diverse workplace/group?

Shifting from the management level to the employee level, we aim to understand how employees can make use of diversity to facilitate their own

performance and well-being. We argue that diversity can not only contribute to the decision-making at the management level, and in turn, achieve organizational development goals, but also provide valuable job resources that can be utilized by employees, and in turn, improve their own performance and well-being. However, the question is how (by what approaches) employees can transform the benefits of workplace diversity into favorable work outcomes. Although previous studies revealed that some top-down approaches (i.e., organizations/leaders launch a general measure that creates an inclusive, supportive work culture and climate; Hornung et al., 2010) are beneficial to improve employee performance and well-being, we argue that some bottom-up approaches initiated by employees themselves are equally important. This is because employees can intentionally adjust their job conditions based on their personal goals, needs, and interests using a bottom-up approach (Demerouti et al., 2015). As such, they can fit themselves to the current job, complex and dynamic work environment (Tims et al., 2016). These proactive, goal-directed actions on a daily basis will be more effective and flexible than just passively waiting and receiving organizational/leaders'/colleagues' help, support, and resources. Thus, we wonder: what proactive behaviors can employees engage in to obtain valuable job resources from a diverse workplace/group, and what personal characteristics may play a moderating role, so that employees can obtain benefits from diversity even better?

Based on the job demands-resources (Bakker & Demerouti, 2017) and proactivity (Parker et al., 2010) perspectives, we aim to propose and examine two proactive employee behaviors: job crafting and help-seeking. Job crafting refers to a self-initiated action employees take to balance job resources and job demands at work (Demerouti et al., 2015). We argue that by engaging in job crafting behaviors, employees can precisely seek and utilize multiple resources they need from a diverse work environment, which in turn, can improve their work outcomes. Thus, in Chapter 3 we examine how perceived diversity in the workplace can enhance employees' work outcomes via stimulating their job crafting behaviors. In Chapter 4 we examine the role of help-seeking. Help-seeking refers to a pro-active action for seeking resources from others (Mueller & Kamdar, 2011), which can be seen as a

bottom-up strategy. We argue that employees who seek help in a (functionally) diverse work group can obtain a more variety of job resources including information, perspectives, and experience, which can effectively stimulate divergent thinking and come up with a creative solution. Work group functional diversity generally refers to the degree to which group members differ with respect to their functional backgrounds (e.g., sales, R&D, finance, engineering, etc). Thus, we examine how the interactive effect of work group diversity and help-seeking behaviors can contribute to a higher level of work outcomes.

However, do employees benefit from diversity equally? What personal characteristics may play a *more* beneficial and helpful role in making better use of diversity? Based on the workplace diversity literature (Guillaume et al., 2017; Shemla et al., 2016), we further examine two important personal characteristics that can help employees to unlock the potentials of workplace diversity even better: emotional intelligence (EI) and openness to experience (OTE). EI refers to a speckled set of motivational, dispositional, affective capabilities and attributes that influence one's ability to cope with various environmental hassles (Parke et al., 2015). OTE refers to an individual's willingness to explore, tolerate, and consider new and unfamiliar ideas and experiences (Feist, 1998). The diversity literature indicates that these two personal characteristics are highly correlated with positive diversity beliefs and attitudes (Ekehammar & Akrami, 2003; Gardenswartz et al., 2010; Homan et al., 2008). For example, studies demonstrated that highly EI employees could better understand, process, and use different information presented by different backgrounds people, and then have more chances to take appropriate strategies for responding to social environments (Parke et al., 2015). More open employees have a higher likelihood of successfully unlocking the potentials of diversity in work environments and integrating different information from diverse contacts (Baer, 2010; Homan et al., 2008). Thus, we argue that these two personal characteristics – EI and OTE – are important personal assets that can help employees to recognize the differences and strengths from different backgrounds people, and capitalize upon these differences as a learning opportunity (Homan et al., 2008; Molleman & Broekhuis, 2012). So far, the second research question aims to understand what

proactive behaviors and what diversity-oriented personal characteristics help employees to make the best of diversity and successfully navigate a diverse workplace/group.

Q3: Can we train employees to increase their ego-network diversity and consequently to attain more work and career goals?

Understanding the value of employee proactive behaviors (i.e., the bottom-up approach) in dealing with workplace diversity, we feel it was important to develop an intervention to train employees to engage in proactive behaviors. As such, they can gain more actual benefits from a diverse work environment. Following recent crafting intervention studies (e.g., Costantini et al., 2020; Demerouti et al., 2020; Dubbelt et al., 2019), we aim to develop a network-based crafting intervention because the social network literature indicates that employees can gain the actual benefits and resources if they can use, expand, and maintain their diverse network contacts (Baer, 2010; Lambert et al., 2006; Wolff & Moser, 2009). Incorporating the proactivity (Crant, 2000) and the (job) crafting literature (Tims et al., 2012), we define network crafting as a proactive strategy aimed at optimizing one's network that involves networking behaviors that employees utilize to balance the costs and benefits of their network (Hulshof et al., 2020; van Gool et al., 2021). It resembles relational crafting (Wrzesniewski & Dutton, 2001) in which employees proactively change a job's relational boundaries by interacting with different people carrying different knowledge and expertise. Thus, we will develop a network crafting intervention to train employees how to engage in network crafting behaviors, and in turn, improve their network diversity and reap associated work and career related benefits. We design the intervention based on the theory of planned behavior (Ajzen, 1991) including the steps of information input, goal-setting, and self-monitoring. These steps can intentionally increase participants' behavioral intention, behavioral control (Steinmetz et al., 2016). Participants can learn and practice network crafting strategies in the real work setting and successfully gain the resources and optimize demands from a diverse work environment. To conclude, we expect to develop and evaluate the effectiveness of a network crafting intervention, which can provide a

specific self-management tool to help employees to capitalize on their diverse networks, and in turn, navigate in and benefit from workplace diversity.

Outline of the thesis

In this thesis, the four research questions will be addressed in four different chapters. We used archive database, diary study design, and intervention design to answer our questions. The overall research framework is presented in Figure 1.

Chapter 2 will answer Q1. Specifically, we investigated the role of top management team functional diversity on organizational environmental performance. We also examined the mediating role of environmental-based decision-making and the moderating role of governmental subsidy (seen as an external resource). The data was obtained from an archived dataset from 406 Chinese manufacturing firms over ten years (from 2010 to 2019). We tested a moderated mediation model with robustness check and endogenous analysis.

Chapter 3 will answer Q2. Specifically, we investigated the indirect effect of job crafting behaviors on the relationship between workplace informational diversity and employee work outcomes (e.g., work performance and engagement). We also examined the moderating role of emotional intelligence, such that we gain insights into whether this indirect effect is stronger for those who have a higher level of emotional intelligence. We employed a weekly diary study and uncovered the beneficial role of daily job crafting actions and the important personal ability of emotional intelligence when employees work in an (informationally) diverse work environment.

Chapter 4 will also aim to answer Q2. Specifically, we considered how the interactive effect of help-seeking behavior and work group functional diversity relates to higher creative performance. Besides, we examined to what extent openness to experience strengthens the interactive effect of help-seeking behavior and work group functional diversity on creativity performance. That said, we reveal how a combination of work group functional diversity, help-seeking behaviors, and the personal characteristic of openness to experience contribute to the highest level of employee creativity.

Chapter 5 will answer Q3. Specifically, we developed a self-training intervention based on the theory of planned behavior (TPB) (Ajzen, 1991). We took a field-experimental approach, including three weeks of self-training to help employees improve their professional network using three types of networking behavior – using existing contacts, establishing new contacts, and maintaining professional contacts (Wolff & Moser, 2010). Based on the TPB principles, we trained employees to engage in these behaviors via information input, smart goal-setting, and self-reflection, which have proved to be effective and essential components to change participants' attitudes, to increase their behavioral intention and behavioral control (Pekaar & Demerouti, 2021; Steinmetz et al., 2016).

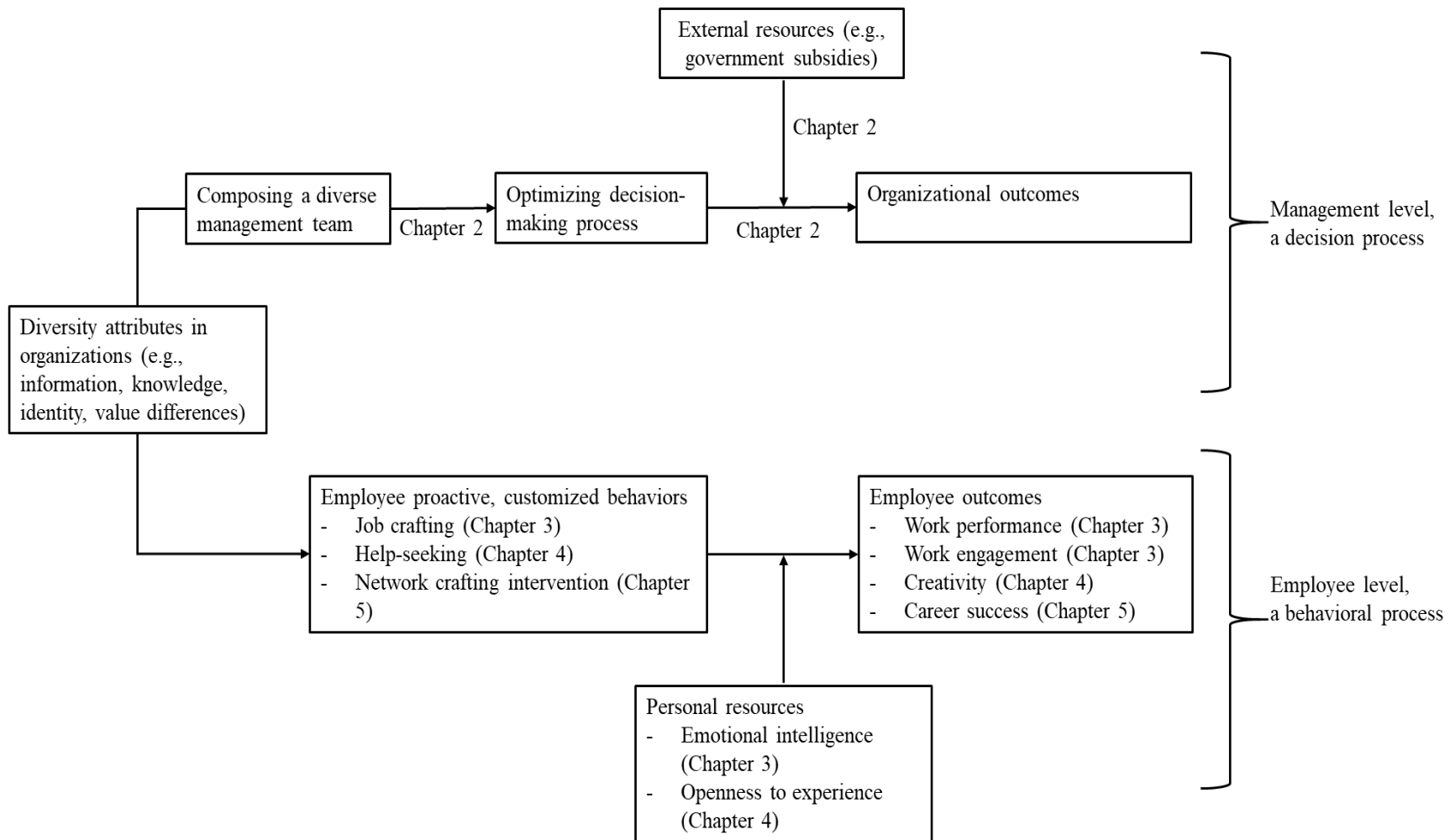


Figure 1. The overall framework of the dissertation

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Chapter 2

Boosting organizational environmental performance: The important roles of top management team functional diversity and government subsidies

Note: This Chapter was ready for submitting to *Group & Organization Management*.

Abstract

Contemporary organizations are pursuing a higher level of environmental performance (referring to the extent to which the organization reduces and minimizes its impact on the natural environment and develops in a more environmental-friendly and sustainable mode) not only to respond to constant climate change but also to gain competitive advantages. While a small handful of studies recognized the importance of top executives' strategy-making on environmental performance, questions still remain on how to promote the quality of the strategy-making and implementation, and in turn, enhance environmental performance. Based on the upper echelon and team diversity perspectives, this study aims to examine whether a functionally diverse top management team (TMT) is beneficial to environmental-based decision-making, which in turn, increases environmental performance, and to what extent external resources (e.g., government subsidies) can strengthen this relationship. Using an archival dataset from 406 Chinese manufacturing firms over ten years (from 2010 to 2019), the results of a moderated mediation model supported our hypotheses. Our findings imply that TMT functional diversity increased organizational environmental performance through improving environmental-based decision-making, and that this indirect effect was stronger if organizations can obtain more government subsidies. In other words, functionally diverse TMTs are more likely to receive these subsidies. Thus, we add to the environmental governance literature by highlighting that (1) diversity attributes from the top management level of an organization can enhance environmental-based decision-making; (2) external resources can effectively offset the risks that diversity may bring in and facilitate the process of decision implementation made by diverse-composed top management teams.

Keywords: top management team; functional diversity; upper echelon; decision-making; environmental performance

Introduction

Organizational environmental performance refers to the extent to which the organization reduces and minimizes its impact on the natural environment and develops in a more environmental-friendly and sustainable mode (Dixon-Fowler et al., 2017). Nowadays, organizations are realizing the necessity and advantages of developing environmental performance in situations of dynamic competition and increased public environmental awareness (Eweje & Sakaki, 2015). Organizations realize that the environmental issues are significantly influencing their customers' decisions and affecting their competitive positions (Tsai & Liao, 2017). A PwC survey in 2015 showed that 71% of businesses were already planning how to engage in environmental-friendly development and that 90% of citizens say it is important for businesses to sign up for the environmental-friendly development goals. However, not all organizations successfully achieved environmental performance. A McKinsey survey (2021) showed that more than 50% of value-creating companies (e.g., high-tech, legal service, logistics, and healthcare) had more environmental-related programs and attained more environmental achievements in the past five year; while only 28% for traditional manufacturing companies (e.g., oil and gas, automotive and assembly). Thus, a more complete understanding of how and in what conditions organizations can engage in more successful environmental performance is needed.

Based on the upper echelon (Carpenter et al., 2004) and team diversity (van Knippenberg & Schippers, 2007) theories, this study aims to examine how functionally diverse top management teams (TMTs) enhance organizational environmental performance via increasing the rationality and comprehensiveness of environmental decision-making, and to what extent external resources (e.g., government subsidies) can strengthen such a decision-making process made by functionally diverse TMTs. TMT functional diversity refers to the degree to which TMT members differ with respect to their functional backgrounds (e.g., management, finance, law, etc.; Qian et al., 2013). Connecting to the team diversity theory, we argue that functional diversity represents a greater variety of cognitive resources for collective decisions, reducing groupthink and decision bias (Auh & Menguc, 2005; Evans & Carson, 2005). Given that environmental issues are challenging and novel

tasks for TMTs, we argue that diverse TMTs holding different perspectives, information, and experience can outperform homogeneous TMTs. Unfortunately, this insight is relatively missing from existing environmental governance literature. Prior studies found the importance of female top executives (Elmagrhi et al., 2019), CEO personal traits (Ren et al., 2021) in environmental decisions but largely overlooked the beneficial role of diversity attributes within TMTs.

However, while the team diversity literature indicates that diversity can facilitate information elaboration and decision making (Boone & Hendriks, 2009; Homberg & Bui, 2013), some other studies showed that diversity could lead to potential conflicts, risks, and make the decision implementation more difficult (Boone & Hendriks, 2009; Y. Wu et al., 2011). Following this logic, although the diverse-composed TMTs can make high-quality, comprehensive environment-oriented strategies, this process might be time-consuming, risky, and difficult to implement (Huang et al., 2019). Thus, it is important to understand in what conditions organizations can safeguard and support the decision-making process within the diverse-composed TMTs. Research suggests that external resources can help to execute the organizational strategy more successfully and smoothly (Hitt & Tyler, 1991). Thus, we consider a form of external financial resources: government subsidy. We argue that if firms can obtain more government subsidies¹, they will be able to effectively reduce operational costs, commercial risks, or other uncertainties. This could also increase perceived opportunities and enthusiasm for TMTs to engage in more environment-related decisions and actions (Květoň & Horák, 2018). Thus, we will consider the important moderating role of government subsidies.

The contributions of this study are threefold. First, examining the role of TMT functional diversity, we contribute to the environmental governance literature (Delmas & Blass, 2010; Nguyen et al., 2021; Shahab et al., 2018) by highlighting that a functionally diverse TMT is an important asset of an organization to deal with environmental issues and that TMT functional diversity is able to improve the quality and comprehensiveness of environmental-based decision-making. Second,

¹ We acknowledge this will depend on the kind of subsidies (e.g., a short-term subsidy or long-term ones). However, as this is not the focus of this study, we will ignore the types of subsidies.

examining the mediating role of environmental-based decision-making, we advance the understanding of why and how TMT functional diversity relates to higher environmental performance. Based on the upper echelon and team diversity theories, we reveal a strategic information processing process of how diversity attributes boost information elaboration, and in turn, enhance the environmental performance. We provide a team diversity perspective to understand the process of enhancing environmental performance compared to previous studies largely using agency and neo-institutional (Elmagrhi et al., 2019), and stakeholder (Nuber & Velte, 2021) perspectives to explain different stakeholders' interests on environmental governance. Third, examining the moderating role of government subsidies, we add to the environmental governance literature by highlighting the importance of external resources. We underscore that only internal resources (e.g., functionally diverse TMTs) might not always be sufficient to the enhancement of environmental performance, external resources (e.g., government subsidies) may help to offset potential risks during the implementation of environmental strategies and provide more opportunities to develop additional environmental activities. With more external resources, organizations and their TMTs could more positively respond to environment-related challenges and demands and engage in more environmental decisions. So far, we answer the question of how and in what conditions organizations can enhance their environmental performance more successfully. Our findings were also in line with the TMT diversity literature indicating that the effects of diversity on outcomes are not always self-evident and that uncovering the necessary mediators and moderators may help to understand the diversity-outcome relationship. Thus, we aim to demonstrate the mediating role of environmental-based decision-making and the moderating role of government subsidies to understand the TMT diversity-organizational outcome relationship from an environmental governance perspective.

Literature Review and Hypotheses Development

Firm environmental performance

Firm environmental performance measures how successful a firm is in reducing and minimizing its impact on the environment (Dixon-Fowler et al., 2017).

For example, firm environmental activities may include but not limited to carbon emissions reduction, waste recycling use, renewable energy use, and clean production (Arocena et al., 2021; Cuerva et al., 2014; Riva et al., 2021). Nowadays, firms are imposed on more responsibilities to improve their environmental performance and mitigate their environmental harm. The literature states that firm environmental performance is viewed as one component of firm social performance and is a reflection of a firm's environmental-related processes, policies, programs, and observable outcomes (Dragomir, 2018; Trumpp et al., 2015). Different from other firm social responsibilities (e.g., socially responsible investment, development of community relations), scholars have argued that environmental issues involve factors that are internally focused, are more systemic, and affect a broader constellation of organizational functions (Dixon-Fowler et al., 2017; Ilinitch et al., 1998; Russo & Fouts, 1997). Studies show that higher environmental performance represents a higher level of innovation, operational efficiency (Dragomir, 2018), and reflects stronger organizational and management capabilities (Gunningham, 2009; Russo & Fouts, 1997).

To unfold the factors that influence firm environmental performance, prior studies have provided some valuable insights. For example, studies found that a cleaner production process (Xie et al., 2019), information and communication technology (Chen, Gong, et al., 2019), customer needs and pressure (F. Zhang & Zhu, 2019), organizational learning and knowledge sharing (Song et al., 2020), organizational absorptive capacity (Song et al., 2020; Xie et al., 2019), and environmental policies and regulations (Elmagrhi et al., 2019) were positively related to firms' environmental performance. In addition to these operational and resource-based perspectives, studies also indicate that firms' strategic decisions are an important antecedent of firm environmental performance (Dixon-Fowler et al., 2017; Riva et al., 2021; Tsai & Liao, 2017) and that it might be the first step before firms engage in environmental-related production, innovation, and other activities. For example, evidence shows that CEO hometown identity (Ren et al., 2021) and having female directors (Elmagrhi et al., 2019; Shahab et al., 2018) is beneficial to improve

environmental strategy-making, and consequently, enhance firm environmental performance.

However, the investigation on firm environmental performance from a strategic decision-making perspective is far from complete. Prior studies merely concentrated on a single person (e.g., CEO) (Ren et al., 2021; L. Zhang et al., 2020) or the non-task-related characteristic (e.g., gender) of the top management team (TMT) (Elmagrhi et al., 2019; Shahab et al., 2018). Research shows that a more task-related TMT composition is more positively related to decision-making and firm performance because it reflects how different knowledge is distributed with TMTs and how members with different task backgrounds can provide unique perspectives and suggestions for the collective decisions (Boone & Hendriks, 2009; Díaz-Fernández et al., 2016; Wei & Wu, 2013). In the following, we discuss how a task-related characteristic of TMT influences the quality of environmental decision-making, and in turn, boosts firm environmental performance.

TMT functional diversity

We identify that TMT functional diversity is a task-related characteristic of TMT, which represents a more task-focused, knowledge-based TMT composition (Cannella et al., 2008; Gabaldon et al., 2018). TMT functional diversity refers to the extent to which each member differs in the functional area that he/she spent the most time in (Cannella et al., 2008). For example, a functional diverse TMT may include members who come from different functional areas, such as finance, technology, marketing, engineering, or operation. Therefore, TMT functional diversity encompasses a greater variety of cognitive resources, including divergent opinions, different solutions to the problem, unique information sources, and specialized expertise, which can be fully used for collective decisions (Bunderson & Sutcliffe, 2002; Buyl et al., 2011; Y. Zhang, 2016). Prior studies found that functionally diverse TMTs are beneficial in improving firm-level outcomes such as profitability (Buyl et al., 2011; Cannella et al., 2008), innovation (Qian et al., 2013), and internationalization (Lee & Park, 2006).

However, the beneficial effect of TMT functional diversity is not always evident. Functional diversity could increase conflict and communication costs

because different social identities may decrease trust and cooperative processes (known as a social categorization process) (Van Knippenberg et al., 2004; van Knippenberg & Schippers, 2007; Wei & Wu, 2013). Given the inconsistent effects of TMT diversity, TMT scholars acknowledge that it is important to understand how (i.e., mediators) and under what conditions (i.e., moderators) diverse-composed TMTs result in higher firm outcomes (Homberg & Bui, 2013; Nielsen, 2010). Accordingly, subsequent studies found that TMT functional diversity enables firm to perform better through increased information elaboration, decision comprehensiveness, rationality, and effectiveness (Díaz-Fernández et al., 2016; Qian et al., 2013; Roh et al., 2019). And TMT functional diversity is particularly beneficial when tasks are complicated, difficulty, and novel (Gabaldon et al., 2018; Roh et al., 2019), or when external circumstances are complex, uncertain, and competitive (Auh & Menguc, 2005; Cannella et al., 2008; Qian et al., 2013; Richard et al., 2019). Thus, based on previous TMT studies and findings, in following sections, we discuss how and when TMT functional diversity facilitates firm environmental performance.

The mediating role of TMT environmental-based decision-making

TMT environmental-based decision-making, in this study, is defined as the level of which TMTs make comprehensive, effective decisions for attaining environmental (sustainable development) goals (Tonn et al., 2010; Vandekerckhof et al., 2019). We argue that TMT functional diversity could improve TMT environmental-based decision-making. Based on the team diversity theory (van Knippenberg & Schippers, 2007), functionally diverse teams have a larger resource pool of task-relevant knowledge, skills, abilities, opinions, and perspectives for making decisions and spotting and solving emerging problems (Roh et al., 2019; Zhang, 2016). By reconciling and integrating diverse information and perspectives (Van Knippenberg et al., 2004), TMTs can generate more alternative solutions to problems, thoroughly evaluate these alternatives, and ultimately increase the quality and effectiveness of decision outcomes and overcome groupthink (Boone & Hendriks, 2009; Cannella et al., 2008). For example, to attain environmental goals, a functional diverse TMT could identify relevant problems and barriers as well as possible solutions from their own functional areas (e.g., what aspects could be

improved in the finance sector, HR sector, or technology sector). Then they could bring these different perspectives, ideas, and suggestions into the table for collective discussion to make sure they do not neglect any critical aspects. In doing so, TMTs can finally generate a comprehensive scheme for attaining sustainable development goals. Prior studies found that TMT heterogeneous characteristics (e.g., gender diversity) were positively related to environmental policy (e.g., carbon emissions reduction) and ambidextrous strategic orientation (Nuber & Velte, 2021; Shahab et al., 2018; Tang et al., 2020). Besides, the diversity researchers acknowledge that the beneficial effect of diversity is not always evident but may depend on certain circumstances. These circumstances include the task characteristics (e.g., when the task is novel, challenging, and complex) (Chen, Liu, et al., 2019; Díaz-Fernández et al., 2016; Li, 2013) and external business characteristics (e.g., when the business environment is competitive, dynamic, and uncertain) (Buyl et al., 2011; Homberg & Bui, 2013). Accumulating evidence shows that TMT functional diversity is particularly beneficial to firm development when tasks are difficult, novel, and urgent (Gabaldon et al., 2018; Roh et al., 2019). Given that environmental issues are quite complex and ill-defined, we argue that TMT functional diversity could help to facilitate the improvement of environmental decision making.

Subsequently, we argue that TMT environmental-based decision-making enhances firm environmental performance. This can be explained by the upper echelon theory (UET) (Carpenter et al., 2004). According to the UET, firm-level performance and activities are actually a holistic reflection of TMT members' cognitions, decisions, and actions (Carpenter et al., 2004). TMTs have substantial discretion in determining the future strategic contour of their firms (Carmeli et al., 2009). Hitt and Tyler (1991) demonstrated that higher organizational performance can be achieved by managers' high-quality decision-making, which is characterized by a series of sequential, rational, and analytical processes. Thus, the UET builds a link between top executives' decisions and organizational-level outcomes. Prior empirical studies found that TMT strategic decisions (e.g., decision rationality, decision comprehensiveness, and decision effectiveness) (Carmeli et al., 2009; Goll & Rasheed, 1997; Simons et al., 1999) were positively related to firm performance.

Therefore, based on the upper echelon theory and prior findings, we argue that environment-relevant decisions made by TMTs could enable firms to make higher environmental achievements. To conclude:

H1: TMT functional diversity is positively related to firm environmental performance through increasing TMT environmental-based decision-making.

The moderating role of government subsidy

The upper echelon scholars further argue that the process that TMT strategic decisions transform into firm-level outcomes depends on supportive conditions (Hambrick & Mason, 1984; Hitt & Tyler, 1991). That is, merely the content of strategic decisions itself is not sufficient for achieving higher environmental performance. Firms also need certain supportive conditions safeguarding the smooth implementation of strategic decisions. Research shows that funding, or financial support, is one of the most important factors to ensure that strategic decisions can be implemented in a proper, desirable, and efficient manner (Hodge & Piccolo, 2005; McGlashan, 2003; Wang et al., 2017). The environmental management studies also suggest that the availability of external resources (e.g., funding source) can ease the difficulties in environmental-related production, operation, and innovation processes (Hu et al., 2021; J. Wu & Cheng, 2011; Xie et al., 2019). Therefore, in this study, we consider the moderating role of government subsidy (as a form of external resources).

Government subsidy refers to the economic incentives provided by governments including policy-related funds and discounted loans (Xie et al., 2019). Based on the UET, we argue that the indirect effect of TMT functional diversity on firm environmental performance through TMT environmental decision making will become stronger when firms obtain more government subsidies. The reason is that government subsidies are a form of external support that can provide extra resources for firms. As such, firms have a larger room and more possibilities to smoothly implement their environment-relevant schemes without worrying too much about financial distress (Guo et al., 2020). For example, research shows that environmental-related decisions, operations, and management are often costly and risky (Hu et al., 2021; Huang et al., 2019). However, if firms gain more support from the government

(e.g., subsidy), they would be able to offset these detriments using the subsidies and have a higher level of enthusiasm to engage in environmental-relevant activities. This is also in line with a broader resource-based perspective (Michalisin et al., 2004; Sanchez, 1995), suggesting that resources (e.g., governmental subsidies in our study) can be used to deal with challenges, task requirements, and stress.

Prior corporate governance studies uncover the beneficial role of government subsidy in many different aspects. For example, some found that government subsidy provided more resources for medium-size manufacturing firms to commercialize new products and services through R&D investment (Guo et al., 2020; Tsai & Liao, 2017); other studies showed that government subsidy had an endorsement effect, which relates to having financial protection from the government, and a signal effect, which signals their good images to the customers (Takalo & Tanayama, 2010; Yan & Li, 2018). Some economists acknowledge that government subsidies or grants play an important role for emerging markets and for the enterprises that aim to develop sustainably and environmentally friendly (Chen et al., 2008; Cotti & Skidmore, 2010). This is because subsidies can help firms to reduce financial distress and increase operational efficiency and innovation (Wu & Cheng, 2011). To sum, we reason that government subsidy is a vital external resource and that firms could use these subsidies to cope with the difficulties during the implementing process of environmental strategies. Thus:

H2: The indirect effect of TMT functional diversity on firm environmental performance through TMT environmental-based decision-making becomes stronger when the level of government subsidy is high (vs low).

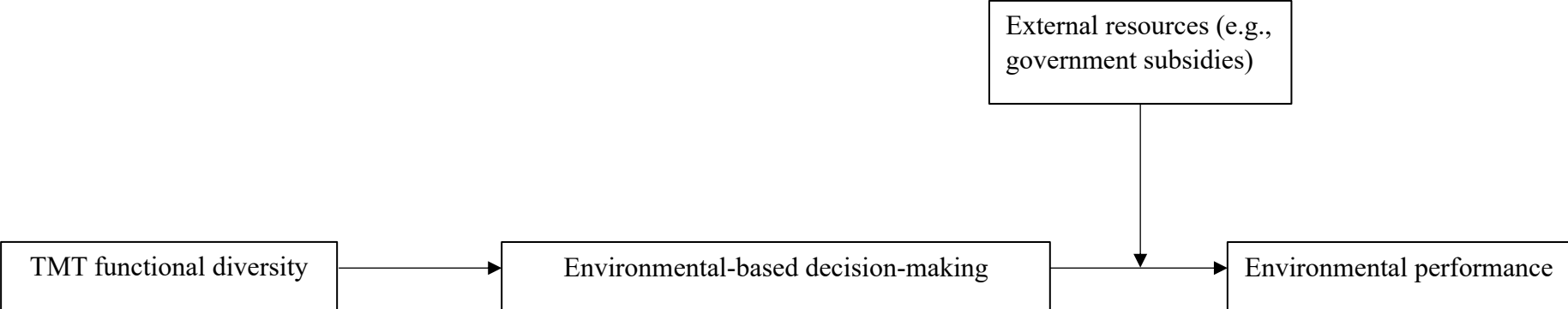


Figure 1. Conceptual model

Methods

Sample and data collection

In this study, we chose China and Chinese publicly listed companies as our focus not only because Chinese manufacturing companies have promoted the rapid economic development for China and the global economy. More importantly, China is experiencing an economic transformation and demands Chinese companies to develop in a more sustainable way to tackle severe environmental pollution issues (Hu et al., 2021). We collected relevant data from the CSMAR database (<https://cn.gtadata.com>), which provides information for TMT demographic characteristics, firm performance, and environmental-related progress each firm made. This database is widely used by many Chinese TMT studies and corporate governance studies (Nguyen et al., 2021; Richard et al., 2019; Shahab et al., 2018; W. Wu et al., 2012). For missing information, we manually searched it from firms' annual financial reports and social responsibility reports.

We limited our sample to Chinese manufacturing firms because they are typically found to have damaging effects on the natural environment such as air and water pollution (Nguyen et al., 2021; Richard et al., 2019; Shahab et al., 2018). We define TMT membership by considering the CEO and senior executives to be TMT members if the latter directly reports to the CEO and are responsible for making strategic choices for the firm. Such executives include, for example, executive directors, managing directors, functional directors, and vice presidents (see, Guadalupe et al., 2014; Richard et al., 2019). The year ranged from 2010 to 2019 because the environmental-related data were not available before 2010 and the year of 2019 was the last year for which data were available at the time of collecting data. Finally, we obtained 1706 firm-year observations consisting of 406 firms.

Measures

TMT functional diversity was measured by the Blau index. The Blau index is calculated as $1 - \sum p_i^2$ where p_i is the proportion of team members in each of the i categories on an attribute. The CSMAR database provides information for each TMT member on the functional area in which they had spent the greater part of their career. We identified nine functional backgrounds: production; R&D; design; human

resources; management; marketing; finance; and law. If a function was not represented, its value was assigned 0 (Auh & Menguc, 2005).

Environmental-based decision-making was measured based on companies' social responsibility reports in which environmental-related actions/decisions companies made were disclosed. The CSMAR database provides relevant information in this regard. We identified four aspects of environmental-based decision-making (see, Hu et al., 2021; Nguyen et al., 2021): following GRI standards (i.e., global reporting initiative for environmental and social topics, GRI 300 & 400); disclosing contents for environment protection; disclosing contents for work safety; disclosing social responsibilities and relevant actions (all aspects were coded 1 for yes, and 0 for no). Finally, we calculated the scores of these four aspects and obtained a summed score, which represents environmental-based decision-making (for similar measurement approaches see Hu et al., 2021; Nguyen et al., 2021). The higher score the company got, the better on environmental-based decision-making the company made.

Government subsidy. The CSMAR database provides information on the amount of government subsidy each company received every year. We used the natural logarithm of government subsidy to keep panel data in stationarity and to reduce the probability of occurrence of collinearity and heteroscedasticity (Carpenter & Sanders, 2004; Rajagopalan & Datta, 1996).

Environmental performance was measured based on companies' annual performance reports in which they disclosed their environmental achievements/progress. Following prior studies (Arocena et al., 2021; Ma et al., 2021; Nguyen et al., 2021; Riva et al., 2021), we identified and coded environmental performance on three dimensions: 1) disclosure of decreases in resources consumption (we counted the number of the relevant items in this dimension), 2) disclosure of decreases in environmental emissions, and 3) disclosure of other environmental-related achievements (using "environmental", "achievements", "progress", "performance" as keywords). Then, we used the average score of these three aspects as the company's environmental performance.

Control variables. To exclude other potential confounding factors and address possibly omitted variables, we considered several control variables in our model.

Following previous TMT studies (Auh & Menguc, 2005; Boone & Hendriks, 2009; Buyl et al., 2011; Campbell & Mínguez-Vera, 2008), we added control variables including *TMT age mean*, *TMT tenure mean*, *TMT female percentage*, *TMT size*, *TMT educational diversity* (measured by Blau index; we identified five educational degree categories: below vocational degree; vocational degree; bachelor degree; master degree; doctor degree), *return on assets* (ROA), the natural logarithm of *firm size* (measured by the number of employees in a firm), and the natural logarithm of the *firm yearly tax amount*.

Analytical strategy

The data were in a panel format (time nested within organizations) and thus we employed the fixed/random effects model, which was widely used by prior TMT studies (Richard et al., 2019; Triana et al., 2019). We conducted the Hausman test to decide to use fixed effects or random effects. The Hausman test suggested that the preferred model was fixed effects (Chi-square = 26.208, $df = 9$, $p = 0.002$ for environmental-based decision-making as the dependent variable; Chi-square = 22.087, $df = 10$, $p = 0.015$ for environmental performance as the dependent variable).

We followed the hierarchical regression step to examine the direct, indirect, and moderating effects. In step 1, we entered only control variables; in step 2, we entered the predictor (i.e., TMT functional diversity); in step 3, we entered the mediator (i.e., TMT environmental-based decision-making); in step 4, we entered the two-way interaction term (i.e., environmental-based decision-making \times government subsidy). The entered variables were person-mean centered to avoid multicollinearity and spurious regression. The indirect effect was computed using the Monte Carlo method, which provides a 95% confidence interval with 20000 repetitions (see the online tool: <http://quantpsy.org/medmc/medmc.htm>). The (integrative) moderated mediation effect was analyzed using PROCESS Marco in SPSS (Hayes, 2013).

To address the endogeneity issue, we conducted several additional analyses. We did the robust check by replacing ROA and female percentage into Tobin_q² and

² Tobin_q refers to the market value of a company divided by its assets' replacement cost. It is a common indicator to represent a firm's financial performance (see, Carpenter, 2002; Triana et al., 2019).

TMT gender diversity (computed by Blau index), respectively. We did the reverse causality check by regressing our dependent variables on independent variables (see, Hu et al., 2021). The results should be insignificant. Finally, as suggested (Larcker & Rusticus, 2010), we used the instrumental variable approach to address the omitted variable bias (e.g., the nonindependence among independent variables and controls). In this study, we used TMT size and disclosure in firms' developmental deficiency (we manually searched it from the social responsibility reports and counted the number of the items regarding disclosure in deficiency) as the instrumental variable, respectively. Specifically, we first regressed TMT functional diversity on TMT size and then calculated the residual of this regression. Subsequently, we used this residual of TMT functional diversity as the independent variable to predict environmental-based decision-making. By doing so, we could remove the potential sources of endogeneity from our hypotheses (Hu et al., 2021). Likewise, we regressed environmental-based decision-making on disclosure in deficiency and then used the residual of environmental-based decision-making and its interaction term with the government subsidy to predict environmental performance. We conducted all these analyses using EViews (McKenzie & Takaoka, 2012).

Results

Table 1 presents descriptive statistics and correlations. No correlation value among the variables is higher than 0.60, suggesting the chance of multicollinearity is low. We calculated the variance inflation factor (VIF) for each of the regression coefficients. The VIF ranged from a low of 1.022 to a high of 1.491, well below the cut-off of 10 recommended by O'Brien (2007).

Hypothesis testing

Table 2 (Model 2) showed that TMT functional diversity was positively related to TMT environmental-based decision-making ($b = 0.362, p < .05$). Table 2 (Model 4) showed that TMT environmental-based decision-making was positively related to firm environmental performance ($b = 0.737, p < .01$). By calculating indirect effects using the Monte Carlo method, we got the indirect effect of TMT functional diversity on firm environmental performance through TMT environmental-based

decision-making. The confidence interval was $LL = 0.032$, $UL = 0.595$ (see Table 2).

Therefore, Hypothesis 1 was supported.

To examine the moderated mediation effect, we ran two analyses. First, we examined the two-way interaction term between TMT environmental-based decision-making and government subsidy. The results in Table 2 showed that the value of the interaction term was $b = 0.28$, $p < .05$. The simple slope test showed that TMT environmental-based decision-making was only positively related to firm environmental performance when government subsidy was high ($b = 1.02$, $p < .05$), while it was insignificant when government subsidy was low ($b = -0.376$, $p = 0.27$). To visualize the moderating effect of government subsidy, we plotted a figure (see Figure 2). Second, we used Process to get the integrative moderated mediation effect. The Process results (in Table 3) showed that the indirect effect of TMT functional diversity on firm environmental performance through TMT environmental-based decision-making was stronger when government subsidy was high ($b = 0.265$, $LL = 0.084$, $UL = 0.512$), while this indirect effect was not significant when government subsidy was low ($b = -0.035$, $LL = -0.228$, $UL = 0.133$). To conclude, Hypothesis 2 was supported as well.

Table 1. Means, SD, and correlations among studied variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1 Firm size (log)	10.25	0.83												
2 Firm tax (log)	5.07	1.02	0.71**											
3 ROA	0.11	2.77	-0.06*	0.02										
4 Female percentage	0.11	0.12	-0.20**	-0.10**	-0.02									
5 TMT size	8.61	3.15	0.26**	0.24**	-0.05	-0.08**								
6 TMT educational diversity	0.75	0.25	-0.17**	-0.18**	-0.01	0.01	-0.02							
7 TMT age mean	48.51	3.31	0.41**	0.31**	0.04	-0.19**	0.16**	-0.07**						
8 TMT tenure mean	3.72	1.37	-0.02	0.01	0.03	0.02	-0.03	-0.09**	0.17**					
9 TMT functional diversity	0.45	0.23	-0.20**	-0.11**	0.03	-0.01	0.16**	-0.02	-0.12**	-0.05				
10 Environmental-based decision-making	2.54	0.81	0.18**	0.18**	-0.02	-0.01	0.11**	-0.07**	0.10**	0.03	0.05*			
11 Government subsidy	6.98	1.08	0.40**	0.34**	0.02	-0.08*	0.20**	-0.08*	0.13**	0.00	-0.01	0.13**		
12 Environmental performance	5.19	6.03	0.12**	0.13**	-0.01	-0.04	0.06*	0.01	0.05	0.04	0.03	0.07**	0.02	

Note: N = 406 firms, N = 1706 data points; *** $p < .001$, ** $p < .01$, * $p < .05$.

Table 2. Regression results for the relationships between TMT functional diversity, environmental-based decision-making, government subsidy, and environmental performance

	Environmental-based decision-making				Environmental performance					
	Model 1		Model 2		Model 3		Model 4		Model 5	
	b	se	b	se	b	se	b	se	b	se
Constant	1.391**	0.511	0.949	0.544	-7.281	5.221	-7.981	5.166	9.056	15.517
Firm size (log)	0.015	0.051	0.049	0.051	0.816*	0.378	0.781*	0.371	-0.653	0.968
Firm tax (log)	0.038*	0.017	0.035*	0.017	0.056	0.151	0.031	0.147	-0.265*	0.123
ROA	1.067†	0.579	0.994†	0.564	1.239	3.387	0.506	3.317	-1.268	8.429
Female percentage	0.013	0.249	0.073	0.251	1.311	1.837	1.257	1.863	-0.170	3.872
TMT size	0.006	0.011	0.002	0.011	0.124	0.129	0.123	0.129	0.016	0.262
TMT educational diversity	-0.159	0.122	-0.134	0.123	-0.453	0.652	-0.353	0.648	6.660	3.533
TMT age mean	0.017†	0.009	0.016†	0.009	0.014	0.104	0.002	0.104	0.034	0.066
TMT tenure mean	-0.047†	0.025	-0.041	0.025	0.158	0.159	0.188	0.161	-0.262	0.611
TMT functional diversity			0.362*	0.156	2.713**	0.884	2.446**	0.866	-0.133	1.835
Environmental-based decision-making							0.737**	0.222	0.331	0.539
					Indirect effect: LL 0.032, UL 0.595					
Government subsidy									-0.214	0.162
Environmental-based decision-making × Government subsidy									0.280*	0.125
R-squared	0.08		0.09		0.04		0.05		0.09	
Log likelihood	-827.69		-824.94		-2250.03		-2246.56		-849.14	
F-statistic	3.92***		4.03***		1.84*		2.13**		6.60***	

Note: N = 1706; *** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .10$; unstandardized coefficients are reported; indirect effect was computed using Monte Carlo method, which provides 95% confidence interval with 20000 repetitions (see the online tool: <http://quantpsy.org/medmc/medmc.htm>); LL = lower limit, UL = upper limit.

Table 3. PROCESS results for moderated mediation effects

Moderator	Indirect effect (i.e., the effect of TMT functional diversity on environmental performance through environmental-based decision-making)	SE	LLCI	ULCI
<i>Control for firm size, firm tax, ROA, TMT size, female percentage, TMT educational diversity, TMT age mean, TMT tenure mean</i>				
Government subsidy (-1SD)	-0.035	0.089	-0.228	0.133
Government subsidy (mean)	0.115	0.064	0.012	0.263
Government subsidy (+1SD)	0.265	0.111	0.084	0.512

Note: N = 1706; all the variables are grand-mean centered; unstandardized coefficients are reported; significance level of confidence is at 95%.

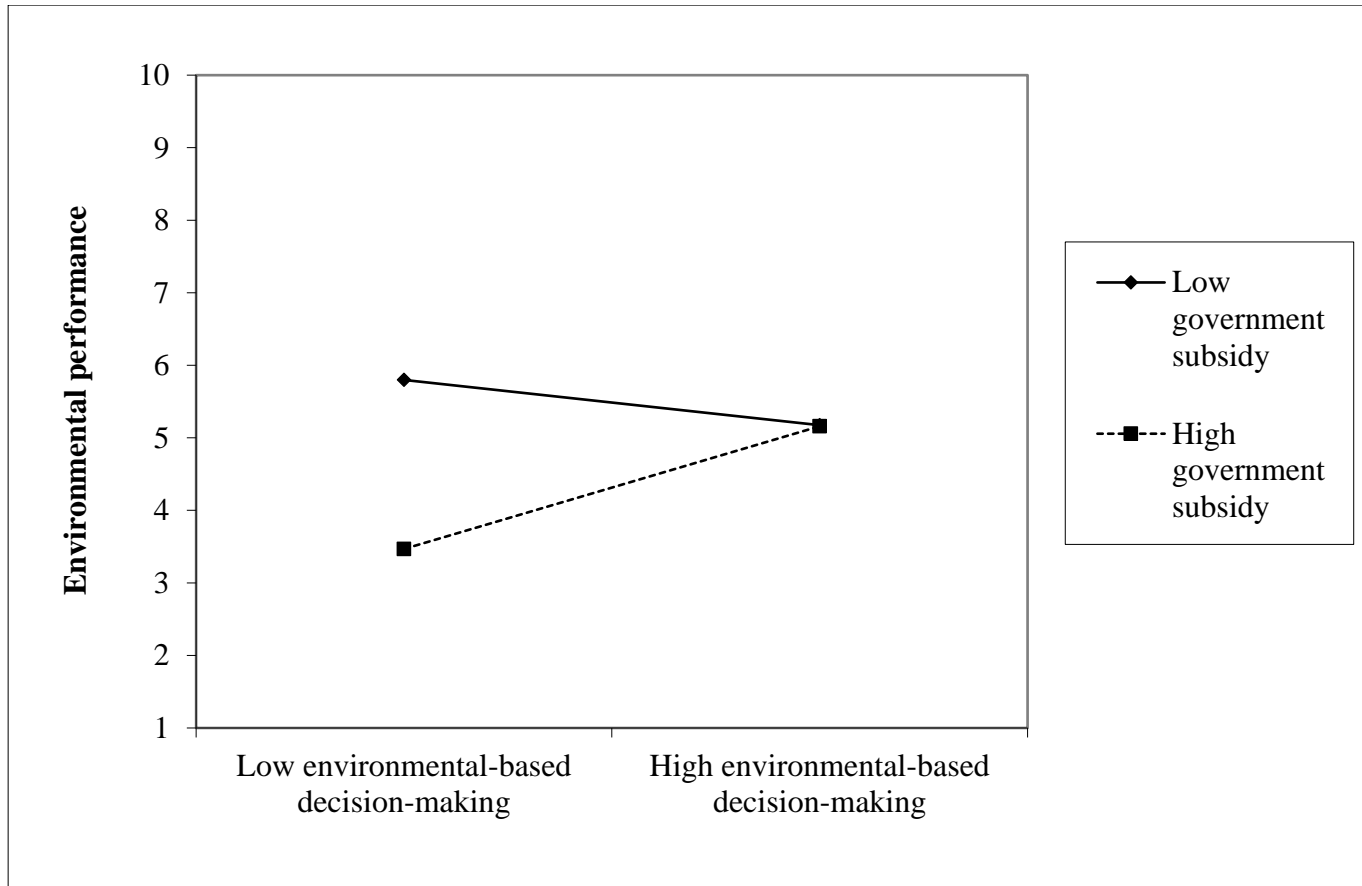


Figure 2. Two-way interactions between environmental-based decision-making and government subsidy

Robustness check

To ensure the robustness of our results, we used several alternative measures to replicate our model. Specifically, we did the robust check by replacing ROA and female percentage into Tobin_q and TMT gender diversity (computed by Blau index), respectively, and ran the new models. The results (in Table 4) indicated that there were no substantial changes in the significance of our predictor ($b = 0.378, p < .05$, see Model 2), mediator ($b = 0.743, p < .05$, LL = 0.041, UL = 0.611, see Model 4), and moderator (two-way interaction term = 0.281, $p < .05$, see Model 5). Thus, our results are robust and all hypotheses were supported.

Endogenous analysis

To address the issues of endogeneity, we performed the following analyses. First, as suggested by prior studies (Hu et al., 2021; Y. Zhang et al., 2010), we did the reverse causality check by regressing our dependent variables on independent variables. The results showed that TMT environmental-based decision-making was not significantly related to TMT functional diversity ($b = -0.011, p = 0.317$). However, firm environmental performance was marginally related to TMT environmental-based decision-making ($b = 0.016, p = 0.075$). See these results in Table 5. Therefore, we could conclude that reverse causation endogeneity might not be a major concern affecting our regression results. Second, as suggested (Larcker & Rusticus, 2010), we used the instrumental variable approach to address the omitted variable bias. We chose TMT size and firm developmental deficiency disclosure as the instrumental variables, respectively. The detailed procedures have been described in the analytical strategy section. The results (in Table 6) showed that the residual of TMT functional diversity was positively related to TMT environmental-based decision-making ($b = 0.014, p < .05$). The residual of TMT environmental-based decision-making was positively related to firm environmental performance ($b = 1.267, p < .001$). The calculated indirect effect was LL = 0.00, UL = 0.039, which did not include zero. Finally, we found that the two-way interaction term between the residual of TMT environmental-based decision-making and the residual of government subsidy was 1.868, $p < .001$. To conclude, the results of the instrumental-variable approach were similar to our original results and all hypotheses were supported.

Discussion

Increasing environmental performance is not an easy task for contemporary organizations. The constant climate change and customer pressure push organizations to formulate a more rational, high-quality environmental strategic scheme. Following the upper echelon and team diversity perspectives, our study investigated the important roles of TMT functional diversity and government subsidy. Our results revealed that TMT functional diversity related to higher firm environmental performance through improving environmental decision making, and that this indirect effect was stronger for those organizations that received more government subsidies. Thus, our study advances the understanding of why, how, and in what conditions TMT functional diversity enhances organizational environmental performance. Our study suggests that TMT functional diversity is a vital TMT characteristic as well as organizational internal assets that provide more cognitive resources to identify, process, and solve environmental-related difficult tasks and formulate comprehensive environmental strategies. Moreover, government subsidies can be taken as an important external financial resource, which could provide substantial instrumental support to help organizations to cope with the difficulties and challenges during the implementing process of environmental strategies.

Theoretical contributions

First, we add to the environmental governance (Gunningham, 2009; Nguyen et al., 2021; Nuber & Velte, 2021) literature by highlighting the important beneficial role of TMT functional diversity in terms of attaining environmental goals and succeeding in environmental governance. Prior studies showed the important roles of organizational internal resources in enhancing environmental performance, such as organizational slack resources (Xie et al., 2019), organizational learning capabilities (Siebenhüner & Arnold, 2007; Song et al., 2020), technology upgrade (Chen, Gong, et al., 2019), and clean production processes (Xie et al., 2019). Our study revealed that TMT functional diversity can be considered as another important form of organizational internal resources/assets. This is because TMT functional diversity represents a larger pool of decision-related resources that can be used to identify,

Table 4. Robust check for the regression results

	Environmental-based decision-making				Environmental performance					
	Model 1		Model 2		Model 3		Model 4		Model 5	
	b	se	b	se	b	se	b	se	b	se
Constant	1.418*	0.578	0.945	0.614	-6.479	5.672	-7.182	5.598	7.871	10.651
Firm size (log)	0.011	0.057	0.047	0.057	0.767†	0.413	0.732†	0.402	-0.736	0.998
Firm tax (log)	0.045**	0.017	0.041*	0.017	0.065	0.143	0.035	0.137	-0.303**	0.111
Tobin_q	0.019	0.032	0.019	0.031	-0.019	0.159	-0.033	0.152	0.497	0.355
TMT gender diversity	0.059	0.188	0.102	0.188	0.603	1.275	0.527	1.284	3.995	3.107
TMT size	0.007	0.009	0.002	0.011	0.124	0.128	0.122	0.128	0.018	0.264
TMT educational diversity	-0.157	0.123	-0.131	0.123	-0.484	0.656	-0.387	0.652	7.039*	3.469
TMT age mean	0.015	0.009	0.015	0.009	0.008	0.101	-0.002	0.101	0.044	0.058
TMT tenure mean	-0.041	0.025	-0.034	0.025	0.162	0.149	0.188	0.151	-0.126	0.546
TMT functional diversity			0.378*	0.157	2.707**	0.877	2.426**	0.858	-0.606	1.913
Environmental-based decision-making							0.743***	0.222	0.322	0.546
					Indirect effect: LL 0.041, UL 0.611					
Government subsidy									-0.214	0.163
Environmental-based decision-making × Government subsidy									0.281*	0.137
R-squared	0.07		0.08		0.04		0.05		0.08	
Log likelihood	-829.39		-826.38		-2250.24		-2246.07		-846.74	
F-statistic	3.69***		3.85***		1.81*		2.11**		6.69***	

Note: N = 1706; *** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .10$; unstandardized coefficients are reported; indirect effect was computed using Monte Carlo method, which provides 95% confidence interval with 20000 repetitions.

Table 5. Reverse causality check for the regression results

	TMT functional diversity		Environmental-based decision-making	
	Model 1		Model 2	
	b	se	b	se
Constant	0.977*	0.491	-6.349**	2.334
Firm size (log)	-0.053	0.051	0.751**	0.239
Firm tax (log)	-0.003	0.005	0.025	0.024
ROA	0.116	0.151	1.142	0.721
Female percentage	0.342**	0.128	0.967	0.616
TMT size	0.002	0.004	0.006	0.019
TMT educational diversity	-0.034	0.062	0.261	0.295
TMT age mean	0.001	0.003	0.007	0.017
TMT tenure mean	0.001	0.008	0.023	0.038
Environmental-based decision-making	-0.011	0.011		
Environmental performance			0.016†	0.009
R-squared	0.19		0.28	
Log likelihood	-706.09		-400.71	
F-statistic	5.03***		3.07***	

Note: N = 1706; *** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .10$; unstandardized coefficients are reported.

Table 6. Instrumental-variable approach predicting the regression results

	Environmental-based decision-making				Environmental performance					
	Model 1		Model 2		Model 3		Model 4		Model 5	
	b	se	b	se	b	se	b	se	b	se
Constant	0.779*	0.363	0.961*	0.374	2.264	3.671	5.151	3.813	23.092*	10.068
Firm size (log)	0.164***	0.027	0.150***	0.028	-0.131*	0.059	-0.051	0.061	-22.908*	9.835
ROA	-0.002	0.008	-0.001	0.007	-5.529†	2.997	-5.106†	2.905	-0.029**	0.009
Female percentage	0.114	0.171	0.119	0.169	2.885*	1.349	3.917**	1.373	3.765	2.501
TMT educational diversity	-0.126	0.081	-0.131	0.081	0.629	0.583	0.799	0.588	2.098*	0.982
TMT age mean	0.003	0.007	0.003	0.007	0.055	0.072	-0.008	0.072	0.087	0.114
TMT tenure mean	-0.001	0.017	0.001	0.017	0.007	0.122	-0.006	0.122	0.155	0.245
TMT functional diversity (residual)			0.014*	0.007	0.035	0.049	-0.029	0.048	0.031	0.094
Environmental-based decision-making (residual)							1.267***	0.309	-0.966	1.179
					Indirect effect: LL 0.001, UL 0.039					
Government subsidy (residual)									23.729*	9.442
Environmental-based decision-making (residual) × Government subsidy (residual)									1.868***	0.364
R-squared	0.06		0.06		0.01		0.03		0.11	
Log likelihood	-1808.19		-1806.53		-2286.94		-2281.27		-2130.14	
F-statistic	6.68***		6.51***		0.85		1.55†		7.12***	

Note: N = 1706; *** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .10$; unstandardized coefficients are reported; indirect effect was computed using Monte Carlo method, which provides 95% confidence interval with 20000 repetitions. For the first-stage regression, we used TMT size as the instrumental variable; for the second-stage regression, we used the disclosure of the company's deficiencies as the instrumental variable. The disclosure of the company's deficiencies was computed by the number of items reporting the company's deficiencies from the social responsibility reports.

analyze, and process critical problems and decision-related tasks (Homberg & Bui, 2013). Given that environmental issues are critical and challenging for contemporary organizations, we highlight that functionally diverse TMTs are valuable assets for organizations to deal with and achieve such novel and difficult organizational goals. This finding was also in line with organizational dynamic capabilities literature (Eisenhardt & Martin, 2000; Lawson & Samon, 2002) indicating that heterogeneous resources are one of organizational dynamic capabilities and can increase organizational competitive advantages and sustainable development. That said, we underscore that TMT functional diversity represents a kind of heterogeneous (cognitive) resources, helping organizations to develop organizational ambidexterity (Li, 2013), identify strategic opportunities and challenges agily, and adjust existing production and operation processes into higher environmental sustainability.

We also examined the mediating role of environmental-based decision-making on the relationship between TMT functional diversity and organizational environmental performance, which further advances our understanding of why and how TMT functional diversity can enhance environmental performance. We reveal that environmental performance can be improved by the TMT's strategic decision-making process where diverse information, perspectives, and knowledge are integrated, exchange, and discussed to identify, process, and solve any possible environmental issues (Boone & Hendriks, 2009). We thus provide the *empirical* evidence of a mediating process of environmental-based decision-making by contrast that prior studies merely proposed it conceptually but lacked empirical evidence (Elmagrhi et al., 2019; Ren et al., 2021; Shahab et al., 2018).

Second, we further enrich the environmental governance literature by uncovering the significant moderating role of government subsidies. We suggest that organizational external resources (i.e., government subsidies) are equally important to be used to assist, support, and safeguard environmental strategy implementation process. Our results revealed that government subsidies strengthened the indirect effect of TMT functional diversity on environmental performance through increasing environmental decision-making. So far, conducting a moderated mediation model, we answer not only how (i.e., through what mechanism) but also when (e.g., in what

condition) TMT functional diversity makes firms achieve higher environmental performance. This finding implies that government subsidies make TMTs' strategic decision making and implementation more smooth and successful. That said, we underscore that external resources can help to offset organizational internal risks and to unlock more potentials of diverse TMTs. However, although some studies recognized the role of government subsidies in improving regional environmental governance (Huang et al., 2019; Tsai & Liao, 2017), few studies considered the joint role of TMT functional diversity and government subsidies (i.e., a combination of organizational internal resources and external resources) in optimizing environmental decision making and implementation processes. We add to the environmental governance literature by highlighting that mobilizing heterogeneous cognitive resources within TMTs and actively seeking available external resources (i.e., government subsidies) might be wise strategic actions to obtain higher environmental achievements.

Third, environmental performance is an important indicator of organizational sustainable development (Hu et al., 2021). Thus, we add to the sustainability literature (Virakul, 2015; F. Zhang & Zhu, 2019) by uncovering what top executives can do (a strategic decision-making perspective) to boost sustainable development. Prior studies showed how organizations can motivate employees' intentions and behaviors to enhance sustainability, such as individual readiness for change (Olafsen et al., 2021), harmonious environmental passion (Saifulina & Carballo-Penela, 2017), environmentally friendly behaviors at work (Saifulina & Carballo-Penela, 2017), and individual sustainability-oriented crafting behaviors (Pekaar & Demerouti, 2021). Although a small number of studies recognized the role of female directors (Elmagrhi et al., 2019), CEO personal traits (Ren et al., 2021), and ethical leadership (Wesarat et al., 2017) in organizational sustainability, which predominately focused on the role of single top executive characteristics on sustainability, few studies presented whether and how task-related diversity within TMTs can contribute to the enhancement of sustainability. Thus, our study emphasizes the important beneficial role of TMT task-related diversity (e.g., functional diversity) in boosting sustainability. This is because functionally diverse TMTs are able to process different

information more thoroughly, and spark more divergent thinking and solutions, compared to homogeneous ones (van Knippenberg & Schippers, 2007). The decisions that fully consider different dimensions of sustainability can be transformed into management practices and finally enhance organizational sustainable development. Thus, we take a strategic information elaboration perspective to understand the mechanism behind the top executive-environmental performance relationship and underscore the importance of diversity attributes in making environmentally sustainable strategies.

Finally, we enrich the team diversity literature (Shemla et al., 2016; Van Knippenberg et al., 2004) by considering a special form of team (i.e., TMT) and its impacts on environmental performance. We pinpoint that TMT is different from general working teams where team members focus on task completion and problem solving. TMT diversity particularly plays an important role in strategic decision-making, which can have a profound impact on organizational-level outcomes in the hypercompetitive business environment. Compared to homogeneous TMTs, a (functional) diverse-composed TMT would be more able to identify current problems in different departments, seize potential market opportunities from different aspects, and formulate a strategic scheme that can mobilize the organizational resources and utilize the strengths of different departments, units, teams. Thus, we connect TMT diversity to the corporate strategy field (Eisenhardt & Martin, 2000; Gabaldon et al., 2018) and underscore that diverse TMTs are beneficial to the rationality, comprehensiveness, and ambidexterity (i.e., simultaneous exploration of new capabilities and exploitation of current capabilities) of corporate strategies. Organizations can formulate and implement more successful organizational strategies by having a more diverse-composed TMT. Besides, in line with a contingency perspective of team diversity literature (van Knippenberg & Schippers, 2007), we place the role of team diversity in a special circumstance where team members need to solve complex, challenging environmental issues. Thus, we confirm that diverse teams outperform homogeneous ones when tasks are ill-defined, difficult and/or external business environment is dynamic, uncertain. By uncovering the positive effect of TMT diversity on organizational environmental performance,

we pinpoint that TMT diversity is not merely positively associated with firm financial success, as evidenced by previous studies (Boone & Hendriks, 2009; Richard et al., 2020), but also contributes to higher environmental success. The environmental achievement is also important for organizations because it represents that organizations take more social responsibilities for society and gain a higher level of innovative, sustainable development patterns (Dragomir, 2018; Trumpp et al., 2015). This will benefit both customers and organizations. We highlight that having a (functionally) diverse TMT might be the first step to attain environmental achievements by formulating rational, comprehensive, and ambidextrous environmental strategies.

Practical implications

Our study also provides valuable practical implications for contemporary organizations. First, we suggest that composing a functional diverse TMT is helpful for organizations to successfully deal with possible environmental misconduct, and achieve higher environmental performance. For example, organizations may consider nominating their TMT members not only from a single functional background. This is no good to generate comprehensive strategic decisions (Boone & Hendriks, 2009). It is wise for organizations to evaluate their current TMT compositions and think about which functional areas might be important sources of making better collective decisions but they do not appear in the current TMT compositions. Second, as our result suggested, government subsidy is an important external resource for contemporary organizations to achieve environmental goals. Therefore, organizations should more proactively seek government (financial) support and make the best of it for their own growth (Cotti & Skidmore, 2010; Huang et al., 2019). For example, organizations (or TMTs of an organization) should keep an eye on applications for government subsidies (e.g., when is the deadline, who has the eligibility, how to apply) (Takalo & Tanayama, 2010). Organizations could also proactively build good connections with (local) governments to share environment-relevant information, improve monitoring mechanisms, and establish new company-government cooperative patterns (Sheng et al., 2010; Wang et al., 2017; W. Wu et al., 2012).

Limitations and future directions

Our study is not without limitations. First, regarding the construct, this study used the archived dataset to measure every variable. While objective, we miss more psychological states and processes of TMT members. The upper echelon scholars state that it is important for future studies to capture a more psychological process of TMT decision-making (Homberg & Bui, 2013; Nielsen, 2010). Thus, a field survey (e.g., interviews, questionnaires, and field experiment) aiming at uncovering these psychological factors is a promising direction for future TMT studies. Second, regarding the measurement of diversity, there is a risk that the Blau index cannot express different degrees of similarity between the functional backgrounds. However, following the common practice in team diversity field, we ignore this difference. But we do think future research may want to think more about the measurement of diversity, integrating the idea of distance between functional background, in order to get more nuanced insights into the diversity phenomenon. Third, regarding the sample, our sample is all Chinese publicly listed firms, which may arise generalizability issues. However, we argue that China, as the largest developing country in the world, may present empirical evidence to other countries on how Chinese firms make efforts to pursue sustainable development. Future studies could examine firm environmental performance in other country settings. Finally, we also want to mention some external factors that may overlook in this study, which can be promising future directions. For example, incorporating TMT studies and environmental governance literature, our study uncovers one of the important TMT characteristics - TMT functional diversity, which signifies a horizontal structure. However, TMT characteristic is multidimensional and complex (Díaz-Fernández et al., 2016). For example, TMT vertical structure characterized by power, income, and status differences could also influence the decision-making process (Bunderson & Van der Vegt, 2018), and in turn, impact firm environmental performance. Thus, future studies could continue to examine the role of other TMT characteristics such as TMT vertical diversity on firm environmental performance.

Conclusion

Based on the upper echelon and team diversity perspectives, this study investigated why, how, and when TMT functional diversity links to higher firm environmental performance. Our study revealed the important mediating role of TMT environmental-based decision-making and moderating role of government subsidy. Our study suggests that TMT functional diversity is an important asset of an organization that can provide more cognitive resources to deal with environmental issues and enhance environmental decision-making. Furthermore, government subsidies are important external resources, which could provide substantial instrumental support to help organizations to cope with the difficulties and challenges during the implementing process of environmental strategies. Thus, it is important for organizations to compose a more functionally diverse TMT and proactively seek more external resources (i.e., government subsidies).

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Chapter 3

Making optimal use of informationally diverse work environments: The important roles of job crafting and emotional intelligence

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Abstract

Employees in informationally diverse work environments face both potential job resources and job challenges. Following the job demands-resources and job redesign perspective, this study investigates by what means and with which abilities employees could profit from informational diversity and successfully navigate in informationally diverse work environments. A weekly diary study with 254 employees in three different medical organizations (1016 observations in total) found that informational diversity was associated with higher work outcomes (e.g., work performance and work engagement) via employees' job crafting behaviors, and that this indirect effect was stronger for employees with higher emotional intelligence. Our study highlights that job crafting is a potential strategy to access and benefit from the heterogeneity in resources presented by an informationally diverse work environment and that emotional intelligence may enable employees to more efficiently respond to the challenges and opportunities that informational diversity may bring. We suggest that organizations support the enhancement of employee job crafting behaviors and emotional intelligence in an informationally diverse work environment.

Keywords: informational diversity; job crafting; emotional intelligence; work engagement

Introduction

Today's employees often face informationally diverse work environments, which are characterized by increased variations in type, source, or category of relevant information, knowledge, and perspectives in the workplace (Allen et al., 2008; Blouch & Azeem, 2019). A European Union survey (2015) shows that 83% of European companies possess a diverse workforce holding different information, knowledge, and educational and functional backgrounds. Although researchers have highlighted numerous benefits of informational diversity, such as better problem-solving, creative decision-making, and superior organizational performance (Allen et al., 2008; Dahlin et al., 2005; Hentschel et al., 2013), informational diversity management is also fraught with many challenges (Singh et al., 2013). Rising informational diversity may necessitate additional effort and energy devoted to information processing, may increase potential disagreements and conflicts, and/or decrease job satisfaction (Guillaume et al., 2017; Van Knippenberg et al., 2004). Thus, informational diversity provides employees with not only valuable benefits but challenging demands as well. This raises the question of how employees can make optimal use of informational diversity in their daily work, positively respond to its challenges, and successfully navigate and thrive in informationally diverse work environments.

Prior studies showed that workplace informational diversity could be managed through top-down, organization-level approaches. For example, organizational inclusion programs (Jaiswal & Dyaram, 2020), a psychologically safe climate (Singh et al., 2013), collective task reflexivity (Chen et al., 2019), and organizational justice policies (Blouch & Azeem, 2019) can help create circumstances in which employee performance and well-being can potentially benefit from informational diversity. However, managing informational diversity should not be limited to top-down approaches. Bottom-up approaches may also have utility. This is an important omission from past literature because employees' job conditions may be unique, and even within an employee, may vary across different days (Tadić et al., 2015). Thus, it may be difficult for organizations to develop a one-size-fit-all approach to manage an informationally diverse work environment. Instead, ongoing,

bottom-up, employee-initiated actions could be an efficient way for employees to navigate informationally diverse work environments. Following the job design and job demands-resources literature, we propose that job crafting, defined as the self-initiated changes one takes to adjust one's job resources and job demands (Demerouti et al., 2015), could be such a bottom-up strategy to respond and make optimal use of informational diversity. Via job crafting actions, employees could mobilize valuable job resources from their informationally diverse work environments to respond to challenging demands, and consequently, improve their work outcomes (Oldham & Fried, 2016; Zhang & Parker, 2019).

Research also suggests that the extent to which diversity leads to positive or negative outcomes depends on individual differences such as employees' ability to process informational diversity at work (Guillaume et al., 2017; Kim et al., 2020). One such ability is emotional intelligence (EI) which refers to the ability to effectively manage one's emotions as well as intentionally harness and use self and others' emotions and emotional information (Mayer et al., 1997). The workplace diversity literature indicates that working in a diverse setting (e.g., exchanging information, ideas, and resources with people from different backgrounds) heightens stress and anxiety levels, and may cause discord and counterproductive conflict (Clark & Polesello, 2017; Gardenswartz et al., 2010). One's emotional intelligence may help increase understanding of different perspectives (Parke et al., 2015; Zhang & Shi, 2017), prevent unproductive tension resulting from misinterpreted interactions among colleagues, and increase the leverage that diversity can bring (Gardenswartz et al., 2010). Thus, we expect that EI moderates the effects of informational diversity such that employees with high EI may respond more positively to informational diversity and cope more effectively with potential informational/situational hassles.

This study aims to investigate whether an informational diverse work environment motivates employees to engage in job crafting behaviors, which, in turn, promotes employees' work outcomes, and to what extent employees' level of emotional intelligence moderates this indirect effect. We employed a weekly diary study to examine if employees cope with informational diversity in their daily work environments by engaging in job crafting behaviors which impact their weekly work

outcomes. We view the process of informational diversity as involving ongoing daily behaviors rather than a one-time event. We contribute to the literature in several ways. First, we add to workplace diversity literature by presenting a bottom-up mechanism by which employees could effectively enhance their work outcomes stemming from an informationally diverse work environment. We highlight that job crafting, as a proactive strategy aiming to restructure one's constellation of job resources and demands (Hornung et al., 2010), can help employees to benefit from the heterogeneity in resources presented by an informationally diverse work environment. Second, we underline the importance of the moderating role of emotional intelligence, thus expanding the understanding of the contingency factors determining the impact of diversity on favorable outcomes (Guillaume et al., 2017). Thus, we shed light on the actions and abilities which help employees effectively navigate their informationally diverse work environments. Third, we contribute to the job crafting literature (Zhang & Parker, 2019) by suggesting that workplace informational diversity is an antecedent of job crafting. We highlight that knowledge-based diversity attributes in the workplace might be an important context to activate employee job crafting because employees can perceive more room and urgency for crafting behaviors.

Theory and hypothesis development

Informational diversity in the workplace

Informational diversity refers to (perceived) differences in type, source, or category of work-related information, knowledge, and perspectives (Allen et al., 2008; Blouch & Azeem, 2019). Grounded in the information-processing perspective (Van Knippenberg et al., 2004), informational diversity is thought to be *beneficial* for employees' work outcomes because informational diversity offers employees a variety of assets such as knowledge, perspectives, and expertise (Phillips et al., 2011).

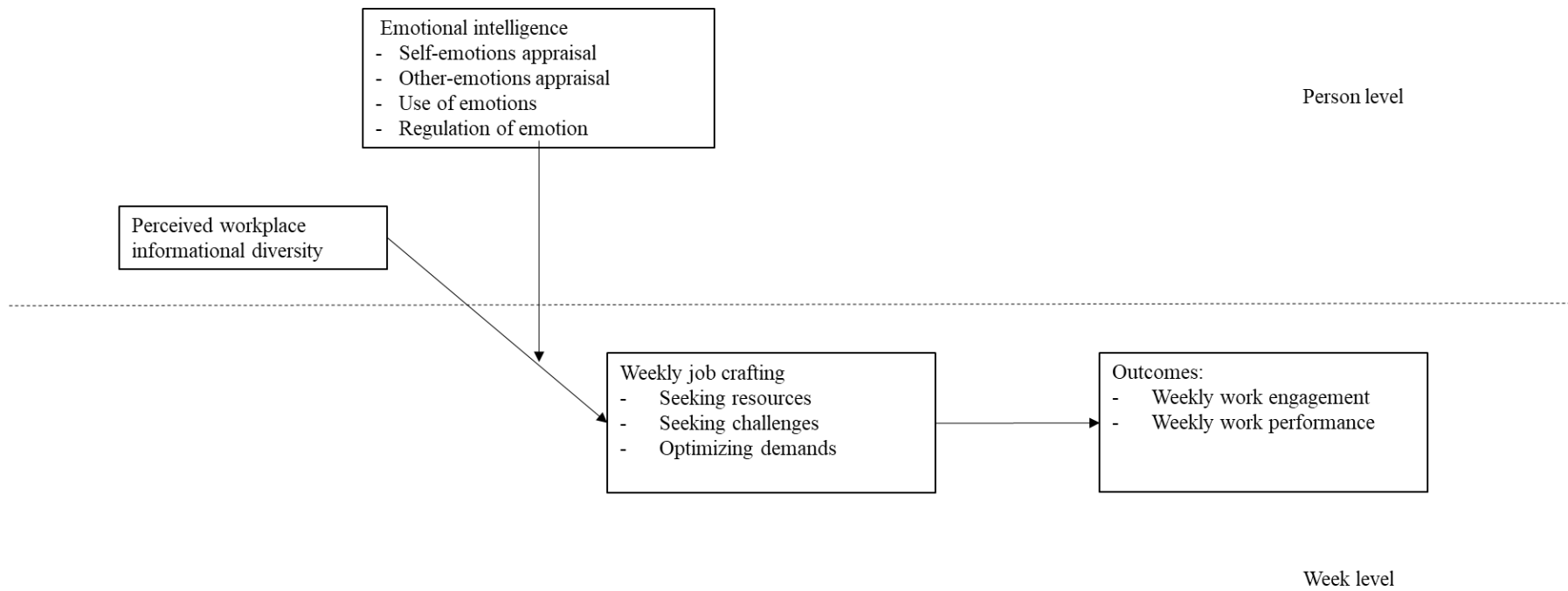


Figure 1. Conceptual model

Employees can use these non-overlapping resources to foster information elaboration and divergent thinking (Dahlin et al., 2005), to generate innovative solutions to work problems and processes. For example, prior empirical studies found that informational, functional, and knowledge-related diversity was positively related to employee work engagement (Downey et al., 2015), sale performance (Joshi et al., 2006), and job involvement (Kirby & Richard, 2000).

However, the benefits of informational diversity in employees' daily work is not always self-evident. Some research suggests that informational diversity can also potentially be *demanding* for employees. In line with the social categorization perspective (Hecht & Allen, 2009), some studies suggest that increased amounts of information may result in higher cognitive and emotional effort (van Knippenberg & Schippers, 2007). The differing opinions that need to be taking into account might increase one's work load, work difficulties, and/or interpersonal conflicts (Jaiswal & Dyaram, 2020). Additionally, when processing diverse information, employees likely feel more stressed and anxious (Clark & Polesello, 2017; Gardenswartz et al., 2010). Some evidence also suggests that those who perceived diversity at work reported a lower level of well-being (Jaiswal & Dyaram, 2020) and higher level communication costs (Madera et al., 2013). We use job demands-resources theory (Bakker & Demerouti, 2017) to understand the mixed effects of diversity on individual-level outcomes and how individuals can cope with it by using the bottom-up of job crafting.

Informational diversity within the job demand-resources framework

The job demands-resources (JD-R) theory is widely used in work characteristics, work design, work stress and motivation studies (Bakker & Demerouti, 2017; Demerouti et al., 2001). This theory demonstrates that employee work outcomes can be affected by two aspects of work elements – job demands and job resources (Bakker & Demerouti, 2017). Job demands refer to those physical, psychological, social, or organizational aspects of the job that require individuals to invest physical and/or psychological time, energy and other efforts (Demerouti et al., 2001). For example, new technologies, complex tasks, and conflicts with colleagues and leaders are job demands that employees must invest time and energy to

effectively address. Conversely, job resources refer to physical, psychological, social, or organizational aspects of the job that help achieve work goals, reduce job demands and stimulate personal growth (Demerouti et al., 2001). For example, feedback, support, and professional skill development are job resources that employees can use to facilitate their work and careers. The JD-R theory (Bakker & Demerouti, 2017) further proposes that job demands trigger the health-impairment process that leads to negative outcomes such as exhaustion, disengagement, and burnout (Gordon et al., 2018; Tims et al., 2013), and job resources trigger the motivational process that yields beneficial outcomes such as positive affect, engagement, and creativity (Bakker & Xanthopoulou, 2013; Demerouti et al., 2015).

According to the JD-R theory, an informationally diverse work environment involves both aspects of job resources and job demands at the same time. On the one hand, an informationally diverse work environment provides employees with available job resources such as different perspectives from colleagues with different functional backgrounds, more learning opportunities from colleagues with different educational backgrounds, and more prior (successful or failed) experience from colleagues with different ages and tenures. These valuable job resources can help employees generate novel ideas, receive useful feedback, seek critical information for career development. On the other hand, informational diversity may also increase employees' job demands. For example, when employees regularly interact with colleagues from different functional backgrounds who provide different opinions, employees must invest extra time and energy to understand, digest, and process this diverse information, and consider how to optimally utilize this varied information to facilitate work. Employees may even need to work longer hours to negotiate and communicate with different colleagues on the precise understanding of different information. The JD-R scholars accordingly propose a means to deal with these job resources and job demands, which is called job crafting (Tims et al., 2012). In the next section, we develop hypotheses on how an informationally diverse work environment could trigger job crafting, and in turn, enhance employee work outcomes.

The mediating role of job crafting

According to the JD-R theory, job crafting is defined as the proactive strategy aiming at balancing job resources and job demands (Tims et al., 2012). The form of job crafting includes actively seeking job resources, seeking challenges, and reducing job demands (Petrou et al., 2012). Research shows that those who engage in job crafting can have considerable control over their jobs, stay energetic and engaged, and perform tasks in suitable, goal-oriented directions (Oldham & Fried, 2016; Rudolph et al., 2017; F. Zhang & Parker, 2019). This is also in line with job design and proactive behavior literature (Crant, 2000; Oldham & Fried, 2016) indicating that job crafting is a bottom-up approach because it is initiated by employees themselves who take personalized actions based on their own needs, preferences, and circumstances (Hornung et al., 2010).

We argue that informational diversity contributes to a demanding and resourceful work environment that could potentially stimulate job crafting behaviors. The reason is that, based on the JD-R theory, an informationally diverse work environment presents more urgency and room for crafting behaviors. That said, when working in an informationally diverse work environment, employees may easily spot the available job resources they need but also perceive an urgent need for dealing with job demands presented by informational diversity. Therefore, as proposed by the JD-R and proactivity scholars, people may initiate actions to deal with these circumstances, including self-management (Breevaart et al., 2014), job crafting (Petrou et al., 2019), and networking (Porter & Woo, 2015). Petrou et al. (2012) found that a work environment exhibiting high resources and high demands was positively related to expansion-oriented job crafting behaviors. Other studies also found that job resources, job demands/challenges, task complexity, and a changing context were positively related to one's proactive behaviors (Fritz & Sonnentag, 2009; Ghitulescu, 2012; F. Zhang & Parker, 2019). Thus, we expect that informational diversity, which offers both non-overlapping job resources and potential challenging demands, could motivate job crafting.

Subsequently, it is expected that job crafting enhances work outcomes. In this study, we consider two outcomes – work engagement and work performance. The former delineates the work-related state of mind (Schaufeli & Bakker, 2004), while

the latter indicates the task-related achievements (Koopmans et al., 2013). Therefore, these two outcomes are seen as important indicators in organizational research uncovering the extent to which employees are motivated and fulfill their tasks (see reviews, Rudolph et al., 2017; Zhang & Parker, 2019). Based on the JD-R model and job crafting literatures, we argue that job crafting improves work engagement. Employees who engage in job crafting experience positive emotions at work, have considerable control over their tasks and goals, and intentionally create a person-environment or person-job fit (Dubbelt et al., 2019; Tims et al., 2016). Following the same logic, job crafting relates to higher work performance because via job crafting actions, such as seeking resources, seeking challenges, and reducing/optimizing demands, employees could effectively find alternative solutions to the work hurdles and mobilize their resources to optimize work processes (Demerouti et al., 2015). Taking together, we hypothesize:

H1: Employees who perceive more informational diversity will engage in more job crafting, and in turn, will report higher (a) work engagement and (b) work performance.

The moderating role of emotional intelligence

In addition to understanding by what means employees react to informational diversity in their daily work contexts, we are also interested to know whether personal abilities of employees assist them in profiting from informationally diverse work environments. Although prior research has identified an number of contingency factors moderating the impact of diversity on work outcomes (Guillaume et al., 2017), the majority have focused on variables at the management/organizational level (i.e., a top-down perspective), such as leadership (Muchiri & Ayoko, 2013), climate and culture (Moon & Christensen, 2020), and HRM practices (Martin-Alcazar et al., 2012). Few studies have explored the contingency factors at the employee level, especially employees' emotional intelligence (EI). We argue that individuals in informationally diverse work environment who are higher in EI will be better to select effective coping strategies (Clark & Polesello, 2017).

EI refers to a suite of motivational, dispositional, affective capabilities and attributes that influence one's ability to cope with various environmental hassles (Parke et al., 2015). Highly EI individuals are able to effectively appraise their own

and others' emotions and regulate their own emotions when facing complex, challenging, and interactional situations involving collaborating with colleagues from different functional or educational backgrounds (Mayer et al., 2007; Parke et al., 2015). Highly EI employees may be better able to understand, process, and use information presented by diverse colleagues, which will enable them to select more effective strategies for responding to complex social environments (Parke et al., 2015). For example, when working in an informationally diverse setting (e.g., exposed to different information, ideas, and resources with colleagues of different backgrounds), high EI may help employees to better understand different perspectives (Parke et al., 2015; Zhang & Shi, 2017), more effectively address tensions resulting from potential misinterpretation, and capitalize on the potential benefit of diversity (Gardenswartz et al., 2010). Research shows that high EI employees could frame a demanding situation in social interactions as an opportunity to challenge themselves to grow and to prove they can handle the demands that stem from social interactions (Parke et al., 2015). Studies found that emotionally intelligent employees place stronger value on individual differences and are capable of taking actions to process diverse information and manage diverse interactions (Newton et al., 2016; Toyama & Mauno, 2017).

In terms of JD-R theory, EI can be viewed a personal resource that enables individuals to better utilize job resources and better address job demands at work (Bakker & Demerouti, 2017). Personal resources are aspects of the self that are generally linked to resiliency and refer to one's ability to control and impact upon one's environment successfully (Xanthopoulou et al., 2009). Thus, we argue that one's emotional intelligence is a valuable personal resource. Prior studies have identified many effective personal resources including self-efficacy, organizational-based self-esteem, optimism, and proactive personality (Bakker et al., 2015; Van Wingerden et al., 2017; Xanthopoulou et al., 2009). We expect that when employees perceive informational diversity in the workplace, higher EI will enable them to unlock the benefits of informational diversity more successfully, thus allowing them to respond more positively respond to potential challenges. As such, high EI employees may initiate job crafting actions more successfully. This is because high EI

employees are better at dealing with interpersonal interactions and manage self and others' emotions during the job crafting process. Thus, we hypothesize:

H2: Emotional intelligence moderates the relationship between informational diversity and job crafting, such that this effect was stronger for employees with higher EI.

H3: Emotional intelligence moderates the relationship between informational diversity and work outcomes (a: work performance; b: work engagement) via job crafting, such that this indirect effect was stronger for employees with higher EI.

Methods

Procedure and participants

We conducted a multilevel, multi-source weekly diary design (over four weeks). Our sample consisted of employees from three medium Chinese hospitals located in Shandong Province, China. We sent employees an e-mail invitation, in which participation was encouraged and confidentiality and anonymity of responses were assured. The e-mail contained a link to a web page that included a detailed description of the study and an electronic consent form. After reading the study description and completing the consent form, participants were directed to another web page where they could complete the survey. The survey included one general questionnaire and four weekly questionnaires. The general questionnaire included demographics and person-level variables (e.g., perceived workplace information diversity and emotional intelligence). Subsequently, the four weekly questionnaires included week-level variables (e.g., weekly job crafting, weekly work engagement, and weekly work performance). The weekly questionnaires were sent every Thursday and expected to be completed before the end of the workday on Friday. Participants created a unique personal identification code so that we could match the data of the general questionnaire with the weekly questionnaires.

In the end, a total of 254 individuals, including nurses, medical specialists, and administrative personnel out of 359 (71% participation), completed the general questionnaire and four weekly questionnaires (1,016 observations). The participants' average age was 34.86 years ($SD = 10.37$), and 77% were female. On average, they had worked with their current organization for 9.71 years ($SD = 8.22$), and 72% of them had earned a bachelor's degree or above.

Measures

Questionnaires were administered in the Chinese language and scales were translated into Chinese and back translated into English to ensure consistency (Brislin, 1976). That is, we first translated the items into the target language – Chinese, and then we asked another linguist (an English teacher) to perform a literal – very precise – translation of the items back to the original language. Finally, we compared the back translation to the original text to make sure the back translation is accurate and complete.

Informational diversity. Harrison & Klein (2007) identified three dimensions of diversity: variety (different *types* of knowledge, expertise, or experience), separation (differences in personal values, trust), and disparity (differences in power, social status), and developed items to measure each of three dimensions. Informational diversity refers to functional, educational, and experience diversity (also known as knowledge-based diversity). Harrison and Klein (2007) developed the following item that effectively capture the level of informational diversity in a work group: “To what extent do your unit members differ in their functional backgrounds, source of relevant knowledge, and distinctive information”, ranging from 1 = “All unit members have the same functional background, knowledge and information” to 5 = “Each unit member has his/her own unique functional background, knowledge, and information”. We used this single-item to measure participants’ perception of work unit informational diversity.

Emotional intelligence was assessed using the 16-item WLEIS scale (Law et al., 2004), which consists of the following four dimensions (using four items each): self-emotions appraisal (e.g., “I have good understanding of my own emotions”; $\alpha = 0.82$), others-emotions appraisal (e.g., “I have good understanding of the emotions of people around me”; $\alpha = 0.88$), use of emotion (e.g., “I would always encourage myself to try my best”; $\alpha = 0.91$), and regulation of emotion (e.g., “I have good control of my own emotions”; $\alpha = 0.90$). A 7-point rating scale was used, ranging from 1 (totally disagree) to 7 (totally agree).

Weekly job crafting was assessed with the scale (Petrou et al., 2012) measuring *weekly seeking job resources* (“This week, I have asked my supervisor for advice” 3

items; Cronbach's $\alpha = 0.92, 0.93, 0.92, 0.94$ at T1, T2, T3, T4), *weekly seeking job challenges* ("This week, I have asked for more responsibilities" 3 items; $\alpha = 0.86, 0.89, 0.91, 0.94$ at T1, T2, T3, T4). We used the scale developed by (Demerouti & Peeters, 2018) to measure and *weekly optimizing job demands* ("This week, I simplified work processes or procedures to make my job easier" 3 items, $\alpha = 0.91, 0.88, 0.91, 0.91$ at T1, T2, T3, T4). All measures used a 5-point rating scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Weekly work engagement was assessed with the nine-item version of the Utrecht work engagement scale (Schaufeli & Bakker, 2004) with three items for each of the three underlying dimensions: vigor ("This week, I felt bursting with energy at my work"), dedication ("This week, I was enthusiastic about my job"), and absorption ("This week, I was immersed in my job"). A 7-point rating scale was used, ranging from 1 (not like me at all) to 7 (very like me). Cronbach's $\alpha = 0.90, 0.96, 0.97, 0.97$ at T1, T2, T3, T4.

Weekly work performance was assessed with selected 6 items (Koopmans et al., 2013). This scale consists of three dimensions with two items for each. That is, task performance (e.g., "This week, I have managed to plan my work so that it was done on time"), contextual performance (e.g., "This week, I took on challenging work tasks, when available"), and adaptive performance (e.g., "This week, I came up with creative solutions to new problems"). A 5-point rating scale was used, ranging from 1 (totally disagree) to 5 (totally agree). Cronbach's $\alpha = 0.96, 0.92, 0.92, 0.95$ at T1, T2, T3, T4.

Analytical approach

Owing to the nested structure of our data (weeks nested in persons), we applied multilevel analyses to test our proposed hypotheses. To determine whether multilevel analysis was appropriate, we calculated the intra-class correlation (ICC) statistics for our level 1 (week-level variables): seeking job resources (49.11%), seeking job challenges (57.74%), optimizing job demands (55.71%), work engagement (71.64%) and work performance (57.05%). The results supported the use of multilevel analysis.

We used MLwiN software to perform multilevel regressions. We first entered intercept and control variables. We controlled for age and gender as people with different genders and ages may hold different values and perceive environments differently, and may influence how they engage in work. In the second step, we entered the predictor. In the third step, we entered the moderator and the two-way interaction term between the predictor and the moderator. Since our predictor was on the person level (i.e., level 2) and had no variance on the week level (i.e., level 1), we can examine the random effects of intercepts and the fixed effects of slopes in the equations. We tested the improvement of each model over the previous one by computing the differences of their log-likelihood statistic $-2 \times \log$ and subjected this difference to a χ^2 significance test. Notably, all person-level variables were grand-mean centered and all week-level variables were person-mean centered in order to avoid multicollinearity and spurious regression.

To examine the mediation and moderated mediation effects, we used MLmed Macro (Rockwood & Hayes, 2017). This procedure can calculate 95% Monte Carlo confidence intervals based on 10,000 bootstrapping for the (multilevel) mediation effects and the (multilevel) moderated mediation effects. As our predictor and moderator are person-level variables (i.e., they do not have variance on the week-level, or to say, they only vary between-persons), the bootstrapping results can only report the mediation effects and moderated mediation effects on between-persons. To obtain the values of the indirect effects on the condition of ± 1 SD moderator and to estimate a complete model, we used SPSS PROCESS.

Results

Table 1 shows means, standard deviations, and correlations among all studied variables.

Preliminary analysis

We ran a multilevel confirmatory factor analysis (CFA) to explore the factorial structures of our measures using Mplus. We distinguished 10 constructs in the measurement model: Informational diversity, four dimensions of EI, three dimensions of job crafting, work engagement, and work performance. The analysis type is TWOLEVEL. Notably, as informational diversity is a single measurement, we

specified it by fixing its factor loading to 1 and fixing its error term to 0 (see Hayduk & Littvay, 2012). The results of multilevel CFA indicated that the measurement model distinguishing 10 constructs showed a satisfactory fit with the data ($\chi^2 = 2515.095$; $df = 900$; CFI = 0.91; TLI = 0.90; SRMR-within = 0.065; SRMR-between = 0.054; RMSEA = 0.038). This model was significantly better than (1) collapsing four EI dimensions into one factor ($\chi^2 = 3034.416$; $df = 924$; CFI = 0.88; TLI = 0.87; SRMR-within = 0.066; SRMR-between = 0.062; RMSEA = 0.043; $\Delta\chi^2 (24) = 519.321$, $p < .001$); (2) collapsing three job crafting dimensions into one factor ($\chi^2 = 5558.685$; $df = 927$; CFI = 0.74; TLI = 0.71; SRMR-within = 0.207; SRMR-between = 0.081; RMSEA = 0.064; $\Delta\chi^2 (27) = 3043.59$, $p < .001$); (3) collapsing work engagement and work performance into one factor ($\chi^2 = 3798.916$; $df = 913$; CFI = 0.84; TLI = 0.82; SRMR-within = 0.170; SRMR-between = 0.166; RMSEA = 0.051; $\Delta\chi^2 (13) = 1283.821$, $p < .001$). To conclude, the multilevel CFA results supported the discriminant validity.

Hypothesis testing

Table 2 showed: the indirect effect of weekly seeking job resources was 0.08 (LL = 0.047, UL = 0.121) for weekly work performance; 0.19 (LL = 0.116, UL = 0.281) for weekly work engagement. The indirect effect of weekly seeking job challenges was 0.08 (LL = 0.043, UL = 0.120) for weekly work performance; 0.17 (LL = 0.091, UL = 0.247) for weekly work engagement. The indirect effect of weekly optimizing job demands was 0.03 (LL = 0.003, UL = 0.057) for weekly work performance; 0.06 (LL = 0.005, UL = 0.111) for weekly work engagement. Therefore, hypothesis 1 was fully supported.

Table 1. Means, S.D., and between level (below the diagonal) and within level (above the diagonal) correlations among the study variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	1.77	0.42												
2. Age	34.86	10.37	-0.20**											
3. Perceived information diversity	4.26	0.91	-0.01	0.01										
4. EI_self emotion appraisal	3.85	0.65	-0.01	0.16**	0.26**									
5. EI_other emotion appraisal	3.64	0.64	-0.11**	0.14**	0.18**	0.59**								
6. EI_use of emotion	3.71	0.65	-0.06*	0.03	0.32**	0.62**	0.60**							
7. EI_regulation of emotion	3.59	0.71	-0.04	0.11**	0.22**	0.49**	0.47**	0.61**						
8. JC_seeking job resources	3.66	0.72	-0.04	-0.03	0.24**	0.31**	0.34**	0.42**	0.37**		0.69**	0.62**	0.63**	0.68**
9. JC_seeking job challenges	3.67	0.71	-0.02	-0.02	0.22**	0.35**	0.38**	0.42**	0.39**	0.62**		0.62**	0.72**	0.73**
10. JC_optimizing job demands	3.91	0.66	0.04	0.13**	0.13**	0.42**	0.39**	0.41**	0.34**	0.51**	0.51**		0.66**	0.62**
11. work performance	3.89	0.55	0.01	0.10*	0.30**	0.41**	0.40**	0.34**	0.34**	0.60**	0.66**	0.56**		0.76**
12. work engagement	5.17	1.04	-0.03	0.06	0.26**	0.44**	0.41**	0.49**	0.49**	0.64**	0.66**	0.51**	0.73**	

* $p < .05$; ** $p < .01$; N = 359 participants and N = 1016 data points; 1 = male, 2 = female; EI refers to emotional intelligence; JC refers to job crafting

Table 2. Indirect effects of weekly job crafting using MLmed Macro

	estimate	SE	z	LLCI	ULCI
Within-persons: N/A					
Between-persons:					
control for age and gender					
Perceived information diversity -> weekly seeking job resources -> weekly work performance	0.08	0.02	4.35	0.047	0.121
Perceived information diversity -> weekly seeking job challenges -> weekly work performance	0.08	0.02	4.10	0.043	0.120
Perceived information diversity -> weekly optimizing job demands -> weekly work performance	0.03	0.01	2.07	0.003	0.057
Perceived information diversity -> weekly seeking job resources -> weekly work engagement	0.19	0.04	4.68	0.116	0.281
Perceived information diversity -> weekly seeking job challenges -> weekly work engagement	0.17	0.04	4.19	0.091	0.247
Perceived information diversity -> weekly optimizing job demands -> weekly work engagement	0.06	0.03	2.09	0.005	0.111

N = 359; unstandardized regression coefficients are reported; bootstrap sample size = 10000 bias corrected; LL = lower limit, UL = upper limit; significance level of confidence is at 95%; As the predictor (i.e., perceived information diversity) only varies between-persons and does not have variance within-persons, the bootstrapping results can only report the mediation effects on between-persons. MLmed Macro aggregated the week-level variables onto the person-level for computing the indirect effects.

Table 3a/3b/3c/3d showed the two-way interaction terms between informational diversity and emotional intelligence on job crafting. We found that the two-way interaction between informational diversity and self-emotions appraisal was not significant; the two-way interaction between informational diversity and other-emotions appraisal was significant for weekly seeking resources ($b = 0.07, p < .05$) and weekly seeking challenges ($b = 0.09, p < .05$); the two-way interaction between informational diversity and use of emotion was significant for weekly seeking resources ($b = 0.07, p < .05$) and weekly seeking challenges ($b = 0.08, p < .05$); the two-way interaction between informational diversity and regulation of emotion was significant for weekly seeking resources ($b = 0.06, p < .05$). Therefore, H2 was generally supported, except for the dimension of self-emotion appraisal.

We also drew a two-way interaction figure to visualize the moderating effects (see Figure 2) and indicated the simple slope test results in Figure 2. Finally, we conducted the PROCESS analyses to uncover the values of the indirect effects at the condition of +/- one S.D. moderator (i.e., emotional intelligence) on the relationship between four job crafting behaviors and two work outcomes (i.e., work performance and work engagement) via four emotional intelligence dimensions. These results can be found in the Appendix (Table 4) and generally indicate that four dimensions of emotional intelligence significantly moderate the indirect effects of seeking resources, seeking challenges, but not optimizing demands. To conclude, hypothesis 3 was only supported for the indirect effects of seeking resources and seeking challenges, but not for optimizing demands.

Discussion

Navigating informationally diverse work environments can be challenging for employees. This study aimed to demonstrate by what means and under which personal abilities employees could profit from informational diversity, positively respond to its challenges, and then improve their work outcomes. Conducting a weekly diary study, we found that informational diversity indirectly improved employees' work outcomes (e.g., work performance and work engagement) via job crafting behaviors (i.e., seeking resources, challenges, and optimizing demands). Moreover, this indirect effect was stronger for employees with a high level of EI. The

results of our study suggest that (1) an information diverse work environment is a condition that stimulates job crafting behavior, and that job crafting seems to be an effective bottom-up strategy for individuals to mobilize and benefit from the heterogeneous resources presented by an informational diverse work environment, and that (2) emotional intelligence is a vital personal ability that helps individuals to gain positive outcomes from an informational diverse work environment by improving their appraisal of different information and their responses to situational hassles. Our study deepens the understanding of how and when employees could successfully navigate an informational-diverse work environment.

Theoretical contributions

This study first adds to the workplace diversity literature by highlighting the value of job crafting when employees are working in an informational diverse work environment. Traditionally, studies focused on how informational diversity can be managed through organization-level, top-down approaches (e.g., inclusion, organizational justice, transformational leadership) (Blouch & Azeem, 2019; Jaiswal & Dyaram, 2020; Singh et al., 2013; Wang et al., 2013) and/or how these top-down approaches lead to higher team-level outcomes (e.g., team creativity, team productivity) (Bell et al., 2011; Kearney & Gebert, 2009). We took another approach and focused on the individual level: how do employees behave in a diverse work environment? Prior limited studies uncovered the mixed effects of a diverse work environment on individual-level outcomes such as employee commitment (McCallaghan et al., 2019), turnover intention (Kunze et al., 2021), creativity (Wang et al., 2013), and performance (Singh et al., 2013), but largely ignore employee-initiated actions. Our study addressed this gap and suggests that an informationally diverse work environment can indirectly enable employees to perform their work better and stay more engaged at work via job crafting behaviors (e.g., seeking job resources, seeking job challenges, and optimizing job demands). That is, we provide evidence that employees who perceive the informational diversity and react towards it with a bottom-up, self-initiated strategy – i.e., job crafting – are able to capitalize on the benefits of this diversity. To conclude, our study uncovers a bottom-up means by which employees can transform the heterogeneity in resources and demand

Table 3a. Multilevel regression of perceived information diversity and sub-dimensions of emotional intelligence predicting three job crafting behaviors

Outcomes	Weekly seeking job resources						Weekly seeking job challenges						Weekly optimizing job challenges					
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8		Model 9	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Constant	3.72***	0.03	3.72***	0.03	3.71***	0.02	3.63***	0.21	3.61***	0.19	3.56***	0.03	3.90***	0.17	3.89***	0.16	3.76***	0.03
Gender	-0.04	0.07	-0.03	0.06	-0.04	0.07	-0.04	0.09	-0.04	0.08	-0.05	0.08	-0.12	0.07	-0.12	0.07	-0.14*	0.06
Age	0.04	0.03	0.04	0.03	0.00	0.02	0.01	0.03	0.01	0.03	-0.03	0.03	0.02	0.03	0.02	0.03	-0.02	0.02
Perceived information diversity			0.17***	0.03	0.12***	0.03			0.317***	0.04	0.12**	0.04			0.15***	0.03	0.07*	0.03
Self-emotions appraisal					0.31***	0.04					0.34***	0.05					0.35***	0.04
Perceived information diversity × Self-emotions appraisal					0.05	0.03					0.06	0.04					0.02	0.03
-2LL Diff	338.15	***	369.57	***	429.66	***	343.09	***	363.178	***	64.333	***	304.82	***	325.521	***	348.587	***
Level 2 variance	0.15	0.02	0.13	0.02	0.09	0.01	0.25	0.03	0.22	0.03	0.18	0.02	0.16	0.02	0.15	0.02	0.11	0.01
Level 1 variance	0.15	0.01	0.15	0.01	0.15	0.01	0.21	0.01	0.21	0.01	0.21	0.01	0.16	0.10	0.16	0.10	0.16	0.01

* $p < .05$; ** $p < .01$; *** $p < .001$; N = 359 participants and N = 1016 data points.

Table 3b. Multilevel regression of perceived information diversity and sub-dimensions of emotional intelligence predicting three job crafting behaviors

Outcomes	Weekly seeking job resources						Weekly seeking job challenges						Weekly optimizing job demands					
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8		Model 9	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Constant	3.72***	0.03	3.72***	0.03	3.71***	0.02	3.63***	0.21	3.61***	0.19	3.57***	0.17	3.90***	0.17	3.89***	0.16	3.75***	0.03
Gender	-0.04	0.07	-0.03	0.06	0.01	0.06	-0.04	0.09	-0.04	0.08	0.02	0.08	-0.12	0.07	-0.12	0.07	-0.08	0.06
Age	0.04	0.03	0.04	0.03	0.02	0.02	0.01	0.03	0.01	0.03	-0.02	0.03	0.02	0.03	0.02	0.03	0.00	0.02
Perceived information diversity			0.17***	0.03	0.14***	0.03			0.317***	0.04	0.13**	0.04			0.15***	0.03	0.10**	0.03
Others-emotions appraisal					0.30***	0.04					0.40***	0.05					0.36***	0.04
Perceived information diversity × Others-emotions appraisal					0.07*	0.03					0.09*	0.04					0.05	0.03
-2LL Diff	338.15	***	369.57	***	431.55	***	343.09	***	363.178	***	89.794	***	304.82	***	325.521	***	361.753	***
Level 2 variance	0.15	0.02	0.13	0.02	0.09	0.01	0.25	0.03	0.22	0.03	0.16	0.02	0.16	0.02	0.15	0.02	0.10	0.01
Level 1 variance	0.15	0.01	0.15	0.01	0.15	0.01	0.21	0.01	0.21	0.01	0.21	0.01	0.16	0.10	0.16	0.10	0.16	0.01

* $p < .05$; ** $p < .01$; *** $p < .001$; N = 359 participants and N = 1016 data points.

Table 3c. Multilevel regression of perceived information diversity and sub-dimensions of emotional intelligence predicting three job crafting behaviors

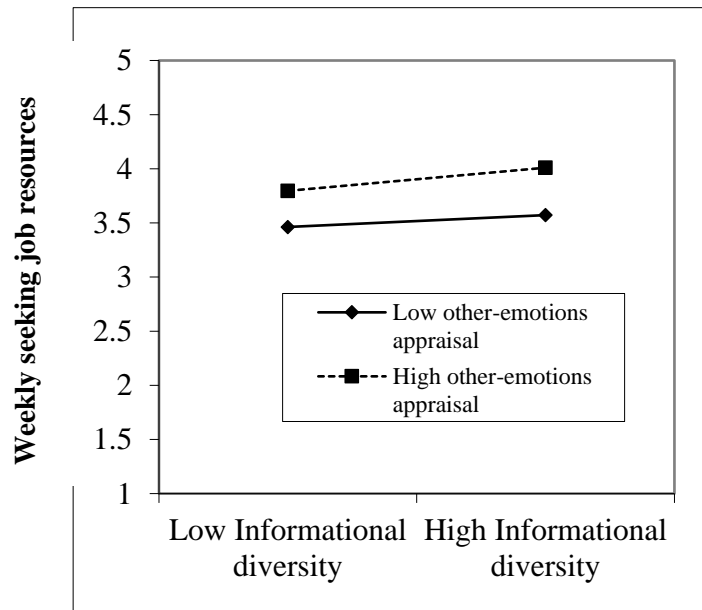
Outcomes	Weekly seeking job resources						Weekly seeking job challenges						Weekly optimizing job demands					
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8		Model 9	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Constant	3.72***	0.03	3.72***	0.03	3.71***	0.02	3.63***	0.21	3.61***	0.19	3.56***	0.03	3.90***	0.17	3.89***	0.16	3.75***	0.03
Gender	-0.04	0.07	-0.03	0.06	-0.02	0.05	-0.04	0.09	-0.04	0.08	-0.05	0.07	-0.12	0.07	-0.12	0.07	-0.10	0.06
Age	0.04	0.03	0.04	0.03	0.03	0.02	0.01	0.03	0.01	0.03	0.00	0.03	0.02	0.03	0.02	0.03	0.01	0.02
Perceived information diversity			0.17***	0.03	0.10**	0.03			0.317***	0.04	0.10*	0.04			0.15***	0.03	0.07*	0.03
Use of emotion					0.38***	0.04					0.40***	0.05					0.36***	0.05
Perceived information diversity × Use of emotion					0.07*	0.03					0.08*	0.04					0.06	0.04
-2LL Diff	338.15	***	369.57	***	466.75	***	343.09	***	363.178	***	87.72	***	304.82	***	325.521	***	361.006	***
Level 2 variance	0.15	0.02	0.13	0.02	0.08	0.01	0.25	0.03	0.22	0.03	0.16	0.02	0.16	0.02	0.15	0.02	0.10	0.01
Level 1 variance	0.15	0.01	0.15	0.01	0.15	0.01	0.21	0.01	0.21	0.01	0.21	0.01	0.16	0.10	0.16	0.10	0.16	0.01

* $p < .05$; ** $p < .01$; *** $p < .001$; N = 359 participants and N = 1016 data points.

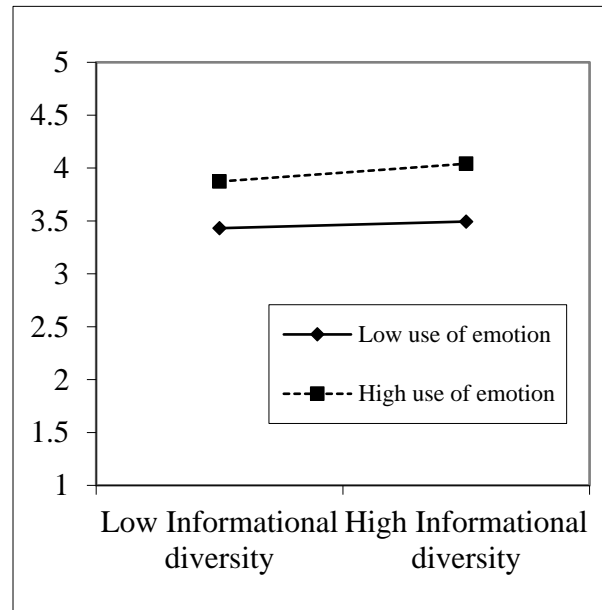
Table 3d. Multilevel regression of perceived information diversity and sub-dimensions of emotional intelligence predicting three job crafting behaviors

Outcomes	Weekly seeking job resources						Weekly seeking job challenges						Weekly optimizing job challenges					
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8		Model 9	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Constant	3.72***	0.03	3.72***	0.03	3.71***	0.02	3.63***	0.21	3.61***	0.19	3.57***	0.03	3.90***	0.17	3.89***	0.16	3.75***	0.03
Gender	-0.04	0.07	-0.03	0.06	-0.03	0.07	-0.04	0.09	-0.04	0.08	-0.04	0.07	-0.12	0.07	-0.12	0.07	-0.12*	0.06
Age	0.04	0.03	0.04	0.03	0.02	0.02	0.01	0.03	0.01	0.03	-0.02	0.03	0.02	0.03	0.02	0.03	0.01	0.03
Perceived information diversity			0.17***	0.03	0.13**	0.03			0.317***	0.04	0.11**	0.04			0.15***	0.03	0.11**	0.03
Regulation of emotion					0.27***	0.03					0.33***	0.05					0.22***	0.04
Perceived information diversity × Regulation of emotion					0.06*	0.03					0.03	0.04					0.04	0.04
-2LL Diff	338.15	***	369.57	***	429.18	***	343.09	***	363.178	***	72.414	***	304.82	***	325.521	***	317.407	***
Level 2 variance	0.15	0.02	0.13	0.02	0.07	0.01	0.25	0.03	0.22	0.03	0.17	0.02	0.16	0.02	0.15	0.02	0.12	0.02
Level 1 variance	0.15	0.01	0.15	0.01	0.15	0.01	0.21	0.01	0.21	0.01	0.21	0.01	0.16	0.10	0.16	0.10	0.16	0.01

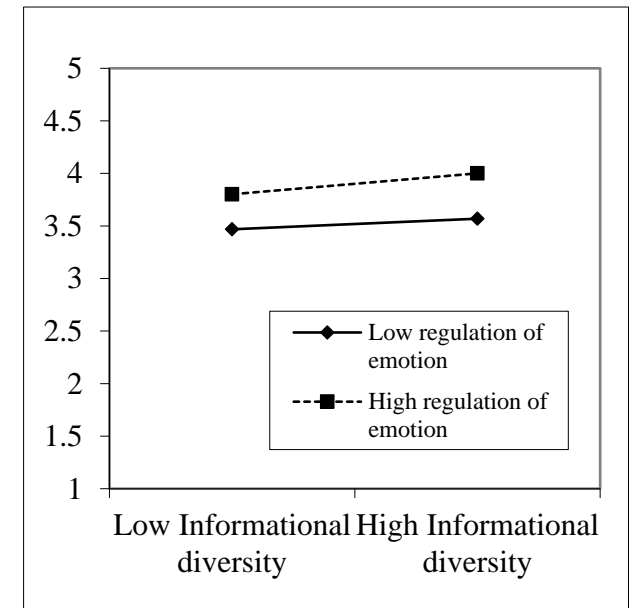
* $p < .05$; ** $p < .01$; *** $p < .001$; N = 359 participants and N = 1016 data points.



Note: The slope (beta) of high other-emotions appraisal is $b = 0.185$, $p < .001$; the slope (beta) of low other-emotions appraisal is $b = 0.095$, $p = 0.011$.



Note: The slope (beta) of high use of emotion is $b = 0.146$, $p < .001$; the slope (beta) of low use of emotion is $b = 0.055$, $p = 0.147$.



Note: The slope (beta) of high regulation of emotion is $b = 0.172$, $p < .001$; the slope (beta) of low regulation of emotion is $b = 0.088$, $p = 0.024$.

Figure 2. The two-way interaction between informational diversity and emotional intelligence on weekly seeking resources. The results are same for seeking challenges and can be obtained via request of first author.

presented by an informationally diverse work environment into positive outcomes.

Second, the results of this study also contribute to the workplace diversity and job design literatures by highlighting the moderating role of EI. Our results suggest that employees higher in EI can navigate a diverse work environment full of opportunities and challenges more successfully, than employees lower in EI. Although prior studies have identified personal-level moderators, such as openness to experience, extraversion, and self-esteem (Anglim et al., 2019; Baer, 2010; Homan et al., 2008; Molleman & Broekhuis, 2012), to unleash the benefits of diversity, they largely overlooked the role of EI. We pointed out that three of four aspects of EI – other-emotion appraisal, use of emotions, and regulation of emotions – are important and beneficial to unlock and make better use of informational diversity at work. Our study suggests that EI is a valuable personal asset that helps employees to improve daily communication, self-management, problem-solving, and interpersonal relationships within an informationally diverse workplace even better.

Third, we enrich job demands-resources and job crafting literatures by pointing out an additional condition that stimulates job crafting behavior – an informationally diverse work environment. Drawing from a JD-R perspective, we highlight that an informationally diverse work environment contains both available job resources while also present challenging job demands. While empirical studies and meta-analyses in the JD-R literature (Rudolph et al., 2017; F. Zhang & Parker, 2019) have identified task characteristics (e.g., job autonomy, task identity, workload, and work pressure) and motivational characteristics (e.g., work engagement, burnout, affective commitment, and future time perspective) that are antecedents of job crafting behaviors, environmental characteristics have rarely been examined. Our study attempts to fill in this gap and suggests that the environmental characteristic of workplace informational diversity may motivate job crafting. Furthermore, we also enrich the JD-R model by adding emotional intelligence as a personal resource in addition to self-efficacy, optimism, hope, and resilience (Van Wingerden et al., 2017; Xanthopoulou et al., 2009). Altogether, taking the JD-R as a theoretical framework, our study suggests that the environmental characteristic of an informationally diverse work environment may influence job crafting and that the

personal resource of emotional intelligence may enhance job crafting effectiveness in an informationally diverse work environment.

Practical implications

Our study provides practical implications for organizations and managers. First, our results suggest that organizations which allow employees to engage in job crafting in informationally diverse work environments may approach more favorable work outcomes. Furthermore, organizations could train employees to use job crafting strategies. Job crafting scholars have developed several job crafting intervention programs that yield numerous beneficial outcomes (Dubbelt et al., 2019; Gordon et al., 2018). Second, our study suggests that EI is a personal ability that could help individuals effectively respond to challenges presented by informationally diverse work environments. Thus, EI may be an important characteristic to strengthen through training. Studies have shown that EI is trainable and developing interventions to improve individual EI can elicit positive work outcomes (Kotsou et al., 2011; Newton et al., 2016).

Limitations and future directions

Our study is not without limitations. First, regarding the constructs we used in this study, we acknowledge that all the constructs were self-reported, which might risk common method bias. Research suggests that the repeated measurement design such as a diary study could help to reduce this concern (Ohly et al., 2010). Future studies could use co-worker or manager-rated measures or other objective measures to overcome this potential issue. For example, perceived informational diversity could be measured by work group functional diversity using the Blau index (Harrison & Klein, 2007; van Knippenberg & Schippers, 2007). However, as Shemla et al. (2016) mentioned, it is also important to enable individuals to be aware of the diversity attributes in the work environment, and thus a subjective measurement from an individual perception level is also valuable. Second, regarding the sample, our sample was from a single industry and a single country setting, which may limit the generalizability of our findings. To obtain more certainty about our conclusions, future studies need to replicate our model in more industries and countries. Finally, regarding other internal and external factors that can unlock the potential of

workplace diversity, we suggest that future studies may want to explore other proactive behaviors that may also help manage informationally diverse work environments. While our study suggests that job crafting may be an effective bottom-up strategy for employees to manage informational diversity in their work environment, job crafting may not be the only proactive strategy that employees can use. The literature suggests that other proactive employee behaviors such as help-seeking, socialization, stress coping, and networking behaviors could elicit beneficial outcomes as well (Crant, 2000; Porter & Woo, 2015).

Conclusion

Gaining the benefits of informational diversity is not always easy for employees. Examining the mediating role of job crafting and the moderating role of EI, our study highlights that job crafting may be a potential strategy for employees to access and benefit from the resources and demands presented by an informationally diverse work environment, and that EI may be a beneficial personal resource that helps employees constructively respond to resources and challenging demands presented by an informationally diverse work environment.

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Appendix

Table 4. PROCESS results for testing the conditional indirect effects of perceived information diversity on weekly work performance/work engagement through weekly job crafting (moderated mediation)

Predictor	Moderator	Mediators	Outcomes	Indirect effect	SE	LLCI	ULCI
Perceived information diversity	Low self-emotions appraisal (-1SD)	Weekly seeking job resources	Weekly work performance	0.048	0.016	0.020	0.081
	High self-emotions appraisal (+1SD)	Weekly seeking job resources	Weekly work performance	0.080	0.017	0.049	0.115
Perceived information diversity	Low self-emotions appraisal (-1SD)	Weekly seeking job resources	Weekly work engagement	0.084	0.022	0.047	0.134
	High self-emotions appraisal (+1SD)	Weekly seeking job resources	Weekly work engagement	0.158	0.023	0.113	0.202
Perceived information diversity	Low self-emotions appraisal (-1SD)	Weekly seeking job challenges	Weekly work performance	0.075	0.020	0.037	0.115
	High self-emotions appraisal (+1SD)	Weekly seeking job challenges	Weekly work performance	0.083	0.025	0.029	0.127
Perceived information diversity	Low self-emotions appraisal (-1SD)	Weekly seeking job challenges	Weekly work engagement	0.057	0.024	0.156	0.113
	High self-emotions appraisal (+1SD)	Weekly seeking job challenges	Weekly work engagement	0.133	0.028	0.073	0.186
Perceived information diversity	Low self-emotions appraisal (-1SD)	Weekly optimizng job demands	Weekly work performance	0.005	0.013	-0.019	0.031
	High self-emotions appraisal (+1SD)	Weekly optimizng job demands	Weekly work performance	0.011	0.015	-0.013	0.044
Perceived information diversity	Low self-emotions appraisal (-1SD)	Weekly optimizng job demands	Weekly work engagement	-0.023	0.014	-0.049	0.006
	High self-emotions appraisal (+1SD)	Weekly optimizng job demands	Weekly work engagement	0.014	0.016	-0.017	0.045
Perceived information diversity	Low other-emotions appraisal (-1SD)	Weekly seeking job resources	Weekly work performance	0.034	0.013	0.010	0.061
	High other-emotions appraisal (+1SD)	Weekly seeking job resources	Weekly work performance	0.096	0.016	0.066	0.127
Perceived information diversity	Low other-emotions appraisal (-1SD)	Weekly seeking job resources	Weekly work engagement	0.094	0.020	0.057	0.138
	High other-emotions appraisal (+1SD)	Weekly seeking job resources	Weekly work engagement	0.177	0.019	0.137	0.215
Perceived information diversity	Low other-emotions appraisal (-1SD)	Weekly seeking job challenges	Weekly work performance	0.052	0.017	0.019	0.087
	High other-emotions appraisal (+1SD)	Weekly seeking job challenges	Weekly work performance	0.113	0.019	0.075	0.153
Perceived information diversity	Low other-emotions appraisal (-1SD)	Weekly seeking job challenges	Weekly work engagement	0.068	0.022	0.030	0.120
	High other-emotions appraisal (+1SD)	Weekly seeking job challenges	Weekly work engagement	0.149	0.024	0.102	0.196
Perceived information diversity	Low other-emotions appraisal (-1SD)	Weekly optimizng job demands	Weekly work performance	-0.005	0.011	-0.027	0.017
	High other-emotions appraisal (+1SD)	Weekly optimizng job demands	Weekly work performance	0.021	0.013	-0.004	0.047
Perceived information diversity	Low other-emotions appraisal (-1SD)	Weekly optimizng job demands	Weekly work engagement	-0.005	0.014	-0.029	0.025
	High other-emotions appraisal (+1SD)	Weekly optimizng job demands	Weekly work engagement	0.029	0.016	-0.002	0.059
Perceived information diversity	Low use of emotion (-1SD)	Weekly seeking job resources	Weekly work performance	0.020	0.015	-0.009	0.049
	High use of emotion (+1SD)	Weekly seeking job resources	Weekly work performance	0.085	0.018	0.052	0.120
Perceived information diversity	Low use of emotion (-1SD)	Weekly seeking job resources	Weekly work engagement	0.048	0.019	0.015	0.089
	High use of emotion (+1SD)	Weekly seeking job resources	Weekly work engagement	0.156	0.022	0.111	0.195

Perceived information diversity	Low use of emotion (-1SD)	Weekly seeking job resources	Weekly work engagement	0.048	0.019	0.015	0.089
	High use of emotion (+1SD)	Weekly seeking job resources	Weekly work engagement	0.156	0.022	0.111	0.195
Perceived information diversity	Low use of emotion (-1SD)	Weekly seeking job challenges	Weekly work performance	0.050	0.019	0.011	0.089
	High use of emotion (+1SD)	Weekly seeking job challenges	Weekly work performance	0.093	0.027	0.040	0.147
Perceived information diversity	Low use of emotion (-1SD)	Weekly seeking job challenges	Weekly work engagement	0.037	0.023	-0.002	0.088
	High use of emotion (+1SD)	Weekly seeking job challenges	Weekly work engagement	0.124	0.029	0.063	0.179
Perceived information diversity	Low use of emotion (-1SD)	Weekly optimizng job demands	Weekly work performance	-0.010	0.011	-0.033	0.010
	High use of emotion (+1SD)	Weekly optimizng job demands	Weekly work performance	-0.001	0.015	-0.027	0.030
Perceived information diversity	Low use of emotion (-1SD)	Weekly optimizng job demands	Weekly work engagement	-0.037	0.013	-0.062	-0.009
	High use of emotion (+1SD)	Weekly optimizng job demands	Weekly work engagement	0.006	0.015	-0.023	0.035
Perceived information diversity	Low regulation of emotion (-1SD)	Weekly seeking job resources	Weekly work performance	0.041	0.014	0.014	0.069
	High regulation of emotion (+1SD)	Weekly seeking job resources	Weekly work performance	0.084	0.019	0.051	0.124
Perceived information diversity	Low regulation of emotion (-1SD)	Weekly seeking job resources	Weekly work engagement	0.091	0.019	0.056	0.131
	High regulation of emotion (+1SD)	Weekly seeking job resources	Weekly work engagement	0.160	0.022	0.118	0.202
Perceived information diversity	Low regulation of emotion (-1SD)	Weekly seeking job challenges	Weekly work performance	0.076	0.019	0.039	0.112
	High regulation of emotion (+1SD)	Weekly seeking job challenges	Weekly work performance	0.092	0.025	0.046	0.144
Perceived information diversity	Low regulation of emotion (-1SD)	Weekly seeking job challenges	Weekly work engagement	0.092	0.024	0.052	0.144
	High regulation of emotion (+1SD)	Weekly seeking job challenges	Weekly work engagement	0.104	0.028	0.048	0.157
Perceived information diversity	Low regulation of emotion (-1SD)	Weekly optimizng job demands	Weekly work performance	0.013	0.010	-0.007	0.035
	High regulation of emotion (+1SD)	Weekly optimizng job demands	Weekly work performance	0.016	0.015	-0.011	0.046
Perceived information diversity	Low regulation of emotion (-1SD)	Weekly optimizng job demands	Weekly work engagement	0.009	0.013	-0.016	0.037
	High regulation of emotion (+1SD)	Weekly optimizng job demands	Weekly work engagement	0.015	0.015	-0.016	0.045

Note: N = 359; Bootstrap sample size = 5000. Values in bold indicate statistical significance at $p < .05$; As our predictor and moderator are all on the person-level, this implies that they only vary between-persons. Therefore, we aggregated the week-level variables onto the person level. We subsequently grand-mean centered all the variables to avoid multicollinearity and spurious regression. PROCESS results thus only revealed the moderated mediation effects on between-persons.

Chapter 4

Boosting creativity in functional diverse work groups: The importance of help-seeking behavior and openness to experience

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Abstract

Organizations increasingly require employees to be proactive and creative problem solvers in their daily work. Our study employs a multilevel perspective (i.e., weekly activity level, group/context level, and personal level) to understand employees' day-to-day creative process. Specifically, we examine whether weekly help-seeking behavior is positively related to weekly creativity and to what extent this relationship is affected by work group functional diversity and employees' level of openness to experience. We recruited 368 medical employees nested within 42 work groups over four consecutive weeks. The results showed that help-seeking behavior was not related to this week's creativity, but was positively related to next week's creativity when work group functional diversity was high. Moreover, this lagged effect was even stronger when simultaneously employees scored high on openness to experience. Our findings suggest that help-seeking behavior sparks creativity after a period of incubation. Furthermore, employees' creative performance reaches the highest level when they engage in help-seeking behavior in a more functionally diverse work environment and simultaneously are more open-minded to different experiences. Our study thus presents an integrative model (i.e., what actions individuals engage in, which circumstances individuals are exposed to, and what personal abilities individuals are capable of) to understand employees' creativity.

Keywords help-seeking behavior; creative performance; work group functional diversity; openness to experience; diary study

Introduction

Creativity is essential in times of organizational change (Zhou & Hoever, 2014). Today's organizations increasingly require employees to be creative problem solvers (Gong et al., 2020; Zhou et al., 2009). While prior studies provided valuable insights on the factors fostering individuals' creativity (e.g., cognitive process, leadership, task characteristics, and financial incentives) (Jain & Jain, 2017; Kamylyis & Valtanen, 2010; Lee et al., 2020), scholars increasingly realize that it is also important and beneficial for employees themselves to take bottom-up approaches to optimize their creative process (Bakker et al., 2020; G. R. Oldham & Fried, 2016). This is because organizations may not always be able to systematically pre-define and pre-specify the creativity-related goals that employees need to achieve (DeStobbeleir et al., 2011). Instead, organizations may rely on employees themselves to take the initiative (e.g., engage in proactive, individualized actions) to access vital interpersonal and contextual resources they need for the enhancement of creative outcomes (Lichtenthaler & Fischbach, 2019). For example, when employees proactively ask for professional advice and assistance from their supervisors, colleagues, or even external contacts, to develop innovative solutions to problems, rather than passively waiting for instructions coming to them, they will possess more freedom and considerable control over their own work, compared to a top-down approach. However, we found that only a small handful of studies investigated the role of employee-initiated behaviors on creative performance, such as job crafting (Demerouti et al., 2015), self-regulation (DeStobbeleir et al., 2011), or proactive vitality management (Bakker et al., 2020).

Therefore, building on limited previous work and the proactive behavior perspective (Crant, 2000; Zhang & Parker, 2019), in this current study we propose that seeking help, defined as individuals' proactive search for resources from one another in order to solve/advance task-related matters (Mueller & Kamdar, 2011), could be another efficient means to achieve higher creative performance. We will employ a multilevel perspective to understand the relationship between seeking help behavior and creative performance. First, we consider how this relationship fluctuates on a *weekly* basis. This is important because the literature indicates that

employees actually experience varied tasks and creativity-related goals across weeks (Ohly et al., 2010; Ritter & Dijksterhuis, 2014) and therefore employees likely show fluctuations in their behaviors across time in order to align with their tasks and goals. The creativity literature also demonstrates that idea generation may take some time to incubate and has certain lagged effects (Sio & Ormerod, 2009). Therefore, it is crucial to gain insights into how help-seeking behavior triggers the generation of creativity over time, rather than seeing help-seeking and creativity as a one-time process. By doing so, we could uncover a short-term dynamic relationship between seeking help and creative performance, which is close to the real work setting.

Second, we further consider if the relationship between weekly seeking help behavior and weekly creative performance is contingent on employees' work environment. The creativity literature suggests that creative ideas are influenced by the extent to which individuals are exposed to divergent information, knowledge, and perspectives (Baer, 2010; Perry-Smith, 2006). Accordingly, we propose that work group functional diversity, i.e., the extent to which workgroup members have distinctive functional backgrounds, knowledge, or experience (Harrison & Klein, 2007), could be an important contingency. When working in a highly functionally diverse work environment, employees would have more opportunities to tap into diverse knowledge sources, useful information, and specialized expertise when they ask for help (Khattab et al., 2020), which eventually enables divergent thinking and incubates creativity (Paulus, 2000).

Third, in addition to having access to diverse knowledge sources and expertise, we argue that employees also need to be able to identify the advantage and to make use of the informational benefits from diverse work environments (Homan et al., 2008). In other words, greater exposure to informational diversity may provide seekers with a higher likelihood of combining different ideas and creating something new, but we expect this only happens if seekers are able and willing to integrating the information (Baer, 2010). Research shows that openness to experience, referring to an individual's willingness to explore, tolerate, and consider new and unfamiliar ideas and experiences (Feist, 1998), could capture such an integrative quality. Therefore, we simultaneously consider that openness to experience, as an important

person-level factor, could enable employees to perform help-seeking behavior in functionally diverse work environments more successfully.

We aim to make the following contributions to the literature. First, examining the beneficial role of weekly help-seeking behavior, we expand the employee creativity literature (see review, Zhou & Hoever, 2014) by highlighting the importance of proactive, goal-directed behaviors (i.e., a bottom-up approach) in the creative process. Prior studies uncovered some employee-initiated behaviors on creative performance, such as job crafting (Demerouti et al., 2015), self-regulation (DeStobbeleir et al., 2011), or proactive vitality management (Bakker et al., 2020). We enrich this line of research by uncovering another simple but effective proactive strategy that can be used in employee daily work context, that is, help-seeking behavior. Therefore, we underscore that the enhancement of creative performance is not simply about whether employees receive important feedback, arrangements, and solutions but also how employees can proactively engage in strategies to mobilize different resources that align with their personal needs. Second, examining the moderating role of work group functional diversity, we add to the proactivity literature (Crant, 2000; Parker et al., 2010) by suggesting an important contingency. We indicate that employees can benefit more from proactive behaviors if they are exposed to a more diverse work group where members have different functional backgrounds, roles, and knowledge. Prior studies uncovered that individuals can perceive more opportunities to engage in proactive behaviors if the work environment is resourceful and supportive (Parker et al., 2010; Wrzesniewski & Dutton, 2001). We enrich this line of research by suggesting that work group functional diversity is such a resourceful, supportive work environment that can strengthen the relationship between help-seeking behavior and creative performance. Moreover, we also aim to contribute to the work group diversity literature (Shemla et al., 2016; Van Knippenberg et al., 2004) by testing an interactive effect of help-seeking behavior and work group functional diversity. This finding implies that to capitalize on the potential benefits of work group diversity, engaging in certain proactive strategies, such as help-seeking, is essential and beneficial for individuals. We indicate that merely a functional diverse work environment is not a sufficient

condition to yield diversity benefits, and that employees should engage in proactive behaviors (e.g., help-seeking) to get access to and make use of the diverse knowledge, information, and opinions presented by a functional diverse work environment. Thus, we highlight that individual-level proactive behaviors are as important as those group-level states and processes (e.g., trust, cohesion, inclusiveness), which are revealed by most work group diversity researchers (Antoni & Hertel, 2009; Marks et al., 2001). Finally, examining the moderating role of openness to experience, we build a three-way interaction model (i.e., help-seeking × work group functional diversity × openness to experience), and thus, present a multilevel perspective (i.e., weekly activity level, group/context level, and personal level) to understand employee daily creative process. We enrich the employee creativity literature (Shalley et al., 2004; Zhou & Su, 2021) by emphasizing that unleashing employee creativity is a complex process that includes not only proactive actions (i.e., seeking help), but also situational benefits (i.e., functionally diverse work environment) and personal abilities to make use of the situational benefits (i.e., openness to experience).

Theory and Hypothesis Development

The proactive process model of individual creativity

With the constant changes of the business environment and job characteristics, organizations increasingly rely on employees themselves to take the initiative to access vital interpersonal and contextual resources they need for achieving better creative outcomes (DeStobbeleir et al., 2011). Gong et al. (2012) proposed a proactive process model of individual creativity to understand how and why being proactive and engaging in proactive actions is effective to the enhancement of creative outcomes. This model states that proactive employees anticipate future outcomes or events, plan in advance, and take actions to accumulate resources for effecting constructive changes (Crant, 2000; Parker et al., 2010). The resources (e.g., information, knowledge, support, and trust) resulting from foresighted actions, in turn, facilitate creativity.

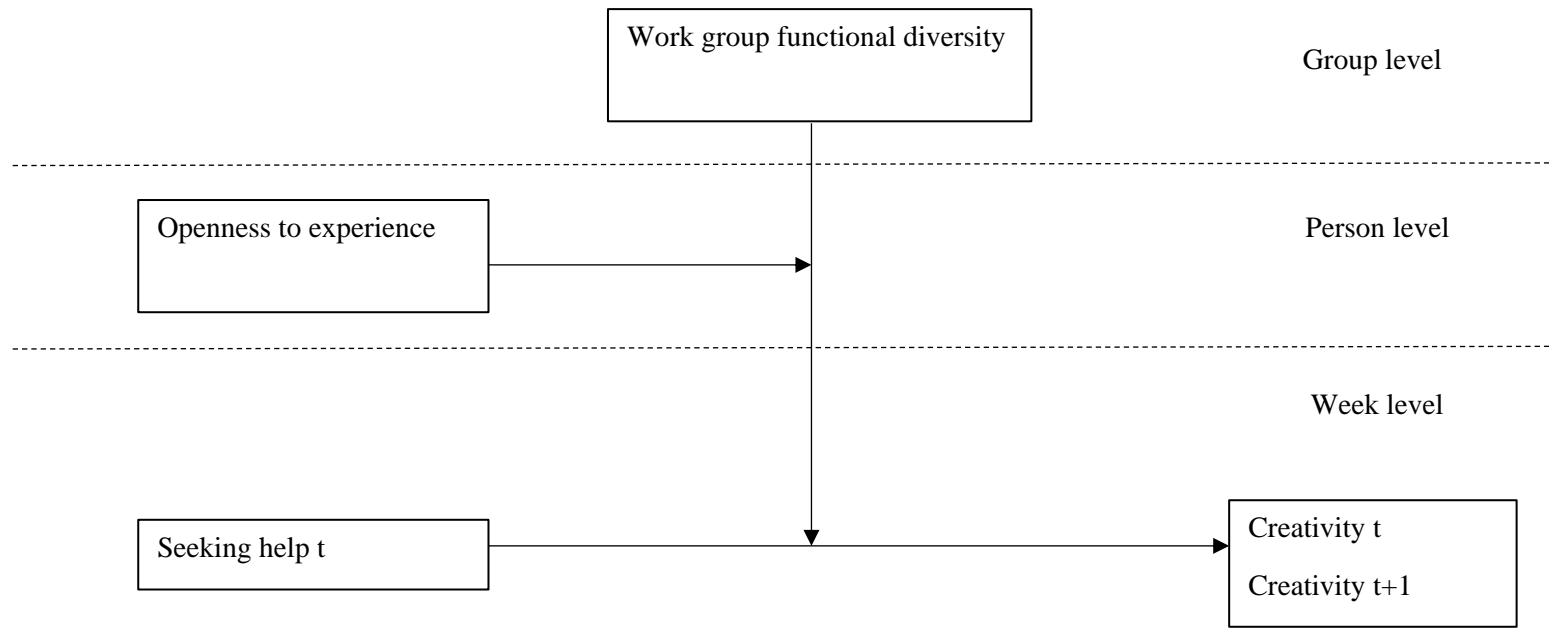


Figure 1. Conceptual model

The forms that such foresighted actions may take include, for example, feedback seeking and interpersonal relationship building (Grant & Ashford, 2008). This model further underlines that to facilitate creativity, a supportive environment is needed because favorable contexts can increase perceived opportunities and external support to engage in creative activities (Crant, 2000; Gong et al., 2012). A supportive environment fosters the proactive process (Crant, 2000; Parker et al., 2010) and the information exchanging process (Gong et al., 2012). Finally, the model points out that being proactive is person-variant (e.g., those with proactive personality vs those not), which means that not all people have the same level and capabilities to successfully initiate personal actions and process different information from the social context (Grant & Ashford, 2008). In line with the creativity literature (Baer, 2010; G. Oldham & Cummings, 1996), the proactive process model of individual creativity emphasizes that unleashing employee creativity is a multilevel process that includes both personal factors (e.g., proactive actions, personalities) and contextual factors (e.g., resourceful, supportive environments).

Thus, based on this theoretical framework, we argue that the combination of both a proactive action and a resource-rich environment is required to reach a higher level of creativity. In line with the creativity literature (Zhou & Hoever, 2014; Zhou & Su, 2021), a resource-rich environment can be characterized with a context that provides *heterogeneous* resources with different information, knowledge, and perspectives. This is because different types of knowledge and information can spark more divergent thinking, compared to homogeneous knowledge. Research shows that an informational diverse work environment is positively related to employee work outcomes such as idea generation (Gielnik et al., 2012), work engagement (Downey et al., 2015), performance (Joshi et al., 2006), and job involvement (Kirby & Richard, 2000). Thus, we propose that work group functional diversity, representing a variety of information, knowledge, and expertise, is a resourceful context that can facilitate employee creativity. However, based on the model of proactive process of individual creativity, we point out that only a functional diverse work environment is not sufficient, and that employees should *proactively* engage in certain behaviors to get access to and make use of the diverse knowledge, information, and opinions

presented by a functional diverse work environment. Thus, we propose that help-seeking, a proactive behavior of seeking resources from others, can be a simple but effective strategy to access necessary resources in a functional diverse work environment. That said, actively seeking help from a functional diverse work environment can help employees effectively improve their creative performance. Finally, we argue that employees may differ in their abilities to exchange, process and integrate information. Therefore, we propose that the personality characteristic of openness to experience may influence the process of seeking help in a functional diverse work environment. We draw a conceptual model of this study (see Figure 1).

Seeking help and creative performance

Creativity, or creative performance, in our study refers to the extent to which employees perform and optimize their work issues in a novel, valued manner (Shalley et al., 2004; Welbourne et al., 1998). Thus, creativity in our study emphasizes a creative process with problem-solving oriented (Glück et al., 2002). The literature on proactive behavior suggests that proactive employees create favorable situations in the face of obstacles, go beyond formal task requirements, and act in valued and innovative directions (Crant, 2000; Sekiguchi et al., 2017). Proactive behaviors can push work forward and stimulate ideas for improving work processes (Khattab et al., 2020). Thus, we argue that help-seeking behavior is such a proactive action for seeking resources from others (Mueller & Kamdar, 2011), resulting in beneficial work outcomes. Based on the proactive process model of individual creativity (Gong et al., 2012), we argue that seeking help is positively related to creative performance because seeking help enables employees to access different resources that are necessary and useful for facilitating work-related outcomes (Porter & Woo, 2015; Zhou et al., 2009). Via seeking help, employees gain instant feedback, novel information, and new perspectives on how to fulfill their tasks and to become innovative in thinking of solutions to current problems. Prior studies showed that help-seeking behavior or other similar proactive behaviors (e.g., feedback-seeking, information-seeking, knowledge-seeking) were positively related to in-role performance (Chen et al., 2007), managerial effectiveness (Ashford & Tsui, 1991),

creative activities (Medaille, 2010), and creative performance (DeStobbeleir et al., 2011; Mueller & Kamdar, 2011).

Researchers have also studied the dynamic relationship between proactive behavior and creativity over time within individuals. Some scholars conducted several diary studies and found that daily/weekly proactive behaviors at work (e.g., job crafting, proactive vitality management) were positively related to daily/weekly creativity (Bakker et al., 2020; Petrou et al., 2018, 2019). The reason is that via engaging in daily/weekly proactive behavior, employees tend to reach a high level of the engaged and enthusiastic state in their daily work and positively respond to the daily job challenges, and then act in an innovative direction (Crant, 2000; Sekiguchi et al., 2017). Likewise, we expect weekly seeking help will be positively related to weekly creative performance.

Furthermore, we are also interested in the carry-over (i.e., lagged) effects of seeking help on creativity in employees' weekly work contexts. The creativity incubation literature indicates that creativity-related activities can enhance everyday creative performance, but oftentimes, creative solutions may be followed by a period of incubation where the individual is no longer consciously working on the task but may be unconsciously still processing information that may lead to new combinations of ideas (Madjar & Shalley, 2008; Ritter & Dijksterhuis, 2014). Research shows that during the incubation period, an individual's mental representation of a problem will be reorganized into a more appropriate and stable form after initial unsuccessful attempts (Sio & Ormerod, 2009). The individual is then more able to capitalize upon relevant external information or to rearrange problem information in a manner that allows a solution to be found more readily (Kounios et al., 2006). Some empirical evidence reveals that certain proactive behaviors (e.g., job crafting) (Zhang & Parker, 2019) or positive states (positive affect) (Karwowski et al., 2021) have lagged/carry-over effects on daily creativity at work. Following these arguments and prior findings, we expect that seeking help may have lagged/carry-over effects on creativity. Taking together, we hypothesize:

H1: Seeking help this week is positively related to (a) this week's creative performance and (b) next week's creative performance.

The moderating role of work group functional diversity

Based on the proactive process model of individual creativity (Gong et al., 2012), we argue that the process in which employees enhance creative performance through help-seeking behavior is dependent on a resourceful environment. That said, employees could profit more from help-seeking behavior if the work environment provides more available resources such as divergent perspectives, different skills, and various knowledge. As such, employees would have more opportunities to integrate different information and find the key to the current work hurdles. This is also in line with the creativity literature (Shalley et al., 2004; Zhou & Su, 2021), suggesting that creativity is not only a matter of having creative capabilities, but also a matter of accessing support from the social context (Shalley & Gilson, 2004; Zhou & Su, 2021). That said, employees need a work environment where they can get access to divergent knowledge, expertise, and perspectives (Baer, 2010; Perry-smith, 2006), so that they can integrate a wider variety of information that stimulates creativity and innovation.

Accordingly, we identify that work group functional diversity is such a favorable work environment where employees can seek help more successfully and get more desirable outcomes. One's functional background refers to the role and expertise he/she spent the most time in. Thus, work group functional diversity refers to the extent to which workgroup members have may have different roles, knowledge, and experience (Harrison & Klein, 2007). Work group functional diversity can facilitate information elaboration process, as stated by workplace diversity literature (van Knippenberg & Schippers, 2007). These non-overlapped resources presented in a functional diverse work group can give employees different, unique perspectives and solutions to current creative work. For example, in a hospital setting, group A has 10 people including 3 doctors, 5 nurses, 1 pharmacist, 1 dietitian; group B has 10 people including 5 doctors and 5 nurses. We argue that group A is more functional diversity than group B because it has more *types* of roles. We could imagine that group A might be more beneficial to boost creative performance because, for example, the doctor could also get some insights from the pharmacist and dietitian, which help the doctor to understand the patient's situation

better and come up with a better solution before, during or after a surgery. Thus, if a doctor seeks help from such a functional diverse work group, he/she will have more chances to get useful suggestions from other functional background professionals, such as a dietitian or a pharmacist. Therefore, it is expected that individuals are able to be exposed to divergent information, perspectives, and resources when working in functionally diverse work groups (van Knippenberg & Schippers, 2007), which stimulates divergent thinking. Prior meta-analyses uncovered that work group functional diversity provides more opportunities for information exchange and elaboration, which in turn, can enhance individuals' and groups' decision-making quality, task completion, problem-solving, and innovation (Horwitz & Horwitz, 2007; Van Knippenberg et al., 2004; Zhang, 2016). Prior empirical studies found that functional diversity including different sources of information, knowledge, and expertise could moderate the effect of divergent thinking on business idea generation (Gielnik et al., 2012) and help team members to engage each other in information elaboration (Wang, 2015). Hence, it is expected that employees have more opportunities to find different types of information and feedback for the generation of creative ideas when seeking help in a functionally diverse environment. Studies also show that the various types of information could consciously and unconsciously trigger insightful thinking and incubation process (Kounios et al., 2006). Thus:

H2: Work group functional diversity strengthens the positive relationship between seeking help and (a) this week's and (b) next week's creative performance, such that the relationships become stronger when work group functional diversity is high (vs. low).

The moderating role of openness to experience

Based on the proactive process model of individual creativity (Gong et al., 2012), we further argue that not all help seekers will benefit equally well from functional diversity or will be equally able to combine different ideas to create something new. Individuals differ in their abilities to process information from social interaction and environment. Rather we suggest that individuals who are more willing to explore, tolerate and consider new and unfamiliar ideas and experiences, i.e., those high on openness to experiences (Feist, 1998; McCrae, 1987), will profit more from the benefits of help-seeking behavior in functional diverse environments.

Literature indicates that open individuals are characterized not only by a need to seek new and varied experiences but also by a particularly permeable structure of consciousness, allowing for better integration and combination of new and unrelated information (Baer, 2010; Baer & Oldham, 2006). These characteristics enhance employees' ability to take advantage of the information benefits when working in diverse work environments (Homan et al., 2008). Besides, studies indicate that employees high on openness to experience have a stronger willingness to learn new knowledge, take the feedback they receive from those with other functional backgrounds as opportunities, and capitalize upon these differences (Homan et al., 2008; Molleman & Broekhuis, 2012). More open employees have a higher likelihood of successfully unlocking the potentials of diversity in work environments and integrating different information from diverse contacts (Baer, 2010; Homan et al., 2008). Prior studies showed that openness to experience, more than any of the other four factors in the five-factor model, is related to beliefs about and attitudes toward diversity (Ekehammar & Akrami, 2003). Therefore, we expect that more open employees are able to better translate and utilize unrelated information from diverse work environments, which in turn, reach higher levels of creative performance (both this week and next week). Hence:

H3: The positive relationship between seeking help and (a) this week's and (b) next week's creative performance would be strongest when work group functional diversity is high and when simultaneously openness to experience is high.

Methods

Procedure and participants

We collected data from three medium-size hospitals in China. Nowadays, hospitals/healthcare institutions are in urgent need of their employees to be creative. For example, a report of Forbes (2020) showed that it is increasingly important to foster hospital nurses' creativity to improve the patient experience (e.g., in the ICUs). Farooq et al. (2020) indicated that medical doctors in developing countries need to be creative and take appropriate medical care of patients. Even in the developed countries, research shows that healthcare services are not so innovative and successful because the increases of client needs, technology revolution pose doctors

with more challenges (Herzlinger, 2006). Besides doctors and nurses, some other reports showed that administrative assistants in a hospital need to be creative to deal with the diverse demands from patient side and doctor side (Elizabeth Enochs, 2020). Especially, during the covid-19 pandemic, health organizations around the world are forced to be innovative (Slåtten et al., 2020). There is an urgent need for a vaccine that hinders or stops the spread of covid-19. But meanwhile, pending a vaccine, health organizations need to search for innovative effective and safe solutions to the ongoing health threat. Thus, hospital employees are an appropriate setting in our study.

Following a weekly diary design, we required participants to complete a general survey questionnaire at the beginning and subsequently filled in a weekly questionnaire during four consecutive weeks. With the help of the HR managers of the three hospitals, we sent an invitation e-mail to employees in each of the hospitals, explaining the study and encouraging participation. Participants were assured that their answers would be treated confidentially, and their responses were anonymous. The e-mail also contained the link to an online Chinese questionnaire platform, Wenjuanxing, where they first read a detailed description of the study and a consent form. After giving consent, participants were directed to the general survey, where they created a unique personal identification code and filled in their demographic information. Subsequently, the weekly surveys were sent every Thursday and were expected to be completed by the end of Sunday. The questionnaires were administered in Chinese language and scales followed a back-translation procedure.

In the end, we obtained a total of 368 individuals including nurses, doctors, and administrative personnel out of 510 (72% participation rate) who completed both the general survey at the start and the four-week diaries (1,472 observations). Among them, the number of nurses, doctors, and administrative personnel (e.g., accountant, ambulance driver) were 172, 159, and 37 respectively. We also identified that all the participants were nested in 42 work groups, with an average of 18 members per group ($SD = 11.53$). The average age of participants was 34.90 years ($SD = 10.29$), and 76.5% were female. On average, they had worked in their current organization for 9.70 years ($SD = 8.21$). 72% of them had a bachelor's or a more advanced degree.

Measures

Weekly seeking help was measured by weekly seeking help frequency. We used this approach because we think this measurement is straightforward and helps to reduce participants' workload when filling in the weekly questionnaire. Specifically, we took an egocentric network approach (c.f., Baer, 2010; Smith et al., 2005). Participants were first asked to list the contact's nickname (to protect privacy) "who did you ask for help to solve issues or to make progress with your work-related matters (e.g., when you came across a problem/puzzle that you could not solve yourself, and you asked your colleagues to help and figure it out; or when you were not sure about the execution of a work project, and you asked colleagues to double-check the results)". Then, for each contact, a follow-up question is "how many times (i.e., frequencies) did you ask this colleague in this week". Accordingly, we computed the frequencies of weekly seeking help (i.e., we averaged the times that participants asked their contacts in this week). Note that we controlled for the number of contacts participants asked each week (see below paragraphs).

Weekly creative performance was assessed with a 4-item scale (Welbourne et al., 1998). A Sample item was "This week, I created better processes and routines" (5-point Likert scale, 1 = totally disagree; 5 = totally agree; $\alpha = 0.94; 0.96; 0.96; 0.97$ at T1, T2, T3, T4). The reason why we used a self-rating to measure creativity is mainly from a practical consideration. On the one hand, we think that the self can know themselves best in their daily activities and performance (Vazire & Mehl, 2008). On the other hand, we failed to obtain the peers' and supervisors' ratings because they indicated that they had high job demands in their daily jobs and did not have time and energy to evaluate colleagues' performance.

Openness to experience was assessed with a 3-item scale (Baer, 2010). A sample item was "I love to read challenging material." (5-point Likert scale, 1 = totally disagree; 5 = totally agree; $\alpha = 0.79$). As openness to experience is a personality trait, we only measured this in the general questionnaire at the beginning.

Work group functional diversity was objectively measured. We first obtained participants' working functions in each work group from HR departments. According to the information provided by the hospital HR departments, we

identified six functional categories: doctor, nurse, pharmacists, anesthetist, dietitian, and supporting personnel (e.g., accountant, ambulance driver, engineering).

Subsequently, we used Blau's index (i.e. $1 - \sum p_i^2$ where p_i is the proportion of work group members in each of the i categories on an attribute) to calculate work group functional diversity. Higher values represent greater functional diversity within the work group.

Given the potential to confound the hypothesized relationships, we included the following control variables: *weekly contact size* (i.e., we calculated the number of each participant's contacts on a weekly level), *work group size* (i.e., the number of members in a work group), and participant's gender and tenure.

Analytical approach

Multilevel regression analyses were performed using MLwiN. We recognized three levels in the regression equations. Week-level variables (i.e., seeking help and creative performance) were person-mean centred. Person-level variable (i.e., openness to experience) was group-mean centred. Group-level variable (i.e., work group functional diversity) was grand-mean centred (Mohammadpour, 2013). Besides, we created the lagged variables of seeking help (i.e., at $t-1$ period), so that we can observe whether seeking help influences the next period of creative performance. Following multilevel analyses practices, in step 1, we started with a null model that included only controls, i.e., gender, tenure, contacts' size, group size. As we also aimed to examine the relationship between seeking help and the next period of creative performance, we also controlled for the current period of creative performance and the next period of seeking help. In step 2, we added the predictor, i.e., seeking help. In step 3, we entered the two-way interaction terms, i.e., seeking help and work group functional diversity. In step 4, we entered the three-way interaction terms, i.e., seeking help, work group functional diversity, and openness to experience. We examined random effects of slopes and tested the improvement of each model over the previous one by computing the differences of log-likelihood statistic $-2 \times \log$ and subjected this difference to a χ^2 significance test.

Results

Common method bias (CMB) issue

Common method bias is defined as a systematic error variance that stems from a common method used to measure the constructs of the study (Podsakoff et al., 2003). The sources of common methods bias include respondent -related sources (e.g., common rater effects, individual characteristics effects) and measurement-related sources (e.g., item characteristics item, item and measurement context characteristics context) (Podsakoff et al., 2003). We conducted an unmeasured latent factor test (Podsakoff et al., 2003) using Mplus to statistically examine if the common method bias is a serious issue in our study. Results showed that the unconstrained model fit at T1 was $\chi^2 = 3643.606$, $df = 183$; the constrained model fit at T1 was: $\chi^2 = 3770.238$, $df = 186$; $\chi^2 (3) \text{ diff} = 126.632$, $p < .001$, which implied that there exists common method bias. We further examined how much variance is shared among all of the items to see if the common method bias is a serious issue. The results showed that the “method” factor shared the variance of 36.72%, 29.38%, 5.57%, and 39.44% at T1, T2, T3, and T4, respectively. Thus, we concluded that CMB might not be a serious issue in this study (see, Fuller et al., 2016). Combining both the procedural and statistical approaches, we conclude that the common method bias might exist but not necessarily be a serious problem in this study because we used different approaches to measure our focal variables. For example, help-seeking variable was measured using an egocentric network approach; group functional diversity was measured objectively using the source from the HR department; creativity was measured by a validated scale. Besides, we collected data from three different hospitals over four consecutive weeks. We balanced positive and negative items in the questionnaires and protected respondent anonymity. Thus, these procedural approaches, can effectively reduce the common method bias and increase the credibility of our findings (Jordan & Troth, 2020; Podsakoff et al., 2011).³

Descriptive Statistics

Table 1 displays means, standard deviations, and correlations among studied variables. Specifically, we found that weekly creative performance positively

³ To provide a more robust test, we conducted an instrumental variable test. We carefully chose individuals' contact size as an instrumental variable. Finally, the results of the instrumental variable test showed similar to our original results. Therefore, we conclude that the potential common method bias could not be a serious problem in this study. We provided the results of this analysis in the supplementary materials.

correlated to weekly seeking help ($r = 0.082$); openness to experience positively correlated to weekly creative performance ($r = 0.063$); openness to experience positively correlated to weekly seeking help ($r = 0.068$); unexpectedly, openness to experience negatively correlated to work group functional diversity ($r = -0.14$). Combining group size ($M = 18.44$, $SD = 11.53$), openness to experience ($M = 3.84$, $SD = 0.68$), and work group functional diversity ($M = 0.5$, $SD = 0.19$), this indicated that more open employees tended to work in smaller and less functional diverse units. We also found that gender, tenure, weekly number of asking contacts, and group size significantly correlated to weekly seeking help. That is why we also considered them as controls in our statistical model.

We also calculated the intraclass correlation coefficient (ICC) (c.g., Mohammadpour, 2013) to assess whether multilevel analyses were warranted. The results indicated that person-level variances for creative performance and seeking help were 54.21% and 49.31 respectively, group-level variances for creative performance and seeking help were 12.51% and 15.96% respectively. Prior literature indicated that ICC with values around 5% or higher is often taken an indication of substantial clustering of observations within higher-level units (Hox, 2013). We thus conclude that our week-level variables varied both at person level and group level, which warrants an examination of predictor and outcome variables at the person level and group level. Finally, we focused on a three-level model that distinguished week level, person level, and group level.

Hypothesis testing

Table 2 showed that seeking help was insignificantly related to *current week's* creativity ($b = 0.038$, $p > .10$). Besides, seeking help was insignificant related to *next week's* creativity ($b = -0.054$, $p > .05$) as well (see Table 3). Hence, Hypothesis 1 was not supported.

Table 2 shows insignificant two-way interactions of seeking help and work group functional diversity on *current week's* creativity ($b = -0.063$, $p > .10$). However, Table 3 shows the significantly positive two-way interaction effect of seeking help and work group functional diversity on the *next week's* creativity ($b = 0.657$, $p < .01$).

The simple slope test showed that seeking help was only positively related to next week's creativity when work group functional diversity was high ($b = 0.599; p < .001$). When work group functional diversity was low, this relationship was insignificant ($b = -0.058, p > .10$) (see Figure 2). Hence, Hypothesis 2a was rejected but Hypothesis 2b was supported.

Furthermore, we only found the significant three-way interaction of seeking help, work group functional diversity, and openness to experience on the *next* week's creativity ($b = 1.125, p < .01$) (see Table 3). The three-way simple slope test showed that the relationship between seeking help and the next week's creativity was strongest when work group functional diversity was high and employees' level of openness to experience was high ($b = 1.577, p < .001$), compared to when work group functional diversity was high and employees' level of openness to experience was low ($b = 0.546, p < .01$). The slopes under the other two conditions were insignificant (low work group functional diversity and high openness to experience, $b = -0.140, p > .10$; low work group functional diversity and low openness to experience, $b = -0.026, p > .10$) (see Figure 3). Hence, only Hypothesis 3b was supported.

Discussion

In this current study, we tested an integrative model to shed light on how proactive behavior (i.e. help-seeking), a resourceful work context, and one's openness to experience jointly shape and boost employees' creative performance. Conducting a weekly diary study, our results showed that engaging in help-seeking actions was positively related to next week's creative performance when employees work in a highly functionally diverse workgroup. Moreover, this cross-week effect was even stronger for those employees with a high level of openness to experience. Thus, our study uncovers that the emergence of creativity is indeed followed by a period of incubation and that the way to maximize creative performance is to actively engage in weekly help-seeking behavior in functionally diverse workgroups and simultaneously be open-minded to different experiences and knowledge. Our study employs a multilevel perspective (i.e., weekly level, group level, and person level) to offer the means to manage employees' day-to-day creative process.

Table 1. Means, S.D., and correlations among the study variables

	Mea									
	n	SD	1	2	3	4	5	6	7	8
1. Weekly creativity	3.63	0.67		0.082*	0.063*	-0.007	0.064*	-0.004	0.037	-0.039
2. Weekly seeking help	2.09	1.24	0.084*		0.068*	-0.107**	-0.159**	0.061*	0.307**	-0.198**
3. Openness to experience	3.84	0.68	0.027	0.048						
4. Work group functional diversity	0.50	0.19	-0.001	-0.039	-0.140**					
5. Gender	1.77	0.42	0.043	-0.093**	-0.074*	0.048				
6. Tenure	9.70	8.21	-0.017	0.063	0.007	-0.078*	-0.012			
7. Contact size	1.91	1.08	-0.008	0.353**	0.042	0.104**	-0.042	0.068*		
8. Group size	18.44	11.53	-0.002	-0.139**	-0.095**	0.440**	0.050	0.086**	-0.068**	

* $p < .05$; ** $p < .01$; N = 510 participants and N = 1472 data points; Above-diagonal are the correlations on within level.

Table 2. Multilevel regression of seeking help, work group functional diversity, and openness to experience predicting the current period of creativity

	Model 1			Model 2			Model 3			Model 4		
	b	SE	sign	b	SE	sign	b	SE	sign	b	SE	sign
Constant	3.436	0.183	***	3.437	0.183	***	3.406	0.185	***	3.404	0.186	***
<i>Control only</i>												
Gender	0.105	0.089		0.104	0.089		0.128	0.089		0.129	0.090	
Tenure	-0.002	0.005		-0.002	0.005		-0.001	0.005		-0.001	0.005	
Contact size t	-0.063	0.025	*	-0.072	0.026	**	-0.070	0.026	**	-0.069	0.026	**
Group size	-0.001	0.004		-0.001	0.004		-0.002	0.004		-0.002	0.004	
<i>Subjects</i>												
Seeking help t				0.038	0.026		0.027	0.035		0.028	0.035	
Work group functional diversity							0.158	0.290		0.167	0.290	
Openness										0.055	0.059	
<i>Interactions</i>												
Seeking help t × work group functional diversity							-0.063	0.218		-0.057	0.217	
Seeking help t × openness										-0.073	0.056	
Openness × work group functional diversity										-0.118	0.411	
Seeking help t × work group functional diversity × openness										-0.475	0.427	
-2LL	1145.333			1143.298			1106.485			1101.968		
d.f.	4			1			2			4		
-2LL differences	231.939			2.035			36.813			4.517		
Group level variance	0.012			0.012			0.010			0.010		
Person level variance	0.219			0.219			0.232			0.232		
Week level variance	0.212			0.211			0.172			0.173		

* $p < .05$; ** $p < .01$; *** $p < .001$; N = 510 participants and N = 1472 data points; "Openness" refers to "openness to experience".

Table 3. Multilevel regression of seeking help, work group functional diversity, and openness to experience predicting the next period of creativity

	Model 1			Model 2			Model 3			Model 4		
	b	SE	sign	b	SE	sign	b	SE	sign	b	SE	sign
Constant	3.438	0.225	***	3.449	0.224	***	3.410	0.227	***	3.419	0.220	***
<i>Control only</i>												
Gender	0.099	0.108		0.096	0.108		0.123	0.108		0.119	0.106	
Tenure	-0.004	0.006		-0.004	0.005		-0.004	0.005		-0.004	0.005	
Contact size t	-0.072	0.029	*	-0.058	0.030		-0.068	0.030	*	-0.070	0.030	*
Group size	0.001	0.005		0.001	0.005		0.001	0.005		0.000	0.005	
Creativity t	-0.216	0.054	***	-0.207	0.054	***	-0.189	0.053	***	-0.184	0.054	***
Seeking help t+1	0.043	0.039		0.031	0.040		0.041	0.039		0.044	0.039	
<i>Subjects</i>												
Seeking help t				-0.054	0.033		-0.058	0.043		-0.026	0.045	
Work group functional diversity							0.016	0.335		0.022	0.338	
Openness										0.065	0.076	
<i>Interactions</i>												
Seeking help t × work group functional diversity							0.657	0.229	**	0.572	0.237	*
Seeking help t × openness										-0.114	0.055	*
Openness × work group functional diversity										-0.739	0.508	
Seeking help t × work group functional diversity × openness										1.125	0.416	**
-2LL	592.910			590.194			571.232			561.699		
d.f.	6			1			2			4		
-2LL differences	784.362 ***			2.716			18.962 ***			9.533 *		
Group level variance	0.011			0.011			0.011			0.005		
Person level variance	0.232			0.230			0.226			0.217		
Week level variance	0.154			0.153			0.142			0.141		

* $p < .05$; ** $p < .01$; *** $p < .001$; $N = 510$ participants and $N = 1472$ data points; "Openness" refers to "openness to experience". We used the four-time data. T+1 refers to the next period. That said, we used help-seeking at t1, t2, t3 to predict creative performance at t2, t3, t4 (i.e., we tested a lagged effect). Meanwhile, we also controlled for creative performance at t1, t2, t3 when we modelled creative performance at t2, t3, t4.

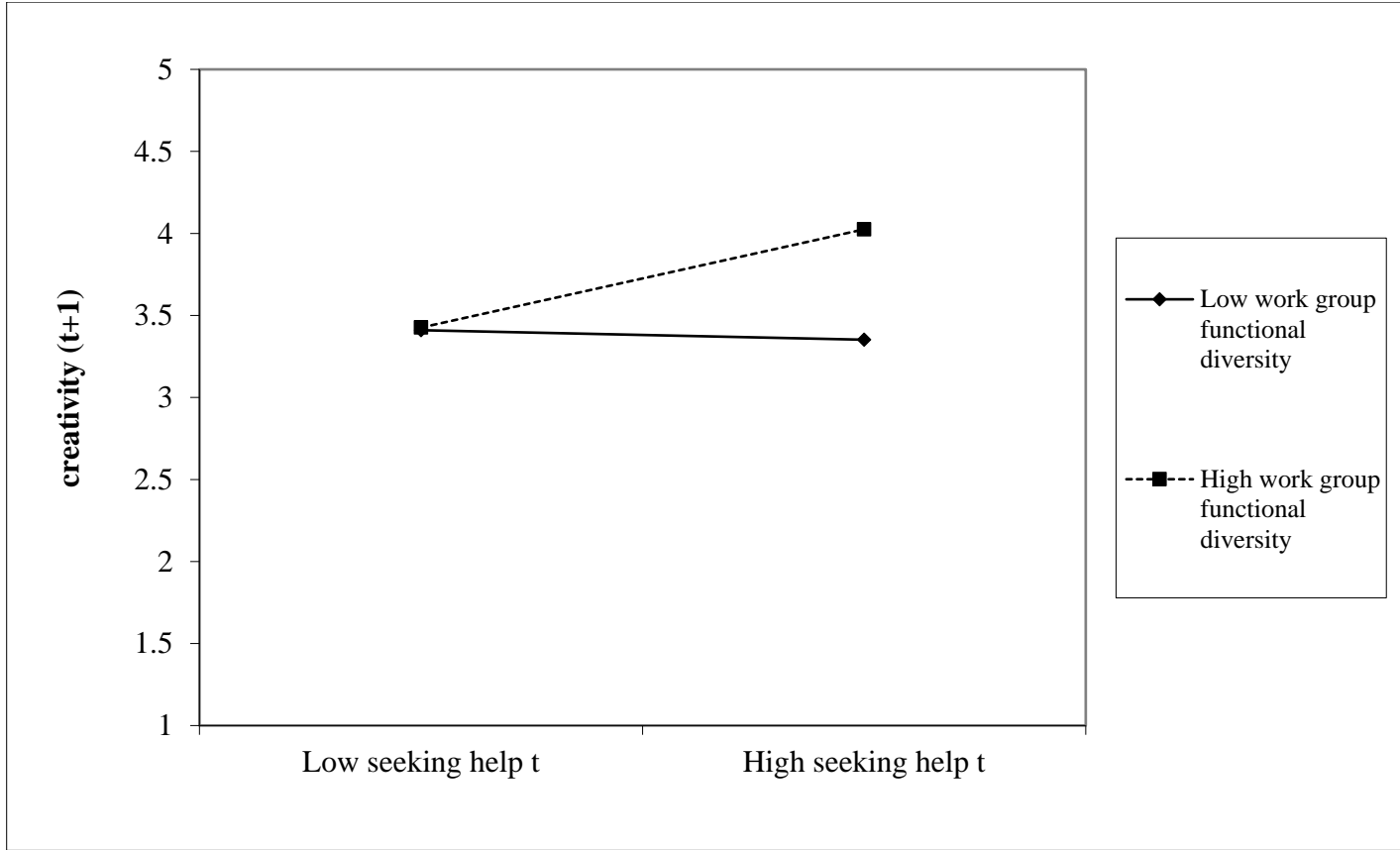


Figure 2. Two-way interaction between seeking help and work group functional diversity on next week's creativity

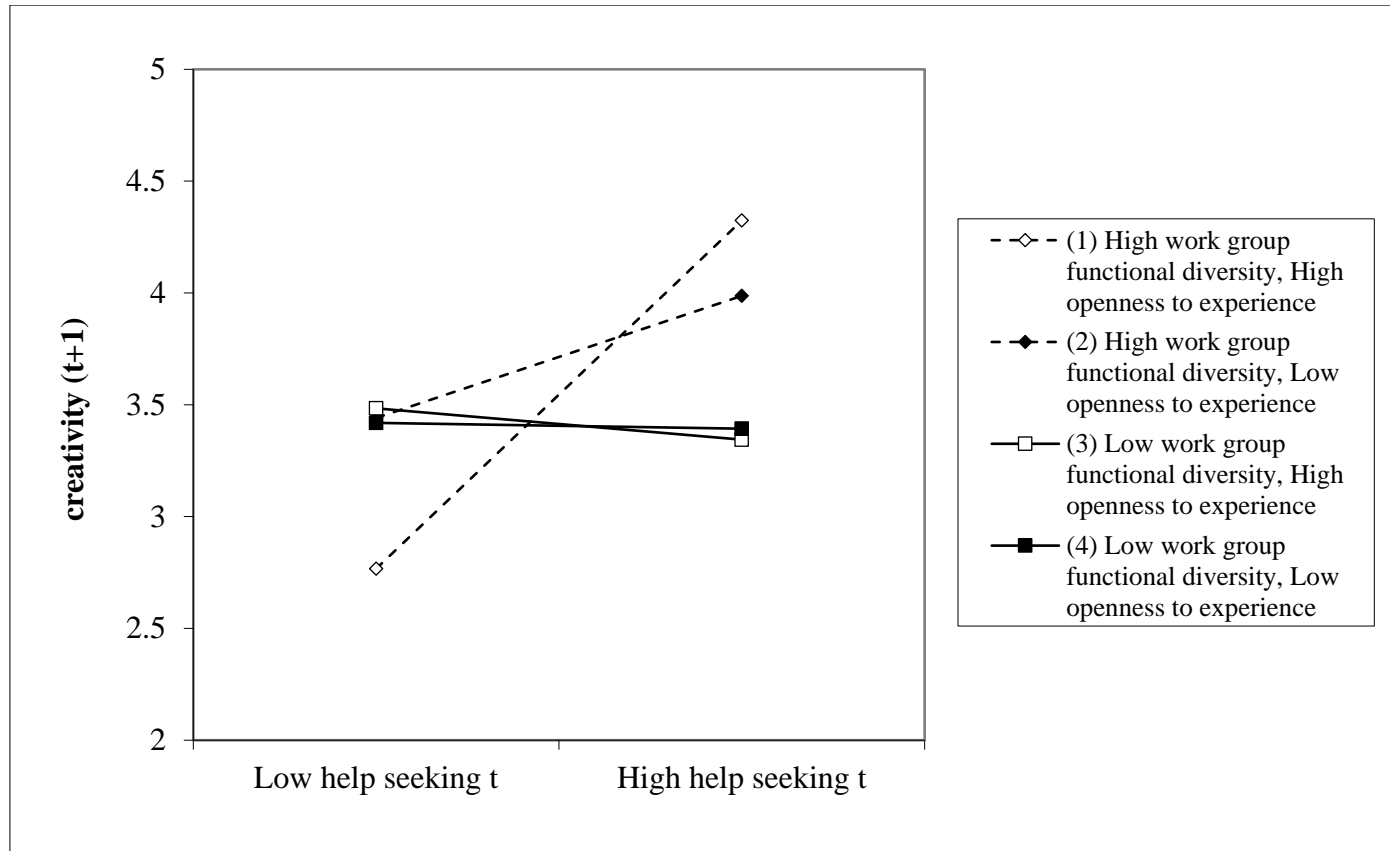


Figure 3. Three-way interaction between seeking help, work group functional diversity, and openness to experience on the next week's creativity

Theoretical contributions

First, we proposed and examined the beneficial role of help-seeking behavior on a weekly basis. Thus, we add to the employee creativity literature (Zhou & Hoever, 2014) by revealing a behavioral means to facilitate employees' day-to-day creativity. We highlight the importance of proactive, goal-directed behaviors (i.e., a bottom-up approach) in the creative process. Our results indicate that to achieve daily creativity, employees can and should *proactively* engage in certain creativity-related actions or activities for seeking relevant information and resources on their daily work basis (e.g., help-seeking behavior), rather than passively waiting for the information and resources coming to them (Demerouti et al., 2015). Thus, we underscore that help-seeking behavior, as a bottom-up job design, could be an effective means to promote employees' creative process, compared to traditional top-down job designs such as leadership, goal orientation, and work arrangements (see review, Oldham & Fried, 2016). Gong et al. (2012) proposed a proactive process model of individual creativity to highlight the importance of employee proactivity. We thus add help-seeking behavior into this model and underscore that help-seeking behavior can be a simple but effective proactive strategy that can be used in employee daily work context to facilitate creativity. Recent studies also call for uncovering the factors that may account for within-person variations in creativity (Sun et al., 2020). Our study thus offers an insight that the extent to which employees engage in weekly help-seeking behaviors may be a critical factor explaining creativity fluctuations within persons.

Second, we examined and confirmed the moderating role of work group functional diversity in the relationship between help-seeking behavior and creative performance. Thus, we enrich the employee proactivity literature (Crant, 2000; Parker et al., 2010) by uncovering an important contextual factor. Our results indicate that help-seeking behavior was positively related to next week's creative performance for those employees who work in a more functional diverse work group. This is because work group functional diversity provides a more variety of knowledge, information, and perspectives, which can be seen as a resourceful work environment. As such, employees can perceive more opportunities for engaging in

proactive strategies (e.g., help-seeking behavior) to gain necessary information they need. Prior literature indicated that the success of engaging in proactive behaviors may depend on a supportive environment such as organizational support, transformational leadership, innovative climate, and HRM practice (for reviews see Cai et al., 2019; Parker et al., 2010). We enrich this line of research by highlighting that having a functional diverse work group is also an important contingent factor facilitating more opportunities for the success of proactive behaviors. Moreover, we add to the work group diversity literature (Kundu & Mor, 2017; Van Knippenberg et al., 2004) by suggesting that enabling employees to realize that diversity in a work group represents different resources from which one can benefit, might be the first step to enhance the functioning and effectiveness of diverse work groups. Examining the interactive effect of help-seeking behavior and work group functional diversity, we underscore that merely having a diverse work group is not sufficient and that members of the work group should proactively take actions to make use of the benefits of diversity (e.g., engage in help-seeking behavior). This finding is in line with work group diversity literature (Guillaume et al., 2017; Shemla et al., 2016) emphasizing that diversity has mixed effects and that one should find a way to capitalize on its benefits and overcome its detriments. We also add to the diversity and inclusion literature (Roberson, 2006) by suggesting that help-seeking behavior could be one of the valuable means to create an inclusive climate in diverse work groups. This is not only because employees gain unique knowledge and skills for personal development, but this simple act of asking help at the same time gives the other person a sense of belonging (Randel et al., 2018).

Third, in addition to help-seeking behavior and work group functional diversity, our study also examined and revealed an essential personal factor – openness to experience. So far, testing a three-way interaction model of help-seeking behavior, work group functional diversity, and openness to experience, we provide a more complete understanding of how to facilitate employees' daily creative process and enrich the employee creativity literature (Shalley et al., 2004; Zhou & Su, 2021). Prior creativity studies largely investigated creativity-related behaviors, personal traits, or contextual factors in a relatively separate manner (see review, Shalley et al.,

2004). Our study integrates these three important aspects of fostering creativity and presents a more complete model. Our results indicate that when employees take proactive actions (i.e., help-seeking behavior) in the functionally diverse work environment, openness to experience could effectively guide their self-initiated actions and reap more benefits from the diverse work context. In line with the proactive process model of individual creativity presented by Gong et al. (2012), we underscore that to maximize daily creativity, employees not only need to take relevant self-initiated actions (Crant, 2000), expose themselves to knowledge-based workplace diversity (Kundu & Mor, 2017), but also need to be capable of being open-minded to different experiences and knowledge (Baer, 2010). We add to the employee proactivity (Crant, 2000; Parker et al., 2010) and workplace diversity (Guillaume et al., 2017; Shemla et al., 2016) literatures by providing insights into how personal trait (i.e., openness to experience) helps employees to conduct self-initiated creative-related actions more successfully and capitalize on the benefits of workplace diversity more effectively.

Finally, it is notable that via conducting a weekly diary study, we capture a temporal scope of help-seeking behavior on creativity and how this temporal effect is influenced by certain contingencies. Our results showed that help-seeking behavior did not have immediate effects on creative performance but released the beneficial effects in subsequent periods in a condition of high work group functional diversity and high individual openness to experience. This implies that the emergence of creativity may be followed by a period of incubation (Ritter & Dijksterhuis, 2014) and this incubation effect could be influenced by informational diverse work environments and personal abilities to capitalize on the benefits of informational diversity. The creativity and neuroscience literature has found the significant effect of incubation via many experiments (Sio & Ormerod, 2009) and uncovered that the incubation effect could be moderated by various factors such as goals, task characteristics, mind wandering, and sleep (see review, Ritter & Dijksterhuis, 2014). Our study, nevertheless, underscores that a resourceful work environment and a personal ability of information identification, processing, and use are also vital

factors that facilitate creativity incubation. We deepen the understanding of the factors influencing the incubation effect on creativity.

In sum, by uncovering what actions employees engage in, what contexts employees are exposed to, and what personal abilities employees are capable of, our study presents a more comprehensive understanding of employees' daily creative process. We underscore that the creative process is not only dynamic within individuals over time (Sun et al., 2020) but also a multilevel phenomenon. That is, the creative process is highly dependent on the person, as the person initiates daily actions that are necessary to creativity and varies in personal abilities in processing different information (Zhou & Hoever, 2014), but also determines the degree to which creativity profits from contextual characteristics (Zhou & Su, 2021). Our study thus highlights that knowledge-based (workplace) diversity is a vital contextual characteristic that incubates and facilitates creativity (Zhang, 2016), and under such a work context, it is advisable for employees to initiate creativity-related actions (e.g., seeking help from their professional contacts) and cultivate openness-to-experience abilities. We contribute to the creativity literature by proposing and testing such a multilevel framework to guide organizations to manage employees' daily creativity.

Practical implications

We also present several important practical implications for organizations and management practitioners. First, we suggest that organizations encourage employees to take the bottom-up approach (e.g., help-seeking) to manage their own creative performance. For example, organizations could empower employees with more autonomy to conduct help-seeking behaviors (Sekiguchi et al., 2017). Consequently, employees could possess more freedom and willingness to take such actions to access vital job resources for higher creative performance. Second, we call for organizations to create a functionally diverse work environment for the employees. In recent years, there has been a significant increase in the use of multifunctional or multidisciplinary work teams as a critical approach to organizing work and improving work quality (Van Der Vegt & Bunderson, 2005). Therefore, it would be wise for organizations to establish a functionally diverse work group where employees could share different information, knowledge, and expertise. Third, based

on our results, organizations may also want to consider training their employees with high openness-to-experience abilities. Open individuals have the ability to take advantage of the information benefits when working in diverse work environments (Baer, 2010). We believe that cultivating employees' openness to experience can bring organizations more human capital.

Limitations and future directions

In addition to its strengths, it is important to note certain limitations of this study. We had several limitations on our construct measurement. First, our study used self-reported rating for employee creative performance, which likely might lead to the common method bias (CMB) (Podsakoff et al., 2003). However, we procedurally and statistically addressed this issue in our study based on which we conclude that it did not affect our study results. Methodology researchers also indicate that a longitudinal study per se (e.g., experience sampling methods, diary studies) is viewed as an effective format to reduce CMB (Gabriel et al., 2019; Jordan & Troth, 2020; Podsakoff et al., 2003). We also added control variables (i.e., weekly contact size, group size) and the lagged terms (i.e., t-1 period of help-seeking, contact size, and creative performance), trying to reduce CMB issues, as suggested by prior studies (Gabriel et al., 2019). Nevertheless, we still recommend that future studies can consider using other-reported rating to acquire a more objective measure of employee creative performance. We encourage future studies to replicate our study and examine the relationships in other occupational settings and using multiple sources.

Second, we measured functional diversity at the group level but not at the ego-network level. Therefore, we did not know whether people actually sought help from a person who has a different functional background. That said, our model only explains whether help-seeking behavior in a functional diverse work group could be better than that in a functional homogeneous work group. But we don't know if one's ego-centered network is diverse or not. The social network literature shows that using, expanding, and maintaining a diverse ego-centered network is positively related to one's creativity (Baer, 2010; Porter & Woo, 2015). Thus, we recognize this as a limitation of our study. We hope that future studies can examine diversity at the ego-network level, which would provide more insights into whom employees can

seek help and how employees make the actual use of the benefits of diversity from their networks.

Third, using the ego-centric measurement approach, we only measured the frequencies of help-seeking (as well as the number of contacts participants asked each week, which takes as a control variable). Therefore, we cannot rule out whether it is really the “amount” of help-seeking or some other potential mechanisms that lead to creativity. One of the reasons is that we did not test a mediating process. According to the relevant creativity theories (Gong et al., 2012; Shalley et al., 2004; Zhou & Hoever, 2014), when people seek help, the enhancement of creativity could be through a communicating/exchanging process, a self-reflecting process, or a divergent thinking process. However, in an ego-centered network measurement approach, we cannot extract these variables. Therefore, we recognize this as a limitation of this study. We strongly recommend future studies to use other measurements to examine by what mechanism help-seeking leads to creativity. This would give a more complete understanding of why, how, and when help-seeking behaviors help employees to enhance creativity.⁴

Besides the limitations of the construct measurement, we had some internal and external factors that may overlook in this study. For example, while help-seeking is proposed as proactive behavior to get access to the benefits of workplace diversity, it should be noted the dark side of seeking help. For example, seeking help may increase burden for people who give help (Mueller & Kamdar, 2011). This perspective is missing from this study. Thus, we recommend that future studies investigate a more reciprocating process of helping seeking and giving in a diverse workplace. We believe that this could uncover a deeper understanding of what individuals can do to unlock the potential of workplace diversity and obtain more beneficial work outcomes. Finally, our study presents an integrative model (i.e., what actions, which circumstances, and what personal abilities) to understand employees’ creative process. Future studies could follow this framework to investigate other proactive actions at work, other environmental characteristics, and

⁴ In our dataset using the ego-centric measurement approach, we actually measured contacts’ gender and contacts’ closeness at the ego-network level. However, we did not find a significant three-way interaction regarding these two variables. Therefore, we did not include them in our conceptual model. Nevertheless, we still put these results in the supplementary materials for those who are interested.

other critical personal abilities/assets. By doing so, we could further extend our knowledge of managing employees' daily creative process.

Conclusion

This study aimed to examine how proactive actions, resourceful work contexts, and critical personal abilities jointly shape and boost employees' day-to-day creative performance. Our results showed that the emergence of creativity is indeed followed by a period of incubation and that the way to maximize creative performance is to actively engage in weekly help-seeking behavior in functionally diverse workgroups and simultaneously be open-minded to different experiences and knowledge. We contribute to the creativity and work design literature by proposing and testing a multilevel model (i.e., proactive actions on the weekly level, resourceful work contexts on the group level, and personal abilities on the personal level) to offer the means to manage employees' daily creative process.

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Supplementary materials

An instrumental variable test

The primary advantage of the instrumental variable technique is that it provides a straight-forward solution to the problem of common method bias in situations where its causes cannot be identified or measured directly (Antonakis et al., 2010). This test is conducted by a two-stage least squares (2SLS) (Podsakoff et al., 2011). The selected instrumental variable should be exogenous, that is, it is correlated with the endogenous predictor (DV) for which it acts as an instrument and is uncorrelated with the structural error term for the equation (Jordan & Troth, 2020). In our study, we carefully chose individuals' contact size as an instrumental variable. We first regressed help-seeking on contact size and then calculated the residual of this regression. Subsequently, we entered the residual of help-seeking as the independent variable into the equation. Finally, the results of the instrumental variable test showed similar to our original results (See Table A). The three-way interaction term was $b = 0.44$, $s.e. = 0.21$, $p < .05$. Therefore, we conclude that the potential common method bias could not be a serious problem in this study.

Additional analyses

We also examined contacts' gender diversity and contacts' closeness and their three-way interaction effects. First, we computed the gender diversity at the ego-network level using the Blau index. Following the multilevel regression practice, we entered the predictors, two-way interactions, and three-way interactions step by step. The results are shown in Table B. We found that the two-way interaction between help-seeking and contacts' gender diversity was not significant ($b = 0.517$, $p > .05$) and that the three-way interaction was also not significant ($b = -1.387$, $p > .05$).

We measured contacts' closeness by asking participants: to what extent you are close with this colleague when you ask for help? (5 Likert point: 1_acquaintance, 2_distant colleague, 3_friendly colleague, 4_close colleague, 5_very close colleague). The results are shown in Table C. We found that the two-way interaction between help-seeking and contacts' closeness was significant ($b = -0.14$; $p < .05$). We further did the simple slope test. The results showed that seeking help was negatively related to the next week's creativity when contact closeness was high ($b = -0.210$; p

Table A: An instrumental variable test

Outcome variable: creativity	Model 1		Model 2		Model 3	
	est	s.e.	est	s.e.	est	s.e.
Intercept	1.96	0.27***	1.94	0.65***	2.16	0.25***
Residual of help-seeking	0.04	0.04	0.17	0.19	1.13	0.69
Openness to experience	0.06	0.04	0.07	0.18	0.01	0.11
Group functional diversity	-0.02	0.17	-0.02	0.91	-0.35	0.75
Residual × openness			-0.02	0.05	-0.31	0.21
Residual × functional diversity			-0.07	0.17	-1.59	0.72*
Openness × functional diversity			-0.08	0.25	0.09	0.19
Residual × functional diversity × openness					0.44	0.21*
Group size	-0.02	0.03	-0.03	0.03	-0.02	0.01*
Tenure	0.02	0.02	0.03	0.03	0.02	0.01*
Gender	0.05	0.07	0.05	0.07	0.04	0.01*
Residual (t-1)	-0.05	0.04	-0.05	0.04	-0.06	0.06
Creativity (t-1)	0.38	0.04***	0.38	0.04***	0.38	0.15*
R-squared	0.19		0.19		0.20	
Adjusted R-squared	0.17		0.17		0.17	
F-statistic	9.64		7.21		6.77	
Prob(F-statistic)	< .001		< .001		< .001	

* $p < .05$; ** $p < .01$; *** $p < .001$

Table B. Multilevel regression of seeking help, contacts' gender diversity, and openness to experience predicting the next period of creativity (creativity t+1)

	Model 1			Model 2			Model 3			Model 4		
	b	SE	sign	b	SE	sign	b	SE	sign	b	SE	sign
Constant	3.438	0.225	***	3.449	0.224	***	3.447	0.198	***	3.469	0.198	***
<i>Control only</i>												
Gender	0.099	0.108		0.096	0.108		0.084	0.109		0.072	0.108	
Tenure	-0.004	0.006		-0.004	0.005		-0.004	0.006		-0.005	0.005	
Contact size t	-0.072	0.029	*	-0.058	0.030		-0.035	0.033		-0.011	0.064	
Group size	0.001	0.005		0.001	0.005		0.001	0.005		0.001	0.005	
Creativity t	-0.216	0.054	***	-0.207	0.054	***	-0.204	0.053	***	-0.191	0.052	***
Seeking help t+1	0.043	0.039		0.031	0.040		0.024	0.039		0.053	0.041	
<i>Subjects</i>												
Seeking help t				-0.054	0.033		-0.052	0.033		-0.079	0.058	
Contacts' gender diversity t							-0.367	0.188		-0.408	0.191	*
Openness to experience										0.011	0.076	
<i>Interactions</i>												
Seeking help t × contacts' gender diversity t							0.517	0.318		0.875	0.349	*
Seeking help t × openness to experience										-0.040	0.045	
Contacts' gender diversity × openness to experience										0.680	0.379	
Seeking help t × contacts' gender diversity t × openness to experience										-1.387	0.726	
-2LL	592.910			590.194			583.887			559.916		
d.f.				1			2			3		
-2LL differences				2.716			6.307 *			23.971 ***		
Group level variance	0.011	0.017		0.011	0.017		0.012	0.018		0.012	0.018	
Person level variance	0.232	0.038	***	0.230	0.037	***	0.234	0.038	***	0.234	0.037	***
Week level variance	0.154	0.015	***	0.153	0.015	***	0.148	0.014	***	0.134	0.013	***

* $p < .05$; ** $p < .01$; *** $p < .001$; N = 510 participants and N = 1472 data points.

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Table C. Multilevel regression of seeking help, contacts' closeness, and openness to experience predicting the next period of creativity (creativity t+1)

	Model 1			Model 2			Model 3			Model 4		
	b	SE	sign	b	SE	sign	b	SE	sign	b	SE	sign
Constant	3.438	0.225	***	3.449	0.224	***	3.457	0.220	***	3.424	0.195	***
<i>Control only</i>												
Gender	0.099	0.108		0.096	0.108		0.098	0.106		0.099	0.107	
Tenure	-0.004	0.006		-0.004	0.005		-0.004	0.005		-0.003	0.005	
Contact size t	-0.072	0.029	*	-0.058	0.030		-0.052	0.031		-0.054	0.031	
Group size	0.001	0.005		0.001	0.005		0.000	0.005		0.001	0.004	
Creativity t	-0.216	0.054	***	-0.207	0.054	***	-0.198	0.054	***	-0.206	0.055	***
Seeking help t+1	0.043	0.039		0.031	0.040		0.032	0.039		0.032	0.039	
<i>Subjects</i>												
Seeking help t				-0.054	0.033		-0.046	0.033		-0.039	0.033	
Contacts' closeness t							0.045	0.032		0.055	0.033	
Openness to experience										0.032	0.075	
<i>Interactions</i>												
Seeking help t × contacts' closeness t							-0.140	0.056	*	-0.713	0.067	*
Seeking help t × openness to experience										-0.027	0.045	
Contacts' closeness × openness to experience										-0.051	0.060	
Seeking help t × contacts' closeness t × openness to experience										0.074	0.092	
-2LL	592.910			590.194			582.749			580.809		
d.f.				1			2			3		
-2LL differences				2.716			6.213 *			1.940		
Group level variance	0.011	0.017		0.011	0.017		0.010	0.017		0.008	0.016	
Person level variance	0.232	0.038	***	0.230	0.037	***	0.221	0.036	***	0.223	0.036	***
Week level variance	0.154	0.015	***	0.153	0.015	***	0.151	0.014	***	0.150	0.014	***

* $p < .05$; ** $p < .01$; *** $p < .001$; N = 510 participants and N = 1472 data points.

< .01). When contact closeness was low, this relationship was insignificant ($b = 0.118$, $p > .10$). This implies that seeking help from high close contacts (strong ties) may not be beneficial to creativity. However, when we entered the three-way interaction (i.e., help-seeking \times contacts' closeness \times openness to experience), we found insignificant results ($b = 0.074$, $p > .05$).

Chapter 5

Crafting networks: A self-training intervention

This chapter was under review at *Journal of Vocational Behavior*

Abstract

While social networks are known to be critical for enhancing employees' work outcomes, how employees proactively shape their networks has not been studied extensively. This study develops a network crafting intervention using a self-training format to investigate whether the intervention can increase three network crafting behaviors (i.e., using existing contacts, establishing new contacts, and maintaining professional contacts), and in turn, lead to higher levels of proximal (e.g., one's network diversity) or distal outcomes (e.g., work and career success). In a quasi-experimental research design of 88 participants in the experimental group and 59 participants in the control group, our results revealed that, after the intervention, employees reported an increase in three trained network crafting strategies.

Moreover, those participating in the intervention reported higher levels of perceived career success (e.g., career autonomy and perceived marketability). Through the three trained network crafting behaviors, the intervention had indirect effects on employees' network diversity and work performance (e.g., task performance and problem-solving). Our study provides insights into a means to smartly shape one's social networks. Our intervention offers a management tool that employees and managers can use to guide individuals' network crafting actions and apply them in their daily work context.

Keywords: career success, crafting, intervention study, network diversity, social network, work performance

Introduction

Social networks are crucial to many aspects of employees' working life. A LinkedIn survey in 2016 revealed that 85% of employees found their job via their social networks (LinkedIn, 2016). A Forbes investigation in 2013 among 4991 U.S. hourly workers found that they used their social networks to increase sales performance (Forbes, 2013). The social network literature indicates that social networks provide individuals with numerous interpersonal resources (Perry-Smith, 2006) and that they are positively related to employees' work performance and innovation (Gong et al., 2020), well-being (Kilduff & Brass, 2010), productivity and job security (Wu, 2013), and career satisfaction (Ng & Feldman, 2014).

Although networks are an essential factor in work and career success, we know relatively little about how employees take charge of their network, shaping and using it to their benefit. This is important because the potential of networks can only be unlocked if we proactively, strategically make use of it (Porter & Woo, 2015). That said, when employees are aware of the (potential) value of their network for work and career outcomes, it is essential to use, expand, and maintain that resource (or bundle of resources) in a strategic and goal-oriented manner. Recent research suggests that those who proactively craft their network/relations create person-job fit (Tims et al., 2016), satisfy their intrinsic needs (Kosenkranius et al., 2020), and facilitate their performance and well-being (Rofcanin et al., 2019; van Gool et al., 2021). Van Gool and colleagues (2021) propose the concept of network crafting as a *proactive* strategy aimed at optimizing one's network that involves networking behaviors that employees utilize to balance the costs and benefits of their network. They emphasized that crafting networks is not merely changing with whom one interacts but doing so *smartly* and *strategically*.

In this study, we develop and evaluate a self-training intervention aimed at stimulating network crafting. Crafting interventions have been shown over the last few years to be an effective means of promoting other types of crafting behavior, such as job crafting (Dubbel et al., 2019; Kooij et al., 2017), reemployment crafting (Hulshof et al., 2020), and sustainable behavior crafting (Pekaar & Demerouti, 2021). More recently, self-training interventions have gained some traction because a self-

training approach is more flexible for both participants and trainers, cost-effective, and more likely to repeat exercises or training (Hülshager et al., 2015; Verelst et al., 2021). We design the current self-training intervention using the theory of planned behavior (TPB) (Ajzen, 1991). We take a field-experimental approach, including three weeks of self-training to help employees improve their professional network using three types of networking behavior – using existing contacts, establishing new contacts, and maintaining professional contacts (Wolff & Moser, 2010). Based on the TPB principles, we trained employees to engage in these behaviors via information input, smart goal-setting, and self-reflection, which have proved to be effective and essential components to change participants' attitudes, to increase their behavioral intention and behavioral control (Pekaar & Demerouti, 2021; Steinmetz et al., 2016).

Besides assessing the effectiveness of the network crafting self-training intervention, we expect network crafting (intervention) to create beneficial outcomes for participants. Research shows that networking-related actions have both proximal consequences (e.g., network quality, diversity; Baer, 2010; Gong et al., 2020) and distal outcomes (e.g., the success of one's work and career; Porter & Woo, 2015; Wolff & Moser, 2010). When individuals intentionally use and shape their networks, their existing network structure will be optimized (i.e., proximal outcomes; Wanberg et al., 2020). Furthermore, crafting networks enables access to valuable social capital to solve work-related problems and to obtain career-related information, skills, and support (i.e., distal outcomes; Wolff & Spurk, 2020). Thus, network crafting is not only important for shaping one's network structure, but also for sustainable self-development including improving daily work performance and future career facilitation. It has been suggested that as many as 60% to 90% of individuals expect to achieve their work and career advancement through networking-based activities (Lambert et al., 2006). Thus, our study will examine if the self-training leads to more network crafting behaviors and if these behaviors, in turn, lead to not only changes in the network (i.e., more diverse networks) but also better task outcomes and career-related success.

Our study has several contributions to the literature. First, we add to the (job) crafting intervention literature (Demerouti et al., 2020; Verelst et al., 2021) by

designing and evaluating a network crafting self-training. We underscore that network crafting resembles job crafting, but it focused more on one's professional network and how one can actively shape and optimize the benefits and costs of networks to fit their personal needs and goals. Moreover, using a self-training format, we believe that this promising intervention approach can move the (job) crafting intervention field forward (Kooij et al., 2017) as it increases intervention flexibility, participation autonomy, and learning experience and process (Verelst et al., 2021). Second, we add to the networking literature by developing a simple but effective networking-based intervention. Spurk et al. (2015) developed a networking intervention but did not find the direct effect of their networking intervention. Wanberg et al. (2020) took the social cognitive theory and developed an effective networking intervention for job searchers but did not demonstrate specific networking behaviors on how to shape networks. Our study might be the first one using TPB principles (including information input, smart goal-setting, and self-reflection) to develop an effective network crafting intervention, but also providing three specific network crafting behaviors – using existing contacts, establishing new contacts, and maintaining professional contacts. Third, we add to the social network literature by showing how a simple self-training intervention may bring about the actual changes in the network and reap associated work and career benefits. Thus, we uncover a more complete consequences of network crafting including proximal outcomes (e.g., network diversity) and distal outcomes (e.g., work performance and subjective career success).

Theory and hypotheses development

Network crafting

Network crafting is a form of proactive, goal-directed behavior through which employees aim to improve their network of professional relationships (Hulshof et al., 2020; van Gool et al., 2021). Improving one's network involves making one's network more efficient by creating a better balance between the network's costs and benefits. Benefits, or resources, from the network can include diverse information, knowledge, skills (Zhou et al., 2009), and necessary instrumental/emotional support

(Shin et al., 2020). These resources are associated with personal development (Bakker & Demerouti, 2017), career advancement (Seibert et al., 2001), and positive affect (Heaphy & Dutton, 2008). Costs include time and energy invested in social interactions and interacting with difficult or dissonant colleagues (Brennecke, 2020). Studies show that employees can optimize their network using different networking behaviors (Wolff & Kim, 2012; Wolff & Moser, 2010). However, effective network crafting necessitates those behaviors to be tailored to the employee's needs and their network characteristics (Porter & Woo, 2015). As such, network crafting is a highly individualized process in which employees proactively use networking behaviors that align with their unique work situation and goals and the associated costs and benefits of the network. In other words, network crafters aim to fit their network to their job and personal needs and goals (Cooper-Thomas & Wright, 2013).

The networking literature (Wolff & Moser, 2009, 2010) identifies three networking behaviors that employees use to shape their network: using existing contacts, establishing new contacts, and maintaining professional contacts. Accumulating evidence shows that these three networking actions are positively related to individuals' motivation, career goals, organizational mobility, promotions, and career satisfaction (c.f., Porter & Woo, 2015; Seibert et al., 2001; Spurk et al., 2015; Wolff & Spurk, 2020). The reason is that such behaviors enable employees to tap into, expand valuable resources (Baer, 2010; Shi et al., 2011), and to build trust, social support, and mutual benefits (Spurk et al., 2015). In this study, we use these three networking behaviors as the basis to train employees to engage in the network crafting process. This process involves employing networking behaviors towards specific personalized network crafting goals in an informed way. As such, the network behaviors are purposefully used in order to craft the network and reap additional benefits.

Motivating network crafting through a self-training intervention

Our self-training intervention is designed based on the theory of planned behavior (Ajzen, 1991). This theory argues that behavioral change depends on motivation (intention) and ability (behavioral control). Therefore, network crafting behaviors should be affected by an individual's intention to show such behaviors.

That is, an intervention that addresses attitudes, subjective norms, and perceived control of network crafting behaviors should result in more network crafting behaviors (Spurk et al., 2015). A meta-analysis of the behavior change interventions based on the theory of planned behavior (Steinmetz et al., 2016) shows that there are effective methods to foster behavior change such as information input, planning, goal-setting, self-monitoring, and financial incentive (Ferguson et al., 2008; Michie et al., 2013). We used these methods to design the intervention.

In the design of the self-training intervention, we focused on three components: (1) Information input. We presented participants with information and knowledge about effective networks (e.g., its size and diversity) and the importance and beneficial consequences of network crafting. This step makes participants aware of their current network contacts (e.g., who are they and what do they do) and increases their positive attitudes and intentions to shape their network. (2) Goal-setting. We asked participants to set SMART (i.e., specific, measurable, attainable, realistic, and timely) goals (Latham et al., 2016), to help them focus their attentions and efforts more towards goal-relevant rather than goal-irrelevant activities. Prior intervention studies indicated that goal setting is an essential component to a greater capacity for individual expectation management and more enthusiasm (Gordon et al., 2018; van den Heuvel et al., 2015). SMART goal-setting supports the implementation of the new behaviors because it results in manageable activities that enhance self-efficacy beliefs and actual and perceived behavioral control (Ajzen, 2015). (3) Self-monitoring. Participants reflected on the effectiveness of their actions in relation to their SMART goals and identified ways how to improve their behavior/strategy in the future (Hülshager et al., 2015). This self-monitoring element was included in the training to boost the learning and internalization process (Pdri & Ely, 2010) as it emphasizes participants' ability to self-regulate their newly learned behavior (Bandura, 1989).

Table 5. The overview of the self-training intervention

Steps	Contents
Step 1: Information input and activation (5 minutes for each trained strategy)	<p>Participants are provided with information and examples on the importance of network crafting, how to conduct network crafting, and what could be the consequences of network crafting (in recorded videos). Specifically:</p> <ol style="list-style-type: none">(1) one of the three strategies (i.e., using existing contacts, establishing new contacts, and maintaining professional contacts) is introduced. In week 1, using existing contacts is presented. In week 2 and 3, establishing new contacts and maintaining contacts were presented.(2) they are asked to reflect on past networking experiences and to list positive and negative consequences of such behaviors.(3) in the videos, we also present participants with specific steps about how to successfully conduct each strategy combined with at least three examples in different industrial backgrounds.
Step 2: Goal setting (5 minutes for each strategy)	<p>Participants are asked to set a personal and specific goal with SMART principle for their current working week. For example:</p> <ol style="list-style-type: none">(1) they have to specify what exactly they plan to do;(2) when they plan to do this;(3) what possible barriers may be;(4) how they will cope with these barriers to make sure the goal can be attained.
Step 3: Self-monitoring (10 minutes for each strategy)	<p>Participants are asked to reflect on their network crafting activities in this week. They need to reflect:</p> <ol style="list-style-type: none">(1) whether the personal goal they set is achieved in this week;(2) briefly describe what they did and evaluate how effective it is;(3) how they could improve this action in future;(4) after the self-reflection, we also present participants with written brief summary and a take-home message for this week's assignment, highlighting the importance of this tactic again and encouraging them to continue to use this tactic in their future work.

Note: In line with TPB principles, Step 1 aims to change participants' attitude towards to network crafting and increase their behavioral intention. Step 2 aims to increase their behavioral intention and perceived behavioral control. Step 3 aims to change their attitude, increase their behavioral intention, and perceived behavioral control.

To summarize, in line with the theory of planned behavior, by viewing their own network size and diversity and being exposed to information about the importance of network crafting, people are likely to have more positive attitudes about this behavior. Setting SMART goals will help them to feel more in control and to formulate intentions which get established as behaviors after reflecting on their effectiveness with self-monitoring. Therefore, we expect that the self-training intervention will be effective in increasing individuals' network crafting behaviors (i.e., using existing contacts, establishing new contacts, and maintaining professional contacts).

Prior studies also provided relevant insights into networking-based interventions. For example, Spurk et al. (2015) developed a networking intervention rooted in the theory of planned behavior to train employee career development. They found that networking plus career coaching jointly increased participants' career planning and career optimism. Similarly, Wanberg et al. (2020) developed and evaluated an online networking intervention aiming to increase the reemployment quality of job seekers. Their intervention included the steps of boosting self-efficacy, promoting goal-setting, and encouraging proactivity, and their intervention was successful: participants increased their networking behaviors and improved reemployment success. Hulshof et al. (2020) developed an effective job search intervention among the unemployed using the job demands-resources framework (Bakker & Demerouti, 2017) and found that the intervention had a positive effect on career exploration and networking behavior (both intensity and quality). Also outside the work domain, networking interventions have been done, resulting in increased physical activity (Tong et al., 2019) and health (e.g., prevention in cancer, suicidal ideation, weight management) (Bailey et al., 2020; Laranjo et al., 2017; McLaughlin et al., 2012; Owen et al., 2015) via receiving feedback, social support, and self-monitoring. Taking together:

H1: Employees in the intervention group will report increased levels of (a) using existing contacts, (b) establishing new contacts, and (c) maintaining professional contacts.

Outcomes of network crafting

Networking-related actions have both proximal consequences (e.g., network quality, diversity) (Baer, 2010; Gong et al., 2020) and distal outcomes (e.g., the success of one's work and career) (Porter & Woo, 2015; Wolff & Moser, 2010). Thus, we argue that network crafting is not only important for shaping one's network structure, but also for sustainable self-development including improving daily work performance and future career facilitation (Lambert et al., 2006). In the following sections, we develop hypotheses on how network crafting (intervention) improves one's network (e.g., network diversity) and creates work-related benefits (i.e., work performance and perceived career success).

Network diversity

We expect that the network crafting intervention will increase participants' network diversity. The social network literature suggests that social networks can be shaped by individual actors and individual actors should engage in certain goal-oriented interpersonal strategies for the improvement of social networks (e.g., size, quality, diversity) (Baer, 2010; Bizzi, 2017; Shea & Fitzsimons, 2016). These goal-oriented interpersonal behaviors can increase one's attention, effort, and persistence, and enable individuals to deliberately change and make strategic use of their network to reap associated benefits (Latham et al., 2016). Thus, we argue that network crafting is such a goal-oriented interpersonal strategy. By engaging in network crafting, employees first critically look at their network and try to see/find the "functionality" of their network. For example, employees get aware of what they possess in the current network (i.e., the commonly used contacts) and what is missing from the current network (e.g., whether the contacts are from the same occupational/ functional background and lack of diversity). Subsequently, employees can strategically change their current network, such as increasing the diversity in their network, in order to enhance the associated benefits. For example, individuals can smartly and strategically approach different contacts, both within and outside the organization, to achieve work tasks and goals. This would yield a more diverse social network structure where contacts may come from different departments, industries and hold different knowledge, skills, and information (Baer, 2010).

We further discuss how the intervention increases participants' network diversity through three trained network crafting behaviors: using existing contacts, establishing new contacts, and maintaining professional contacts. Specifically, using existing contacts is a strategy that helps employees to think about who in their network could have the relevant knowledge to solve the current problem at hand and then approach to him/her. As such, they might activate dormant ties and reconnect with them (Levin et al., 2011). The activated dormant ties can be seen as the "new" interpersonal resources including different knowledge and skills. Thus, one's network could become more diverse than before. Establishing new contacts seems a direct way to increase one's network diversity, as a new contact can bring in extra perspective, knowledge, and useful information that are different from existing contacts (Baer, 2010; Gong et al., 2020). Finally, maintaining contacts delineates a process in which employees increase the frequencies of the connections with different contacts (Wolff & Moser, 2010) and reach trust, social support, and mutual benefits with them (Wolff & Moser, 2009). Consequently, employees can successfully maintain their network in a larger size where those contacts coming from different occupational/industrial backgrounds are well connected and communicated. For example, via a regular meeting or an informal meet-up, people can feel more connected to those who come from the outside of the organization, get to know his/her expertise in that field, and find "win-win" collaboration opportunities. Thus, one's network can become and stay diverse in this manner. Taking together:

H2: Participants who join in the network crafting intervention will report increased levels of diversity in their network after the intervention.

H3: The intervention will increase diversity in participants' network via three trained network crafting behaviors (i.e., using existing contacts, establishing new contacts, and maintaining professional contacts).

Work performance

In this study, we focus on task performance and problem solving as two important facets of employees' work performance. Task performance represents the extent to which individuals fulfill their routine tasks and requirements (Goodman & Svyantek, 1999), while problem solving emphasizes the extent to which individuals

think up creative and effective alternatives and solve a novel situation or problem (Heppner & Petersen, 1982). The proactivity literature indicates that proactive behavior – for example, network crafting is beneficial to individual work performance, because it involves self-initiated efforts to bring about changes in the work surroundings and/or oneself to achieve a different future (Crant, 2000; Parker et al., 2010). Proactivity is an antecedent of work performance because it involves a goal-driven process that includes both the setting of a proactive goal and striving to achieve that proactive goal (Crant, 2000; Parker et al., 2010; Zhang & Parker, 2019). For example, participants in the intervention first set a goal on task completion, and then take customized actions based on this goal such as using existing contacts, establishing new contacts, and maintaining professional contacts, in order to exchange vital job resources, information, and necessary knowledge for a specific task (Porter & Woo, 2015; Wolff et al., 2011). This beneficial effect is also underlined in the social network literature, where it has been found that social networking behaviors have the potential to improve actor’s work performance as they allow for the integration of multiple perspectives into the actor’s task (Nesheim et al., 2017), and gives the actor more insights into requirements of the task outputs and solutions of the current hurdles (Khattab et al., 2020). That said, network crafting involves a networking process by which actors gain valuable job resources for the improvement of work outcomes. These job resources (e.g., feedback, assistance, knowledge, and expertise) can help employees to fulfill tasks on time and find a solution to difficult problems (Bakker & Demerouti, 2017; Gordon et al., 2018).

We further discuss how the intervention increases participants’ work performance through three trained network crafting behaviors. Specifically, deliberately asking an existing contact for information or knowledge to facilitate task performance or solving a work-related problem means that someone immediately obtains the necessary and useful information, knowledge, and skills (Gong et al., 2020) (assuming they target the right person). Via deliberately establishing new contacts, employees establish a new social tie that might provide a different perspective or a creative solution for their problem. Research shows that via a new relationship (also called a weak tie), a person gets access to non-redundant

information which has been found to significantly creativity and problem solving (Baer, 2010; Zhou et al., 2009). Finally, network crafting is not only a strategy of being aware of the “value” of the own network and making use of them, but also an approach that one realizes the reciprocity of networking and actively bring own resources into the network contact. Thus, the third tactic – maintaining professional contacts – will guide employees not only ask for help but also proactively give help (i.e., information, knowledge, and skills) to others (Porter & Woo, 2015; Wolff et al., 2011). Research shows that this reciprocal process could increase the closeness and trust among social ties (Porter & Woo, 2015), and create a helping and learning climate for each other’s task and problems (Eldor, 2017). Therefore:

H4: Participants in the network crafting intervention group will report increased levels of (a) task performance and (b) problem solving after the intervention.

H5: The intervention will improve (a) task performance and (b) problem solving via three trained network crafting behaviors (i.e., using existing contacts, establishing new contacts, and maintaining professional contacts).

Career success

We expect the network crafting intervention to also foster employees’ perceived career success. Although career success includes many facets, the most important two, according to Arthur et al. (2005), are (1) the extent to which employees can effectively master career direction and mobility and (2) the extent to which employees are valuable and competitive in the job markets. Therefore, we choose two indicators of career success: career autonomy and perceived marketability. Career autonomy is defined as the extent to which individuals perceive freedom and discretion to determine and influence the pacing, shape, and direction of their careers (Colakoglu, 2011). Perceived marketability refers to beliefs that one is valuable to his or her current employer and other employers (Eby et al., 2003).

Based on the proactivity literature together with prior social networking studies (Crant, 2000; Volmer & Wolff, 2018), we expect that network crafting intervention can advance one’s career because participants proactively, deliberately seek career-related resources (e.g., information, influence, and friendship) from one’s

network contacts that can be leveraged for career success (Porter & Woo, 2015; Wolff & Moser, 2010). Via network crafting, participants learn and obtain a diverse and transferrable set of career-relevant skills and job-related knowledge that can be applied to a variety of employment settings. They can also get access to new contacts and possible job changes or opportunities (Arthur, 1994) and meet important people within and outside the organizations (Eby et al., 2003). Thus, employees can enjoy considerable freedom to manage and influence their careers with ease and flexibility (i.e., career autonomy) (Colakoglu, 2011) and keep competitive in the job markets (perceived marketability) (Higgins & Kram, 2001).

We further discuss the mediating role of three trained network crafting behaviors. Specifically, via using existing contacts, employees could obtain necessary career-related resources (e.g., promotion information, skill development, and work-related abilities) (Seibert et al., 2001). As such, employees will have more control over their career because they have available resources to mobilize. Employees could also feel their value and advantages in this organization and external employment market because of the critical career-related resources (Volmer & Wolff, 2018). Likewise, via establishing new contacts, employees obtain new but valuable career-related resources. This increases their perceived control for career decisions and adjustments (Colakoglu, 2011). This will also make them feel that they are competitive in the employment market because of the newly mastered information and skills (Eby et al., 2003). Research shows that those who spend time and energy developing their professional networks can increase their net worth both within and outside the organization (Eby et al., 2003). Finally, via maintaining professional contacts, employees not only receive but also give career-related resources to their network. This reciprocal process increases the frequencies of resources exchange (Porter & Woo, 2015), and thus enlarges the resource pool for career decisions and adjustments. This will also make employees feel needed when giving help to others (Downey et al., 2015), and feel valued to this organization. Thus:

H6: Participants in the network crafting intervention group will report increased levels of (a) career autonomy and (b) perceived marketability after the intervention.

H7: The intervention will enhance (a) career autonomy and (b) perceived marketability via three trained network crafting behaviors (i.e., using existing contacts, establishing new contacts, and maintaining professional contacts).

Methods

Participants

We recruited the participants from Shandong province in China. Three companies agreed and were willing to participate in this project. Participants from a large infrastructure company were assigned to the intervention group, while participants from two small electricity companies were assigned to the control group. Before the official start of the intervention, all participants from both intervention group and control group were asked to complete a pre-measure questionnaire. Subsequently, participants in the intervention group would receive an invitation link to join the network crafting self-training intervention, which lasted three weeks. After the intervention, participants from both intervention group and control group were asked to complete a post-measure questionnaire.

The group that attended the intervention and completed the pre-measure questionnaire (T1) was composed of 113 individuals, with a mean age of 35.57 (SD = 10.76) years. 53.7% were men and 46.3% were women. 60.2% of participants had a university degree. Their work tenure was on average 10.88 (SD = 11.21) years. At the second measurement (T2) (i.e., post-measure), 88 employees who initially participated at T1 and completed the intervention took part. Independence-sample t-tests showed that the participants who dropped out at T2 were not significantly different from the other participants at T1 regarding their sociodemographic characteristics or the study variables.

The control group consisted of 59 employees. Their mean age was 35.55 (SD = 10.36) years, and 55.9% were men and 44.1% were women. 64.4% of participants had a university degree. Their work tenure was on average 7.51 (SD = 7.33) years. Participants in the control group had similar sociodemographic characteristics with those in the intervention group except one exception: Participants in the control group had significantly lower job tenure [control group: mean = 7.51 years, experimental group mean = 11.59 years, $F(1, 145) = 24.314, p = .02$]. The t-tests

showed that there were no significant differences regarding the study variables between the control and experimental groups at T1 except for task performance: Participants in the control group had a significantly lower level of task performance [control group: mean = 3.66, experimental group = 3.91, $F(1, 145) = 2.316, p = .005$]. We drew a figure on how we recruited and allocated the participants (see Figure 2).

Intervention design and procedure

The self-training intervention starts with a brief introduction section consisting of an introduction video (5 minutes) and two mini-assignments. In the video, we welcomed participants and introduced the training (purpose and organization), the learning goals (i.e., smartly and strategically shaping own professional network), and we explained the importance of having high-quality and diverse professional networks. After the video, participants were presented with two mini-assignments. First, we asked participants to assess their own professional network via listing the commonly used contacts in WeChat. By doing so, participants made an overview of their network in terms of size and diversity. In the second mini-assignment, we asked participants to set a general goal for attending this program, i.e., think about what they want to improve/achieve through this training before the actual self-training sessions started.

After the introduction section, participants were asked to conduct self-training in the next three weeks. In week 1, participants would practice one of the three tactics of network crafting – using existing contacts. To do so, we prepared a recorded video (3 minutes) presenting this tactic including various examples. We also included a link directing participants to a page where participants were required to set a goal (following SMART goal criteria) to practice this tactic and were encouraged to implement their personal goal during this week. We also asked participants to create a unique identification code, the aim of which is to assist us to match the weekly data for each participant. We sent these materials to participants via email on Monday.

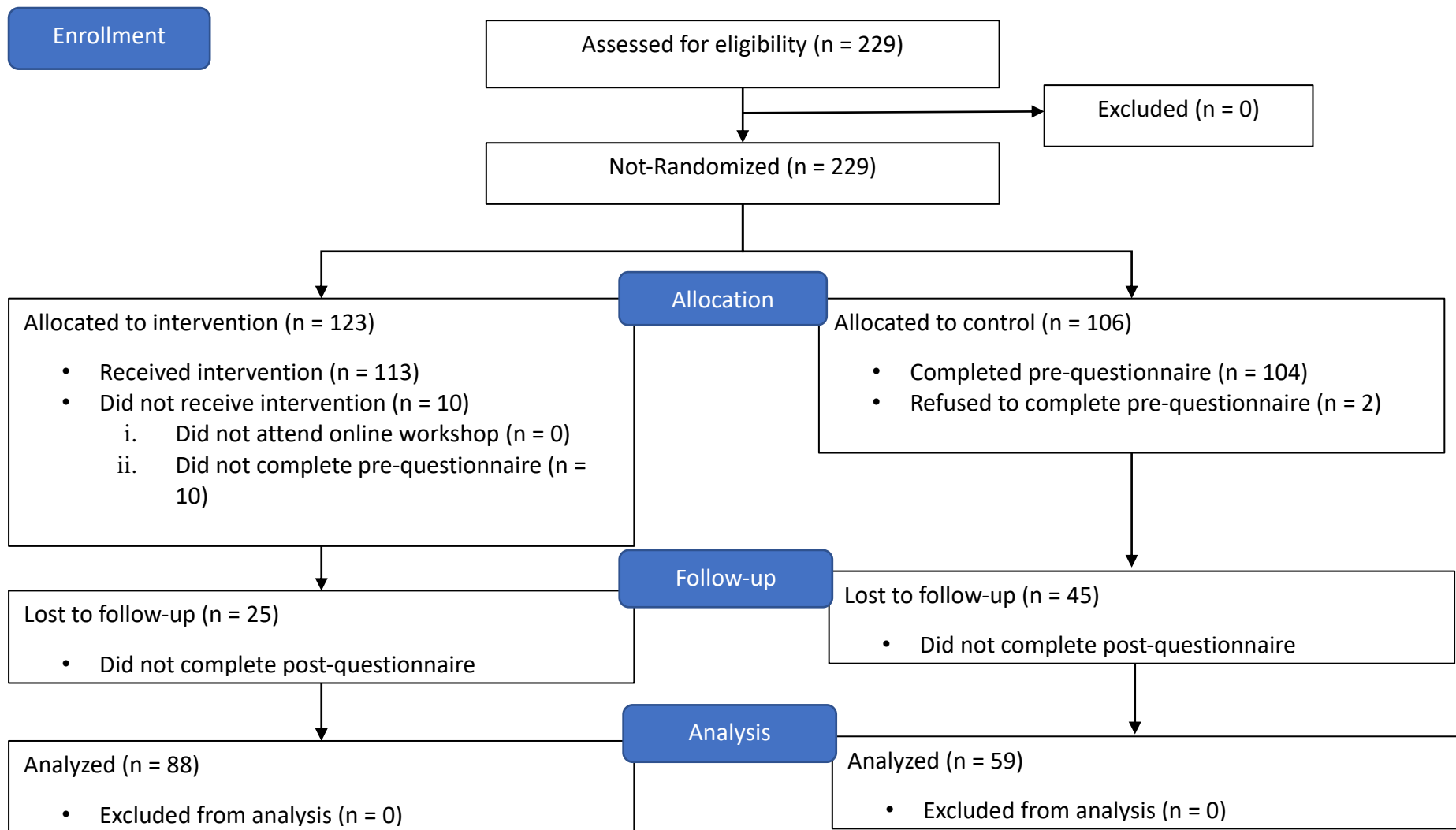


Figure 2. CONSORT Flow Diagram (Moher et al., 2001)

On the last working day of this week (i.e., Friday), we sent participants a survey for evaluating the implementation of this tactic. Specifically, we asked participants to reflect on the extent they engaged in this tactic, the extent the goal was attained, and the aspects that could be improved in future. Participants were also asked to rate the scores of their network crafting behaviors this week. In the final step, after submitting the survey, participants were directed to another page where we presented participants a short summary and a take-home message for this week's assignment, highlighting the importance of this tactic again and encouraging them to continue to use this tactic in their future work. We also left our email address for participants, so that they knew where they could ask for personalized feedback on this assignment, which we gave to those who asked. In week 2 and week 3, participants would practice the other two tactics – establishing new contacts and maintaining professional contacts. The procedure was the same as what we did in week 1.

Finally, after finishing the whole procedure of the intervention (i.e., after the post-measure), we shared our recorded videos, the three tactics, and the relevant assignments to the participants in the control group. Although they were assigned to the control group, they were still encouraged to use our materials to self-train their networking behaviors in future, which, we believe, would benefit their work outcomes and career objectives.

Measures

All questionnaires were presented in Chinese. Scales originally developed in English were translated following a translation back-translation procedure. Unless otherwise stated, all measures used a 5-point Likert scale (1 = “strongly disagree”, 5 = “strongly agree”).

Table 6. The overview of the specifics of assignments for each tactic

Tactic	Assignment
Two mini-assignment before the actual start of the self-training	<p><i>Assess own professional network diversity:</i></p> <ol style="list-style-type: none">(1) Open up WeChat and reflect the contacts that you talked last week.(2) Make a list of their characteristics such as their gender, age, occupation, department, company type and job position(3) Think about whether these contacts are different from you in terms of gender, age, occupation, department, company type and job position. <p><i>Set a general goal for attending this program:</i></p> <ol style="list-style-type: none">(1) what I want to improve/achieve through this training (e.g., to get to know more people; to facilitate my current work; to find a new job; to get promotion)
Tactic 1: Deliberately making use of existing contacts	<p><i>Following below steps:</i></p> <ol style="list-style-type: none">(1) Think about work contacts that you asked within the last week for help to solve your work- or career-related issues.(2) Think about 3 contacts outside of your work group (e.g., a contact from another department or from another company) that can help you with your work tasks/problems this week.(3) This week, ask one of the, in the previous step listed, contacts for feedback or information.
Tactic 2: Establishing new contacts	<p><i>Choose either of the assignments (No.1 using close contact to introduce you to others; No.2 taking the initiative to introduce yourself):</i></p> <ol style="list-style-type: none">(1) Think about your existing networks and your relationships with your contacts. Write down 3 contacts with who you have close relationship with (people with whom you feel strongly connected in your networks). Ask one close contact whether they know someone who is important to your work and career or who you benefit each other with. Also ask your close contact to introduce you to this other person, such that you can build new connections.(2) Instead of asking your contacts to introduce you, think about opportunities, in which you can introduce yourself to new contacts. This week, take the initiative to introduce yourself to 1 new person when you get an opportunity.
Tactic 3: Maintaining professional contacts	<p><i>Following below steps:</i></p> <ol style="list-style-type: none">(1) Think about new contacts that you met recently or the contacts that you feel less connected (e.g., last week, two weeks ago).(2) Take the initiative and offer your knowledge, skills, or information to one of them. This can be done during an informal catch-up or in a work meeting. <p>Note: it is easy to understand that we can get valuable help from our diverse networks. However, to keep a good relationship, one cannot only receive from the networks but we also need to give knowledge and insights to the networks. Therefore, this is the idea of this assignment.</p>

*Network crafting*⁵ was measured with the adapted scale developed by Wolff et al. (2011). Three dimensions were included. Among them, *using existing contacts* was measured with 6 items. An example is “I actively use my contacts with colleagues in other departments in order to get advice in work matters”. T1: $\alpha = .838$, T2: $\alpha = .902$; *establishing new contacts* was measured with 6 items. An example is “If I want to meet a person who could be of professional importance to me, I take the initiative and introduce myself”. T1: $\alpha = .856$, T2: $\alpha = .915$; *maintaining professional contacts* was measured with 7 items. An example is “If I can’t help a colleague from another department directly, I will keep an eye out for him/her”. T1: $\alpha = .791$, T2: $\alpha = .893$.

Network diversity was measured with an egocentric network approach (c.f., Baer, 2010; Smith et al., 2005). First, participants indicated the number of professional contacts they interacted with over the past month to solve/advance their work- or career-related issues. Second, participants indicated for each contact their functional background. Participants could choose out of 8 categories: production, sales, marketing, customer service, administration, finance, R&D, and H.R. We then computed each participant’s network diversity using the Blau index, i.e. $1 - \sum p_i^2$ where p_i is the proportion of intrapersonal contacts in each of the i categories on an attribute.

Work performance was assessed by two variables: task performance and problem solving. *Task performance* was measured with 4 items developed with Goodman & Svyantek (1999). An example item is “I fulfill all the requirements of my job”. T1: $\alpha = .796$, T2: $\alpha = .885$. *Problem solving* was measured with 3 items developed by Heppner and Petersen (1982). An example item is “I think up creative and effective alternatives to solve a problem”. T1: $\alpha = .753$, T2: $\alpha = .873$.

Career success was assessed by two variables: career autonomy and perceived marketability. *Career autonomy* was measured with 3 items developed by Colakoglu (2011). An example is “I have considerable control over the choices I make in my career”. T1: $\alpha = .869$, T2: $\alpha = .885$. *Perceived marketability* was measured with 6 items

⁵ Originally Wolff et al. (2011) refer to these behaviors as *networking behaviors*. In the context of our intervention, we refer to them as *network crafting behaviors* as the behaviors are proactively and purposefully aimed at improving the network because they are linked to specific networking goals.

developed by Eby et al. (2003). An example is “There are many jobs available for me given my skills and experience”. T1: $\alpha = .865$, T2: $\alpha = .920$.

Strategy of analyses

Hypotheses 1, 2, 4, 6 were tested by means of repeated-measures GLM using SPSS. The within-factor was measurement time [coded as T1 = 0 (pre-intervention) and T2 = 1 (post-intervention)], and the between factor was group membership (coded as control group = 0 and intervention group = 1). Partial eta-squared (η^2) values were used to estimate the effect sizes. Cohen’s *d* was estimated to evaluate intervention effects from T1 to T2 (Cohen, 1992). Additionally, we conducted a growth curve analysis (c.f., Choi & Wilson, 2016; West, 2009) to observe whether the proposed three network crafting strategies increase over time in the experimental group during the intervention. Specifically, we regressed time on the three network crafting strategies and detected whether the intercept factor and slope factor were statistically significant. By doing so, we can observe participants’ initial level of network crafting and the growth trajectory of network crafting over time.

Hypothesis 3, 5, 7 (indirect effects) were examined using multilevel regression analyses with MLwiN 2.35, as the data follow a repeated-measures design with measurement points (level 1) nested within individuals (level 2). To test the indirect effects, we followed the steps proposed by Mathieu and Taylor (2006). Step 1 requires the interaction of time \times group to relate to the mediators (i.e., the three network crafting strategies). Step 2 requires the mediators to relate to the outcome variable. Step 3 requires the indirect effect of the interaction through the mediator on the outcome to be statistically significant. The significance of the indirect effects was examined with the Monte Carlo method, which provides the confidence interval for assessing mediation (MCMAM; Preacher & Selig, 2012).

Results

Table 1 shows the correlations among the study variables at both pre-measure and post-measure. Table 2 presents means, standard deviations, *t*-tests, and repeated measures ANOVAs for the study variables for both intervention group and control group.

We also conducted the confirmatory factor analyses (CFA) to examine the factorial validity of our measures at T1 using Mplus version 8. Results of the CFA with all the variables as separate constructs (i.e., using existing contacts, establishing new contacts, maintaining professional contacts, problem solving, task performance, career autonomy, and perceived marketability) showed good fit indexes ($\chi^2(519) = 991.707$; CFI = .895; TLI = .879; RMSEA = .063; SRMR = .063). This model was significantly better than the alternative models (see the results of measurement model comparisons in supplementary materials due to the page limits).

Hypothesis testing

Table 2 shows that participants in the intervention group reported higher levels of using existing contacts [$F(1, 145) = 23.922, p < .001$], establishing new contacts [$F(1, 145) = 9.950, p = .002$], and maintaining professional contacts [$F(1, 145) = 22.765, p < .001$]. Using the weekly data in the intervention group, we also conducted a growth curve modelling to examine whether three trained network crafting behaviors increased over time as we would expect. We found that using existing contacts (slope factor: $b = 0.297, t = 7.196, p < .001$), establishing new contacts (slope factor: $b = 0.229, t = 5.497, p < .001$), and maintaining professional contacts (slope factor: $b = 0.297, t = 6.616, p < .001$) significantly increased over time for the participants in the experimental group (see Table 4). Therefore, Hypothesis 1 was supported, which implied the intervention was effective.

Table 2 also revealed that participants in the intervention group reported higher levels of career autonomy [$F(1, 145) = 12.981, p < .001$] and perceived marketability [$F(1, 145) = 7.454, p = .007$], confirming Hypotheses 6a and b. Participants in the intervention group did not higher levels of task performance [$F(1, 145) = 3.281, p = .072$], problem solving [$F(1, 145) = 3.244, p = .074$], as well as network diversity [$F(1, 145) = 0.239, p = .626$]. Thus hypotheses 2 and 4 were rejected. This implied that the intervention had positive direct effects on subjective career success but not on network diversity and work performance.

Table 1. Correlations among the study variables (N = 147)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<i>Pre-measure</i>																
1. Using existing contacts																
2. Establishing new contacts	0.597**															
3. Maintaining professional contacts	0.557**	0.622**														
4. Network diversity	0.128	0.233**	0.349**													
5. Task performance	0.266**	0.253**	0.360**	0.128												
6. Problem solving	0.367**	0.296**	0.458**	0.162	0.636**											
7. Career autonomy	0.139**	0.447**	0.378**	0.260**	0.243**	0.324**										
8. Perceived marketability	0.349**	0.458**	0.458**	0.312**	0.399**	0.438**	0.645**									
<i>Post-measure</i>																
9. Using existing contacts	0.380**	0.240**	0.215**	-0.009	0.229**	0.212*	0.114	0.154								
10. Establishing new contacts	0.287**	0.440**	0.394**	0.263**	0.242**	0.279**	0.221**	0.286**	0.676**							
11. Maintaining professional contacts	0.217**	0.322**	0.328**	0.226**	0.289**	0.301**	0.229**	0.301**	0.730**	0.626**						
12. Network diversity	0.102	0.197*	0.275**	0.694**	0.071	0.189*	0.210*	0.320**	-0.003	0.321**	0.144					
13. Task performance	0.167*	0.058	0.151	0.079	0.497**	0.373**	0.163*	0.236**	0.507**	0.406**	0.514**	0.052				
14. Problem solving	0.195*	0.088	0.220**	0.134	0.423**	0.488**	0.194*	0.294**	0.476**	0.422**	0.566**	0.104	0.748**			
15. Career autonomy	0.088	0.159	0.153	0.301**	0.275**	0.225**	0.417**	0.356**	0.306**	0.436**	0.485**	0.273**	0.490**	0.489**		
16. Perceived marketability	0.207*	0.228**	0.234**	0.278**	0.341**	0.388**	0.438**	0.559**	0.376**	0.484**	0.559**	0.304**	0.539**	0.622**	0.636**	

* $p < .05$; ** $p < .01$

Table 2. Mean scores, S.D., t-tests, and repeated measures ANOVAs for the study variables (intervention N = 88; control N = 59)

variable	experimental group		T-test	p^a	Cohen's d	control group		T-test	p^b	Repeated measures ANOVA Time X Group		
	M	SD				M	SD			F	p^c	η^2
Using existing contacts pre	3.54	0.57				3.51	0.74					
Using existing contacts post	4.02	0.67	5.77	0.000	0.62	3.39	0.64	-1.39	0.170	23.922	<.001	0.142
Establishing new contacts pre	3.27	0.66				3.22	0.77					
Establishing new contacts post	3.72	0.75	5.13	0.000	0.55	3.27	0.69	0.58	0.568	9.950	0.002	0.064
Maintaining professional contacts pre	3.28	0.61				3.29	0.55					
Maintaining professional contacts post	3.81	0.71	6.16	0.000	0.66	3.27	0.55	-0.43	0.669	22.765	<.001	0.136
Network diversity pre	0.47	0.38				0.58	0.36					
Network diversity post	0.50	0.38	1.099	0.275	0.12	0.59	0.37	0.24	0.813	0.239	0.626	0.002
Task performance pre	3.95	0.57				3.66	0.64					
Task performance post	4.07	0.63	1.55	0.126	0.17	3.57	0.73	-1.09	0.279	3.281	0.072	0.022
Problem solving pre	3.91	0.53				3.85	0.55					
Problem solving post	4.03	0.66	1.76	0.082	0.19	3.79	0.67	-0.89	0.375	3.244	0.074	0.022
Career autonomy pre	3.36	0.74				3.51	0.79					
Career autonomy post	3.69	0.79	3.93	0.000	0.42	3.34	0.76	-1.49	0.140	12.981	<.001	0.082
Perceived marketability pre	3.64	0.64				3.66	0.81					
Perceived marketability post	3.87	0.72	3.07	0.003	0.33	3.58	0.79	-0.98	0.331	7.454	0.007	0.049

Note. T-test refers to Paired-sample t-tests. ^adf = 87; ^bdf = 58; ^cdf = 1, 145.

η^2 = [0.01 - 0.06], small effects, [0.06 - 0.14], medium effects, $\eta^2 \geq 0.14$, large effects.

Cohen's d = [0.2 - 0.5], small effects, [0.5 - 0.8], medium effects, and ≥ 0.8 , large effects.

Table 3. Multilevel analyses examining the indirect effects of the intervention (step 3: MCMAM approach with confidence intervals)

Outcome variables	the indirect effect of intervention (via using existing contacts)	the indirect effect of intervention (via establishing new contacts)	the indirect effect of intervention (via maintaining professional contacts)
	95% CI	95% CI	95% CI
Task performance	[0.1045, 0.3020]	[0.0361, 0.1943]	[0.1199, 0.3404]
Problem solving	[0.1127, 0.3122]	[0.0403, 0.1970]	[0.1419, 0.3703]
Career autonomy	[0.0938, 0.3156]	[0.0637, 0.3231]	[0.1446, 0.4120]
Perceived marketability	[0.1003, 0.3096]	[0.0526, 0.2475]	[0.1297, 0.3681]
Network diversity	[-0.0167, 0.0531]	[0.0029, 0.0553]	[0.0041, 0.0781]

Note. N = 147 participants (i.e., 294 data points); repetitions = 5000. Step 1 and 2 are presented in the supplementary materials

Table 4. The growth trajectory of networking behaviors during the weekly self-training (participants in the experimental group)

Outcome variables	Intercept factor			Slope factor		
	estimate	S.E.	t	estimate	S.E.	t
Using existing contacts	3.367	0.069	48.827***	0.297	0.041	7.196***
Establishing new contacts	3.166	0.079	39.764***	0.229	0.042	5.497***
Maintaining professional contacts	3.152	0.074	42.710***	0.297	0.045	6.616***

Note. N = 93 participants (279 data points); * $p < .05$; ** $p < .01$; *** $p < .001$.

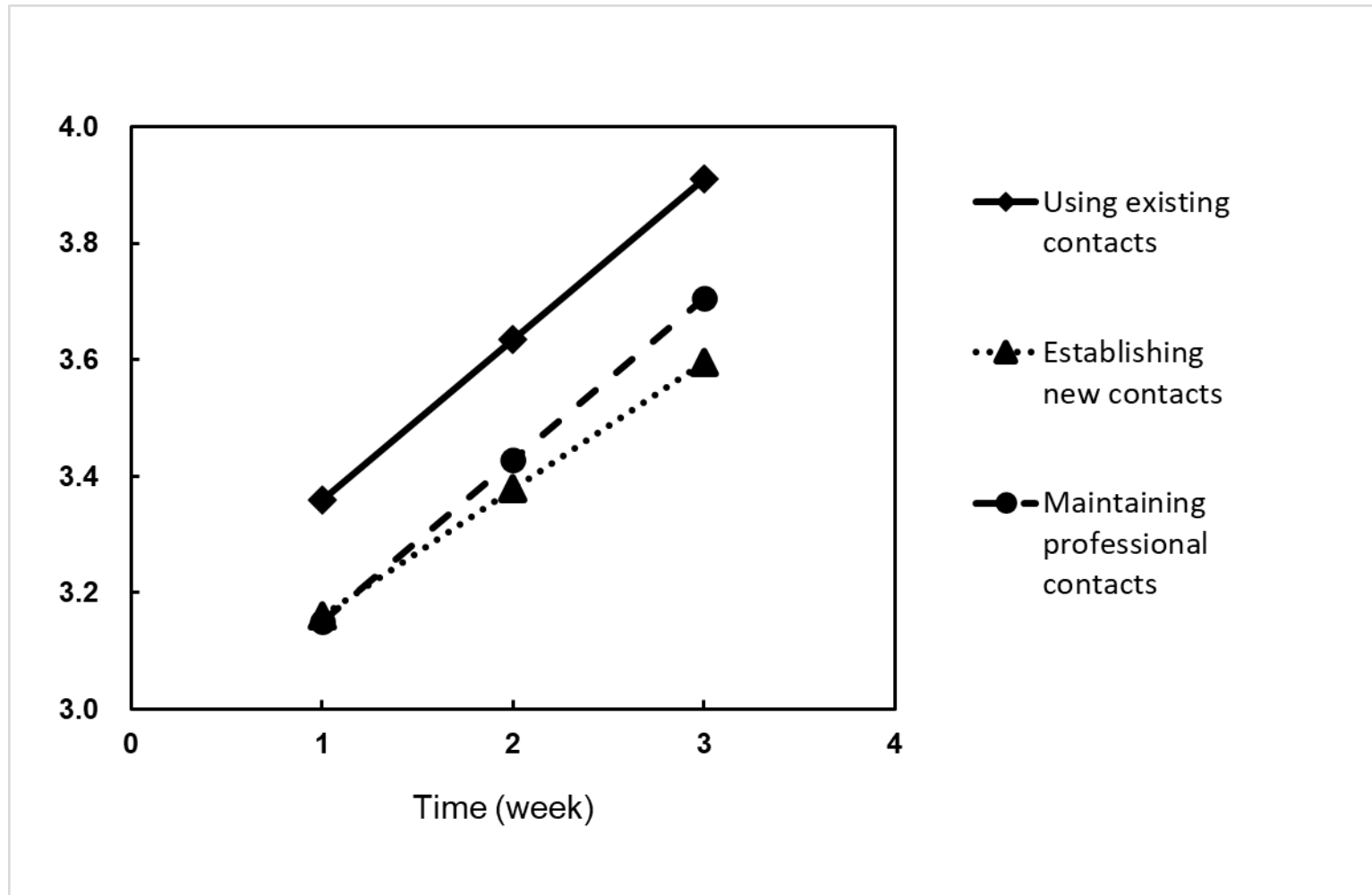


Figure 1. The growth trajectory of networking behaviors during the weekly self-training (participants in the experimental group)

Note: as we did not have weekly data in the control group, we could not draw a trajectory for participants in the control group.

To test Hypothesis 3, 5, and 7 (i.e., indirect effects), we first inspected whether the interaction of time \times group membership relates significantly to the mediators (i.e., network crafting behaviors). In step 2, we regressed network crafting behaviors on the outcome variables while controlling for the main effects of time, group, and their interaction effect. We provided these results in the supplementary materials due to the page limits. Finally, regarding the significance of the indirect effect (i.e., step 3), the MCMAM results (see Table 3) supported the positive and indirect effects of the time \times group interaction on task performance (LL = 0.1045, UL = 0.3020), problem solving (LL = 0.1127, UL = 0.3122), career autonomy (LL = 0.0938, UL = 0.3156), and perceived marketability (LL = 0.1003, UL = 0.3096) via using existing contacts; the positive and indirect effects of the time \times group interaction on task performance (LL = 0.0361, UL = 0.1943), problem solving (LL = 0.0403, UL = 0.1970), career autonomy (LL = 0.0637, UL = 0.3231), perceived marketability (LL = 0.0526, UL = 0.2475), and network diversity (LL = 0.0029, UL = 0.0553) via establishing new contacts; the positive and indirect effects of the time \times group interaction on task performance (LL = 0.1199, UL = 0.3404), problem solving (LL = 0.1419, UL = 0.3703), career autonomy (LL = 0.1446, UL = 0.4120), perceived marketability (LL = 0.1297, UL = 0.3681), and network diversity (LL = 0.0041, UL = 0.0781) via maintaining professional contacts. One exception is that we did not find the indirect effect of the intervention on network diversity via using existing contacts (LL = -0.0167, UL = 0.0531). To summarize, hypotheses 3, 5, and 7 were overall supported. This implied that the intervention increased participants' network diversity, work performance, and perceived career success through three trained network crafting tactics.

Discussion

This study aimed to assess the effectiveness of a network crafting self-training to increase one's network diversity and to obtain the associated benefits to work and career success. Based on proactivity and networking theories (Porter & Woo, 2015; Wolff & Moser, 2010) and the theory of planned behavior (Ajzen, 1991), our results supported the effectiveness of the intervention to increase network crafting behaviors (i.e., using existing contacts, establishing new contacts, and maintaining professional contacts). We also found that this self-training had the indirect positive effects of this

self-training on participants' proximal (i.e., network diversity) and distal outcomes (e.g., work performance and perceived career success). Our findings imply that network crafting behaviors are trainable and can yield beneficial work-/career-related outcomes.

Theoretical implications

First, our study develops an effective network crafting intervention. Specifically, our study demonstrates that network crafting increases employees' work outcomes such as work performance and career success. We identified that a limited number of studies conducted relevant networking interventions in the work domain (Spurk et al., 2015; Wanberg et al., 2020). However, Spurk et al. (2015) conducted a networking intervention among female academics but found that the networking group training alone showed no effectiveness in fostering networking behaviors. Wanberg et al. (2020) developed an effective online networking intervention, but they did not demonstrate specific networking behaviors and did not examine the increases in network diversity and career-related outcomes. Following their work, our intervention developed and trained employees with three specific network crafting behaviors (i.e., using existing contacts, establishing new contacts, and maintaining professional contacts), and revealed the significant increases in participants' network diversity, work performance, and career success through three trained behaviors. Thus, our study successfully develops a trainable tool that managers and employees can use to actively shape their professional networks and improve their work outcomes.

Second, using the TPB principles (Ajzen, 1991), we developed a simple, time/cost effective, and flexible self-training intervention. The mainstream crafting interventions are a face-to-face format (Demerouti et al., 2020; Gordon et al., 2018; Kooij et al., 2017; van den Heuvel et al., 2015). Specifically, the trainers organize an on-site workshop for participants to learn together, after which participants schedule and practice the new behavior to strengthen what they learned. While effective, scholars argue that these intervention programs might be small scope, time and cost consuming, and less flexible due to their designs and procedures (Pekaar & Demerouti, 2021). Recognizing the limitations of traditional interventions, our study

innovatively transforms the intervention format into a self-training one, where participants learn, plan, and practice the new behavior based on their own preferences, needs, and circumstances. This better captures the nature of “crafting” (Zhang & Parker, 2019). Applying the principles of TPB in a self-training format, we asked participants to get information about a new behavior, set a personalized goal, and self-reflected weekly (Steinmetz et al., 2016). The advantage of a self-training format is that organizations do not have to invest in much administrative personnel to monitor the intervention process, and participants do not have to restrict themselves to a fixed time and space to learn and implement the new behavior (Pekaar & Demerouti, 2021). We estimated how much time it costed participants to follow this training. It is shown that information input stage, goal-setting stage, and self-reflected stage costed participants 5 minutes, 5 minutes, and 10 minutes, respectively. Thus, this training is time-effective, simple, and structural. We believe that such a self-training intervention fits a larger scope of audience and are easy to repeat exercises in employees’ daily work context.

Third, we contribute to the proactive behavior (Crant, 2000) and job design (Oldham & Fried, 2016) literatures by addressing that network crafting is an effective proactive strategy individuals can take to manage their professional networks, and in turn, achieve higher performance and career outcomes. Prior studies uncovered that job crafting (Dubbelt et al., 2019), strengths use (Bakker & Woerkom, 2018), and playful work design (Scharp et al., 2019) are successful job (re)designs resulting in beneficial outcomes. Our study highlights that network crafting could be another important form of job redesign or proactive behavior at work, which aims to shape one’s network smartly and strategically. Via network crafting, employees could fit their network to their job and personal needs. More particularly, we extend job crafting and job demands-resources knowledge (Bakker & Demerouti, 2017) by suggesting that network crafting is a more specific, networking-based action to optimize one’s job conditions and to create a person-environment fit (Zhang & Parker, 2019). We highlight that actively shaping the network on a daily work basis is an efficient means to mobilize valuable job resources and reap the associated benefits to work and career success.

Fourth, our study contributes to the social network and networking literatures by highlighting a more motivating, proactive, goal-directed networking process – that is, network crafting. Thus, different from a general networking behavior (Wolff & Spurk, 2020), we underscore that network crafting is not blindly interacting with contacts but more strategically, proactively using, expanding, and maintaining networks aligning with one’s unique work situations and goals. Our study also answers recent calls for an in-depth understanding of the ways to gain the benefits from social networks (Porter & Woo, 2015; Rofcanin et al., 2019). That is, we point out that network crafting could be a way to capitalize on the benefits of networks but also positively cope with the challenges and costs that occur during networking activities (van Gool et al., 2021).

Finally, we provide a more comprehensive understanding of the outcomes of network crafting. That is, we uncover not only the common distal work outcomes such as work performance and career success but also an important proximal outcome – network diversity, which was little empirically tested from previous studies (Forret & Dougherty, 2004; Spurk et al., 2015; Wolff & Moser, 2010). Our findings imply that network crafting is able to facilitate the fulfillment of the tasks and the solutions of the problems (i.e., task-related outcomes) and increase considerable freedom to manage one’s career such as where they want to go with their careers and enables individuals to feel valuable within and outside the organizations (i.e., career-related outcomes). Furthermore, using an egocentric network approach (Baer, 2010), our study calculated network diversity in a relatively objective manner (compared to a traditional psychological scale). Our results showed that two of the three network crafting strategies (i.e., establishing new contacts and maintaining professional contacts) significantly increased employees’ network diversity, but not for using existing contacts. This thus implies that reaching out to new contacts and maintaining a high-quality relationship are two more effective means to shape and optimize social network’s level and structure, compared to simply using existing contacts. In sum, these findings provide insights into how network crafting improves one’s network and reaps the associated benefits to work and career.

Limitations and future research

This study is not without limitations. First, regarding the experimental design, participation was not completely voluntary, as all employees in the intervention group were strongly encouraged by trainers to participate and complete the three-weeks of self-training. Besides, the participants of the control group were not randomly selected and did not receive any treatment at all. This could inflate effect sizes and cannot remove the possibility of confounding bias, which increases the concerns to draw causal inferences (Demerouti et al., 2020). Future studies are advised to randomly recruit participants (if possible). Second, regarding the construct measurement, except for the measurement of network diversity, most measurement instruments were self-reported and therefore might give rise to concerns related to common measures bias (Podsakoff et al., 2003). Future studies can use objective measures, such as using networking frequency, size, and intensity to measure network crafting; using supervisor-rate to evaluate employees' work performance. Third, regarding the sample, the intervention was conducted in China and all the participants were Chinese. This may restrict the generalizability of our results. China has a different cultural background than the western (Hofstede & Bond, 1988). Therefore, we are not sure whether our findings are specific to the Chinese context or could be generalizable to other contexts. Future studies can examine such cross-culture differences in network crafting.

Practical implications and conclusion

Our study also provides valuable practical implications for employees, managers, and organizations. First, we suggest that each employee should take the initiatives to craft his or her professional networks (e.g., using existing contacts, establishing new contacts, and maintaining professional contacts) because these strategies have beneficial effects on work performance and career success. Second, our results showed that our network crafting self-training intervention was effective. This self-training was also proved to be simple, flexible, and structural. It only takes participants about 20 minutes to master and internalize one network crafting strategy including three steps of information input and activation, goal setting, and self-reflection. Thus, our intervention provides organizations and managers an effective

manageable tool, by which employees are self-trained to learn and follow a desirable action, and in turn, boost their work performance and career development.

Conclusion

our study developed and evaluated a network crafting self-training intervention to improve employees' networks (e.g., more diverse networks) and achieve higher performance and career outcomes. Our results showed that the intervention has significant effects on increasing employees' work performance, career success, and network diversity through using existing contacts, establishing new contacts, and maintaining professional contacts. Our study suggests that it is important for employees to take network crafting strategies to tap into different interpersonal resources and for organizations to apply network crafting self-training intervention in management practices.

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Chapter 6 General discussion

Obtaining the benefits of workplace diversity is not easy for organizations and employees. Workplace diversity, on the one hand, can promote the information elaboration process, which may spark creative ideas, enhance decision-making, and improve work performance (Allen et al., 2008; Buyl et al., 2011; Dahlin et al., 2005; Hentschel et al., 2013); while on the other hand, diversity may stimulate a social categorization process, which may divide a group of people into in- and out-groups and thus further increase interpersonal conflicts and disagreement, and decrease trust when working in a diverse workplace (Guillaume et al., 2017; Van Dick et al., 2008; van Knippenberg & Schippers, 2007). Given the “double-edged” effects of diversity, organizations and employees themselves need to think about how to make the best of diversity, unlocking its benefits and optimizing its potential detriments. To tackle this issue, we argue that a combination of different actors (e.g., the top managements and employees) involving different perspectives (e.g., an organizational strategic perspective and an individual behavioral perspective) may help to make the best of diversity. That said, the top management of an organization can use knowledge-based diversity (e.g., diverse information, knowledge, and expertise) to formulate a high-quality strategic scheme that aligns with organizational development goals and implement it through all departments of the organization; while employees themselves can take certain self-customized, bottom-up strategies to proactively seek and use valuable job resources provided by a diverse work environment and smartly optimize those job demands that may drain time and energy. Therefore, the main question of this thesis was:

“How, when, and from whom is workplace diversity linked to positive employee and organizational outcomes, and can we intervene in this process?”

To answer this question, this thesis conducted four empirical studies using different designs, such as an archival database, two diary designs, and an intervention study. In the first study, we examined how functional diversity in top management teams enhanced the decision-making process, and in turn, contributed to the attainment of organizational development goals (e.g., environmental performance), and to what extent external resources (e.g., government subsidies) moderated this relationship. In the second study, we examined how an

informationally diverse work environment can increase employees' work outcomes (i.e., work engagement, performance) by stimulating job crafting behaviors (a bottom-up strategy), and whether this relationship is more positive for those with a higher level of emotional intelligence (EI). In the third study, we examined how help-seeking behavior (another form of bottom-up strategy) was beneficial to the enhancement of creative performance in a functionally diverse work group, and to what extent personal characteristics (i.e., openness to experience) moderated this relationship. Finally, in the fourth study, we developed a network crafting intervention and examined its effectiveness on employees' ego-network diversity and their career success. To conclude, this thesis sheds light on how and in what conditions top management teams (TMTs) and employees can make better use of diversity, and further attain a higher level of outcomes. We reveal that diversity attributes can be utilized to optimize a decision-making process at the management level, and that at the employee level, employees can benefit more from diversity by engaging in certain self-customized, goal-directed bottom-up strategies.

Answering the research questions

Q1: At the management level, does (functional) diversity of the top management team (TMT) contribute to the attainment of contemporary organizational goals (e.g., sustainably environmental performance) and in what condition is TMT diversity more beneficial?

The changing, competitive business environment is putting forward new challenges for contemporary organizations. One of the emerging challenges organizations have to deal with is how to develop sustainably at lower expenses of destructing the natural environment (known as environmental performance) (Hu et al., 2021; Nuber & Velte, 2021). In Chapter 2, we examined whether diversity attributes (i.e., functional diversity) in top management teams can help organizations to make high-quality, comprehensive environmental-related strategies, and in turn, enhance organizational environmental performance, and to what extent external resources (i.e., government subsidies) can strengthen this indirect effect. Our results indicated that functional diversity in top management teams indirectly improved organizational environmental performance through increasing the quality and

comprehensiveness of environmental-related strategies, and that this indirect effect was stronger when organizations gained more government subsidies.

Therefore, Chapter 2 answers the question of how and in what conditions diversity attributes can be used at the management level. This study suggests that diversity attributes at the management level can contribute to the attainment of organizational development goals via the decision-making process. This is because diversity in the team means that members also have different perspectives and knowledge, which increases decision quality and comprehensiveness (Van Knippenberg et al., 2004). Moreover, this study suggests that external resources are an important supportive condition that can effectively offset the risks that diversity attributes may bring in and facilitate the decision-making process even better. The reason is that a broader resource-based perspective (Michalisin et al., 2004; Sanchez, 1995) indicates that resources, in general, can help to deal with challenges, task requirements, and stress. This study is also in line with the mainstream diversity literature (Guillaume et al., 2017; Homberg & Bui, 2013; Horwitz & Horwitz, 2007) suggesting that investigating the mechanism (mediators) and the condition (moderators) is the key to understanding the diversity-outcome relationship.

Q2: At the employee level, what behaviors and characteristics of employees can help them to obtain benefits from a diverse workplace/group?

Shifting from the management level to the employee level, we examine what employees themselves can do to actively make use of diversity, and further facilitate their work outcomes. This is important because diversity is not only a strategic consideration at the management level that facilitates the decision-making process and organizational-level outcomes. Diversity attributes of the workplace can also promote some meaningful adjustments and actions at the employee level and positively impact employees' daily work performance and well-being. Thus, it is important to understand the effects of diversity at the employee level, for example, what employees can actively do to capitalize on the benefits of workplace diversity; what personal characteristics/traits are helpful to make use of workplace diversity even better. Based on the job demands-resources and proactivity perspectives (Bakker & Demerouti, 2017; Crant, 2000), in Chapter 3, we proposed and examined

whether workplace informational diversity can stimulate employee job crafting, and in turn, enhance their work engagement and performance, and to what extent the personal characteristic of emotional intelligence (EI) can moderate this relationship. Using a weekly diary design, we found that informational diversity indirectly improved employee work engagement and performance through increasing job crafting behaviors (including seeking job resources, seeking job challenges, and reducing job demands), and that this indirect effect was stronger for those who had a higher level of EI. Thus, this study suggests that informational diversity can effectively stimulate a proactive behavioral process, which in turn, can enhance work outcomes. Job crafting, as a form of proactive behavior, can effectively transform the benefits of diversity into favorable work outcomes. This is because by engaging in job crafting behaviors, employees can intentionally and precisely seek useful job resources (e.g., different knowledge, expertise) from an informationally diverse work environment, and can also smartly and strategically optimize hindering job demands (e.g., information overload) presented by an informationally diverse work environment. We also highlight that EI is an important personal ability to help individuals navigate an informationally diverse work environment even better. This is because highly EI employees can better understand, process, and use different information presented by different people, and have more chances to take appropriate strategies to responding to social environments (Parke et al., 2015).

In Chapter 4, we examined how help-seeking behavior in a functionally diverse work group can improve employees' creativity, and to what extent the personal characteristic of openness to experience moderated the interactive effect of help-seeking and work group functional diversity (a three-way interaction) on individual creativity. Using a weekly diary design, we found that the interactive effect of help-seeking behavior and work group functional diversity related to higher creativity, and that this interactive effect became stronger for those who scored high on openness to experience. Thus, this study suggests that help-seeking behavior could be another form of proactive behavior to gain necessary job resources provided by a diverse work group. We also highlight that openness to experience is an important personal characteristic to help employees benefit from a diverse work

group even better. These findings were also in line with the work group diversity literature (T. Kim et al., 2020; Van Knippenberg et al., 2004) stating that the main effect of work group diversity on creativity may not be self-evident but depends on some personal-level factors. Thus, our study revealed the important roles of help-seeking behavior and openness to experience. When employees engage in a help-seeking strategy in a functionally diverse work group, they will have more chances to gain instant feedback, novel information, and new perspectives on how to fulfill their tasks and to become innovative in thinking of solutions to the current working problems. Those employees with a higher level of openness to experience will have a stronger willingness to learn, exchange, and capitalize on different information and perspectives from different functional backgrounds people, and will more likely take these differences as opportunities for self-growth instead of risks (Homan et al., 2008; Molleman & Broekhuis, 2012). Our findings were also in line with the creativity literature (Gong et al., 2012; Jain & Jain, 2017; Zhou & Hoever, 2014) stating that the enhancement of creativity is a complex and multidimensional process including personal and contextual factors. So far, incorporating Chapters 3 and 4, We provide valuable insights into what workplace diversity means for employees in addition to the top management; and what behaviors and personal characteristics can help employees to actively make use of diversity and successfully navigate a diverse workplace.

Q3: Can we train employees to increase their ego-network diversity and consequently to attain more work and career goals?

Recognizing the value of employee bottom-up strategies in making use of diversity in previous sections, we aim to develop an intervention to teach and train employees to engage in these behaviors. As such, employees can gain the actual benefits in the diverse workplace. In Chapter 5, we developed a network crafting training aiming to guide employees how to shape and make use of their professional network in order to increase their network diversity and attain more work and career goals. Using a field-experimental design including the experimental group and the control group, we confirmed the effectiveness of our intervention. We found that those participating in the self-training intervention group reported (1) a higher level

of network crafting behaviors (e.g., using existing contacts, establishing new contacts, and maintaining professional contacts), which in turn, reached (2) a higher level of work performance, career autonomy, and perceived marketability, and (3) a higher level of network diversity (measured by Blau index). We used the theory of planned behavior (Ajzen, 1991) to design our intervention including the steps of information input and activation, goal setting, and self-monitoring. These steps can effectively change participants' attitudes toward network crafting, increase their behavioral intention and perceived behavioral control (Ferguson et al., 2008; Michie et al., 2013). Thus, this study suggests that employee proactive strategy (e.g., network crafting) can be trained and yield beneficial outcomes. We provide a means to improve diversity on the ego-network level. That said, employees can proactively use, expand, and maintain their professional networks to enjoy a higher level of network diversity. By contrast, previous studies mainly uncovered what are the beneficial consequences of network diversity (e.g., creativity, adaptive capabilities, collaboration; Baer, 2010; Cheruvelil et al., 2014; Ma et al., 2009) but less explained how to enhance network diversity. Using a field-experimental design, we provide more causal evidence on the relationship between employee bottom-up strategies and ego-network diversity. This intervention provides leaders and employees a management tool/guide on how to improve network diversity and facilitate work and career success using network crafting strategies. We reveal that by engaging in crafting their professional networks employees can better capitalize on the benefits (resources) of their diverse contacts and consequently fit themselves to and profit from a diverse workplace.

Theoretical implications

This thesis contributes to the workplace diversity literature in several ways. First, on the management level (Chapter 2), we demonstrated that diverse TMTs had a better strategic decision-making process, which in turn, enables them to attain sustainably environmental performance. This is because diversity provides a more variety of information, perspectives, and experience, which can be used to increase top management's decision quality and comprehensiveness (Díaz-Fernández et al., 2016; Homberg & Bui, 2013). Given that environmental issues are the challenging and

complex task for TMTs, we demonstrate that (functionally) diverse TMTs are able to handle, resolve such difficult tasks even better than homogeneous TMTs. Therefore, on the top management level, organizations can compose a (functionally) diverse TMT including diverse perspectives, information, and expertise to formulate a high-quality strategy/policy that aligns with organizational development goals and fits common interests in different stakeholders. Thus, we contribute to the team diversity literature (Hentschel et al., 2013; Martin-Alcazar et al., 2012) by highlighting that TMT diversity is different from general working team diversity where team members focus on task completion and problem solving. TMT diversity particularly plays an important role in strategic decision-making, which can have a profound impact on organizational-level outcomes in the hypercompetitive business environment. Compared to homogeneous TMTs, a (functional) diverse-composed TMT would be more able to identify current problems in different departments, seize potential market opportunities from different aspects, and formulate a strategic scheme that can mobilize the organizational resources and utilize the strengths of different departments, units, teams. Thus, we connect TMT diversity to the corporate strategy field (Eisenhardt & Martin, 2000; Gabaldon et al., 2018) and underscore that diverse TMTs are beneficial to the rationality, comprehensiveness, and ambidexterity (i.e., simultaneous exploration of new capabilities and exploitation of current capabilities) of corporate strategies. Organizations can formulate and implement more successful organizational strategies by having a more diverse-composed TMT.

Second, shifting to the employee level, we demonstrate the importance of proactive employee behaviors (e.g., help-seeking and job crafting behaviors) in making use of the benefits of workplace diversity, which received insufficient attentions from the current literature. We have seen that many diversity studies have investigated the effects of diversity on the team level and organizational level. For example, researchers examined how and in what conditions diversity (attributes) within the team can facilitate team decision, team cohesion, and team innovation (Chen et al., 2019; Kauer et al., 2007; Qian et al., 2013; Seong et al., 2015); and/or how organizations can increase overall diversity and enjoy a higher level of inclusive climate within the organization (Nishii, 2013; Randel et al., 2018; Roberson, 2006).

However, what does a diverse workplace mean to individuals? How can individuals best navigate a diverse workplace? Few studies gave a clear answer on this question. Thus, this thesis aims to provide a means that employees can take to navigate a diverse workplace/group. We underscore the importance of an individual proactive behavioral process when employees work in a diverse workplace/group. We pinpoint that workplace diversity includes various elements that can motivate individuals (e.g., job resources, challenging job demands; Fangfang Zhang & Parker, 2019), which may provide more perceived opportunities for engaging in proactive behaviors to gain the valuable task-related, interpersonal resources from a diverse workplace/group (Parker et al., 2010). Thus, we highlight employees themselves can and should take the initiative to shape their own job conditions, seek and use the resources they need from a diverse work environment. For example, job crafting and help-seeking are proactive behaviors that predominantly focus on self-growth aligning with employees' own personal needs and goals and that can gain more learning opportunities from a diverse workplace/group. This further demonstrates that it is important for employees to develop and motivate an instrumental way of looking at the diverse work unit/group, focusing on the individual qualities or strengths of colleagues rather than engaging in in-group/out-group shizzle. Thus, in line with previous work (Leroy et al., 2021; Meyer & Schermuly, 2012), we emphasize that proactively engaging in pro-diversity practices and harvesting the benefits of diversity might be one of the means to the enhancement of individual work performance and well-being in a diverse workplace/group.

To better understand employee proactive strategies in navigating a diverse workplace, we examined these behaviors on a weekly basis and thus revealed the short-term fluctuations of proactive behaviors on work outcomes. Therefore, we show that making use of diversity on the employee level is an ongoing process, instead of a one-time event. This provides a nuanced insight into how employees take small but meaningful adjustments while working in a diverse work environment within a short period of time, gain the necessary resources they need from a diverse work environment every day, and finally, improve their work outcomes. For example, in Chapter 3, we showed how perceived diversity facilitated

employees' weekly work engagement and performance through increasing their weekly job crafting behaviors. In Chapter 4, the results indicated that the current week's help-seeking behavior in a diverse work environment can even increase the next week's creativity. Therefore, we enrich the workplace diversity literature (Galinsky et al., 2015; Guillaume et al., 2017; Harrison et al., 2002) by suggesting that the effects of diversity on the employee level can be shaped by daily, micro, goal-directed, and pro-active behaviors.

Third, this thesis highlights the important moderating role of personal characteristics on the diversity-individual-level outcome relationships. The diversity scholars acknowledge that diversity has "double-edged" effects and that investigating potential moderators may be the key to the understanding of the diversity phenomenon (Shemla et al., 2016; Van Dick et al., 2008; van Knippenberg & Schippers, 2007). For example, prior studies examined many moderators in the diversity-outcomes relationships, such as organizational-level moderators (e.g., institutional support, slack resources, environmental dynamics) (Roh et al., 2019; Wu et al., 2011) and team-level moderators (e.g., team trust, shared version, task interdependence) (Bjornali et al., 2016; Wei & Wu, 2013). However, personal-level moderators (e.g., the moderating role of personal characteristics) are relatively less considered. Personal-level moderators are important as well because these can help us to understand why people benefit from diversity differently, and in other words, to what extent people may differ in their personal abilities to successfully make use of different resources in a diverse work environment. Thus, in Chapter 3 and 4, we proposed and examined two important personal resources: emotional intelligence and openness to experience. The selection of these two moderators is because emotional intelligence and openness to experience were found to be highly correlated with positive diversity beliefs and attitudes, as evidenced by previous studies (Ekehammar & Akrami, 2003; Gardenswartz et al., 2010; Homan et al., 2008). Highly emotionally intelligent employees value individual differences and are capable of taking actions to process diverse information and manage diverse interactions (Newton et al., 2016; Toyama & Mauno, 2017) and employees high on openness to experience have a stronger willingness to learn new knowledge, perceive

the feedback they receive from those with other functional backgrounds as a learning opportunity, and can capitalize upon these differences more than employees who score low on this dimension (Homan et al., 2008; Molleman & Broekhuis, 2012).

Therefore, we suggest that emotional intelligence and openness to experience are two kinds of valuable personal assets, helping employees make better use of and profit more from a diverse work environment. We add to the diversity literature by finding the important moderating role of personal resources (e.g., emotional intelligence, openness to experience), in addition to well-established general/organizational resources (e.g., institutional support, inclusion, team trust). So far, we answer the question of what personal characteristics are beneficial for employees to benefit more from workplace diversity.

Fourth, we developed an effective intervention to train employees to engage in proactive behaviors (i.e., network crafting behaviors), and consequently obtain the actual benefits of workplace diversity. Prior diversity intervention studies largely focused on how to train individuals' diversity awareness but less on diversity-oriented behaviors. For example, Moss-Racusin et al. (2016) developed a diversity intervention and found that the intervention effectively increased participants' awareness of gender bias in the workplace and increased their readiness to increase gender diversity. The study of Birnbaum et al. (2021) found that a diversity ideology intervention increased students' multiculturalism awareness. Homan et al. (2015) found that diversity training can increase team creativity, but only for teams with less positive diversity beliefs. Given the previous limited studies, based on the social network (Porter & Woo, 2015; Wanberg et al., 2020) and individual proactivity (Crant, 2000; Parker et al., 2010) perspectives, we developed a network crafting intervention aiming to increase participants' ego-network diversity and career success. We argue that employees can gain many valuable benefits from workplace diversity if we can successfully train them to use, expand, and maintain their diverse professional networks. Our results indicated that participants engaging in network crafting behaviors (i.e., actively using existing contacts, expanding new contacts, and maintaining relationships with contacts) significantly increase their network diversity and their career autonomy, compared to those in the control group. Thus,

besides providing more causal evidence of the positive effect of network crafting on network diversity and career outcomes, this intervention study adds to the workplace diversity literature by offering a management tool aiming to improve employees' network diversity in the workplace. We demonstrate that crafting one's networks to make it more diverse might be one of the means to gain the actual benefits of workplace diversity. Additionally, in the process of network crafting, we particularly highlight that network crafting is not just a single direction of getting and receiving interpersonal resources from others but also proactively giving resources of their own to others. This is important because this reciprocal process can increase the closeness and trust among social ties and create a high-quality, lasting professional relationship (Porter & Woo, 2015). Research shows that this reciprocity of the networking process can build a helping, learning climate for each other's tasks and problems (Eldor, 2017). Thus, in line with the diversity and inclusion literature (Shore et al., 2011), we further highlight that network crafting behaviors might be one of the means to increase the perceived inclusion in the diverse workplace as network crafters can feel more uniqueness and belongings when they receive and give help.

Fifth, in this thesis, we also uncovered several types of workplace diversity, to present a more in-depth understanding of the different attributes of workplace diversity and their relevant outcomes. For example, in Chapter 2 and 4, we investigated the beneficial role of functional diversity. We underscore that functional diversity is more task-related diversity where people can gain a more variety of informational, decision-related resources. And functional diversity is able to yield more beneficial outcomes, such as work engagement, task performance, and creativity, as evidenced in Chapter 2 and 4. In Chapter 3, we revealed the importance of (perceived) informational diversity, which refers to a more deep-level, task-related diversity attribute. While similar to functional diversity, we highlight that informational diversity includes more than differences in functional backgrounds. It includes those aspects that are unique in information, knowledge, perspective, and experience. This type of diversity is important and more relevant to the business context, compared to the surface-level, demographic diversity. Finally, in Chapter 5, we uncovered how network crafting behaviors leads to higher network diversity. We

also highlight that this type of network diversity refers more to one's professional networks with more different functional backgrounds. Thus, in line with previous chapters, we further point out the importance of task-related diversity on the daily work basis. We provide insights into a means that can improve network diversity – that is, by proactively shaping the networks based on one's own job condition, personal needs, and career goals. Thus, we add to the workplace diversity literature (Guillaume et al., 2017) by particularly highlighting the importance of task-related diversity in the workplace, compared to non-task-related diversity (e.g., age, gender diversity). Nevertheless, our findings on different types of diversity also confirmed the CEM model (i.e., categorization-elaboration model), which indicates that different types of diversity can be beneficial or detrimental in some circumstances because diversity can incite an information elaboration process and a social categorization process. We highlight that the means that can unleash the benefits of diversity can be through employee-initiated, bottom-up actions.

To conclude, this thesis might be the first one integrating both management and employee roles/perspectives to understand how to make use of and get access to the benefits of workplace diversity. We reveal that a strategic information-processing/decision-making process initiated by diverse-composed TMTs and a proactive behavioral process initiated by individual employees can effectively unlock the potential of diversity. Organizations and the top management can formulate and implement a better corporate strategy by having a diverse-composed TMT. Employees can engage in proactive behaviors to transform the benefits and resources of workplace diversity into their favorable work outcomes.

Practical implications

This thesis provides valuable practical implications for both managers and employees. First, in the management level, our results indicate that a functional diverse top management team (TMT) is effective in making better environment-friendly decisions, and in turn, improves organizational sustainable goals and environmental performance. Thus, we suggest that it is wise for organizations to compose a functional diverse TMT to deal with environmental-related challenges. To do so, organizations can consider two things: one is to compose a team to make

critical decisions, such as increasing environmental performance. Accumulating evidence has shown that team decision making is better able to increase decision quality and decrease decision bias if the task is difficult and/or novel, compared to the individual decision making (Marks et al., 2001; Nielsen, 2010). The other one is to make the team composition more diverse. This can effectively expand the information pool (Van Dick et al., 2008). For example, organizations can actively incorporate different functional managers into top management teams, value different opinions and ideas from managers who represent different functional departments, and regularly exchange these ideas to timely adjust the current actions and policies. Establishing positive diversity beliefs among the top executives is also important as this can create a more diverse and inclusive work climate for employees (Mor Barak et al., 2016). Having positive diversity beliefs among TMT members is beneficial to the incubation of diversity mindsets, which can enable TMTs to become more willing to pursue diversity-related goals and pro-diversity practices (Van Knippenberg et al., 2013). Our results also indicate that the beneficial effect of TMT functional diversity can become stronger when organizations obtain more external resources (e.g., government subsidies). Thus, in addition to compose a functional diverse TMT, we suggest that organizations should actively seek any forms of external resources (e.g., financial resources, interpersonal resources). This is because resources can help to increase decision making and decision implementation (Russo & Fouts, 1997). For example, having a good connection with the local government would be beneficial to getting more policy-oriented information, which can adjust organizational strategies and actions accordingly. Establishing a good connection with other enterprises would be beneficial to inter-organizational cooperation and the optimization of supply chains.

Second, on the employee level, we suggest that employees engage in more proactive, self-customized job strategies to gain heterogeneous resources and optimize (challenging) demands presented by a diverse work environment, such as job crafting, help-seeking, and network crafting. Our results showed that these bottom-up approaches effectively increased employees' work (e.g., performance, engagement, creativity) and career (e.g., perceived marketability, career autonomy)

outcomes in an informational/functional diverse workplace. Although organizations can initiate and design a top-down, organizational-level approach (e.g., inclusion, psychological safety climate, learning climate, equality and justice; Blouch & Azeem, 2019; Jaiswal & Dyaram, 2020; Singh et al., 2013; Vanthournout et al., 2014) to help employees navigate and benefit from a diverse work environment, we recommend that organizations can empower employees with more autonomy and support to enable themselves to adjust their actions to fit a diverse workplace. Leaders can also play a role model on their employees to encourage employees to be proactive (Hetland et al., 2018; M. Kim & Beehr, 2020). For example, leaders of the department, team, or work unit should engage in proactive behaviors (e.g., job crafting) as well, so that employees can learn and imitate from them (Xin et al., 2020). Scholars also suggest that a shared understanding should be established between organizations and employees that employee bottom-up job behaviors are acceptable and even encouraged as long as they align with organizational goals, if organizations want to encourage more employee proactivity (Wrzesniewski et al., 2013). Thus, we suggest that organizations should establish such a shared understanding with their employees and fully support their bottom-up strategies.

Besides encouraging employee proactive behaviors, our results indicate that employees differ in their personal abilities/traits to make use of workplace diversity, such as emotional intelligence (EI) and openness to experience (OTE). Thus, we suggest that organizations should recognize individual differences in benefiting from workplace diversity. For those with lower personal abilities (i.e., EI and OTE), organizations should help them to improve the level of these personal abilities. Research shows that some personal traits (e.g., EI and OTE) are not invariant through lifespan and can be improved by some trainings (Jackson et al., 2012; Slaski & Cartwright, 2003). Thus, we suggest that organizations can intentionally develop some training programs aiming to improve the level of employees' EI and OTE. This would benefit both employees and organizations.

Finally, we developed a network crafting self-training intervention, which can provide organizations with useful guidance on how to design, implement, and evaluate a self-training intervention. Using a field-experimental design with the

principles of the theory of planned behavior (Ajzen, 1991), our results confirmed the effectiveness of a network crafting intervention and its beneficial effects on employee work performance, subjective career success, and network diversity. We suggest that organizations and HRs can use our intervention and can follow this procedure to train and teach employees how to craft their professional networks and gain associated work and career benefits. This is not only beneficial to employees but to organizations as well because organizations can foster more proactive employees, who can become active problem solvers and fit organizational goals and development through such an intervention. We also provide a self-training format. Thus, we suggest that HRs may also want to use this format to train employees as a self-training format seems a more flexible self-management tool and can help employees gain control over issues of concern related to their current job conditions (Demerouti et al., 2020; van den Heuvel et al., 2015), which can translate top-down directions and procedures into daily work practices.

Strengths and limitations

This thesis has many strengths in terms of research design, measurement, and analytical approach. First, we used multiple research designs to answer our research questions, ranging from the archival dataset (Chapter 2), daily design (Chapter 3 and 4), to field-experimental design (Chapter 5). These can provide future studies with more insights and recommendations on how to design studies to understand the diversity topic. Besides, we used relatively objective measures to improve the measurement quality. For example, in Chapter 2, and 5, we used Blau index to measure diversity. In Chapter 4, we used an egocentric network approach to measure help-seeking behavior; Baer, 2010). The objective measures can effectively reduce the common methods bias and make our results more reliable (Jordan & Troth, 2020).

This thesis also used several advanced statistical analyses to test the hypotheses. In Chapter 2, we used the fixed/random effects (panel) model to examine the relationship between TMT functional diversity and firm environmental performance. We also used the instrumental variable approach to address the endogeneity issue (Hu et al., 2021), so that we can increase the causality of the results and reduce the omitted variable bias (Larcker & Rusticus, 2010). In Chapter 3 and 4,

we conducted diary studies and used the multilevel analyses to test a moderated mediation model and a three-way interaction model, respectively. Thus, we uncover not only how those engaging in bottom-up behaviors (vs those not) resulted in increases in performance and well-being (i.e., between-person), but also expect to capture how bottom-up behaviors influence their performance and well-being over time (i.e., within-person). This within-person investigation is essential because individuals may vary in their actions, emotions, and tasks across days and weeks (Ohly et al., 2010). The current states and behaviors may even influence next period's (e.g., next day/week) states and performance. The traditional between-person studies cannot uncover this "changing" phenomenon. In a literature review, Bakker & Xanthopoulou (2013) concluded that the average amount of variance in individual states (e.g., engagement) attributed to within-person (e.g., daily level) fluctuations is no less than 42%. Thus, a diary study could provide more insights into the dynamic fluctuations of individuals' behaviors, states, and performance. In Chapter 5, besides the 2×2 ANOVA test examining the effectiveness of intervention, we also conducted a growth curve analysis (Choi & Wilson, 2016) to observe participants' initial level of network crafting and the growth trajectory of network crafting over time.

However, this thesis is not without limitations, which represent future research directions. First and foremost, the sample in this thesis was collected in China and all participants were Chinese. This could lead to the concern of the generalizability of our results in western countries. Although China is an interesting, suitable context as China is one of the most vibrant economies in the world, it is still worthwhile to look into whether our findings can be replicated in other country settings.

Second, the thesis investigated many kinds of organizations such as hospitals, construction companies, electricity companies (mainly the traditional industries) with the participants' average age between 35 to 45. It would be interesting for future studies to investigate some emerging industries such as AI-related companies. For example, how diversity attributes can be optimally used in AI organizations and how organizations can design employees' jobs combining the benefits of diversity. Moreover, our participants' age was from 35 to 45, which indicates that they have

gained some working experience in the current organization. However, what about those newcomers and aging employees? Will it become more difficult for them to adapt to a diverse work environment? Are the strategies that we proposed applicable for newcomers and aging employees? Future studies can provide more nuanced insights into this matter.

Third, in Chapter 2, we focused on the management level and examined the relationship between TMT functional diversity and organizational performance using the archival dataset. However, those objective indicators provided by the archival dataset cannot effectively capture the individual and team psychological states and processes. The upper echelon scholars state that it is important for future studies to capture a more psychological process of TMT decision-making (Homberg & Bui, 2013; Nielsen, 2010). Thus, a field investigation (e.g., interviews, longitudinal surveys, and field experiments) can be a promising direction for future TMT studies, which can provide insights into the psychological factors of TMTs' states and behaviors (even on a daily basis).

Fourth, focusing on the employee level, we proposed three bottom-up strategies (job crafting, help-seeking, and network crafting) and two personal abilities (openness to experience, emotional intelligence) that can jointly help employees navigate a diverse work environment. Following the job design, job demands-resources, and employee proactivity perspectives (Crant, 2000; Demerouti et al., 2001; Oldham & Fried, 2016), future studies can examine other forms of employee self-initiated, goal-oriented behaviors (e.g., playful work design, leisure/home crafting) and other essential personal abilities that can fit and be effective in a diverse work environment (e.g., resilience, self-regulation). This will further expand the workplace diversity and employee proactivity knowledge and provide employees with a more variety of self-management tools to adapt to, capitalize on, and thrive in a diverse work environment.

Future directions in the areas of workplace diversity and employee proactivity

Finally, we feel it is also important to provide a more helicopter view on the future research avenues in the area of workplace diversity as well as employee proactivity.

First, while the mainstream diversity literature applies the CEM model (i.e., categorization-elaboration model) to account for the effects of workplace diversity on the team level (i.e., team beneficial/detrimental processes and consequences) (Galinsky et al., 2015; Guillaume et al., 2017; Harrison et al., 2002), we suggest that it is equally important to examine whether the CEM model also applies to and accounts for the effects of diversity on individual level outcomes such as work performance and well-being. Moreover, we suggest future studies can introduce other theoretical frameworks to enrich the understanding of the effects of diversity on individual-level outcomes. In this thesis, we took a work characteristics perspective to understand what job resources and job demands are included in the diverse workplace and how they could further influence individuals' motivational process. Future studies can explore the motivational process and health impairment process caused by diversity. Thus, we recommend that future studies can follow this research direction to further understand what specific job resources and job demands are included in the diverse workplace and how these job characteristics relate to individual (engaged or exhausted) states and (coping) behaviors.

Second, up to date the diversity management literature has suggested some useful strategies and tools organizations and leaders can use to manage workplace diversity, capitalizing on its benefits and overcoming its risks (see a review, Guillaume et al., 2017). These strategies include inclusiveness programs (Jaiswal & Dyaram, 2020), justice and equity policies (Blouch & Azeem, 2019), diversity-friendly climate (Jaiswal & Dyaram, 2020; Singh et al., 2013), and diversity-oriented leadership (Homan et al., 2020). However, besides these organizational-initiated strategies, employee-initiated strategies are also important and useful. This is because employees know themselves better than anyone else: they reflect upon their own interests, personal needs, and career development to engage in the most appropriate strategy. In this thesis, we took the job characteristics/redesign perspective to uncover several employee-initiated, bottom-up approaches that were effective for employees to deal with a diverse workplace, such as help-seeking behavior and job crafting. Recognizing the importance of the bottom-up approach, we suggest that future research continues to identify other effective employee-

initiated, bottom-up approaches that can help employees successfully navigate a diverse workplace.

Third, we suggest future research develop more simple, effective diversity-related training/interventions, to further enrich the workplace diversity literature. Existing literature mainly focused on training employees' mindset, positive beliefs in diversity (see a review, Guillaume et al., 2017), but with less attention on training employees' behaviors to make use of diversity. While this thesis successfully developed a network crafting intervention, future studies can continue to dive into this direction to present employees with more cognitive as well as behavioral tools to help them fit into a diverse workplace.

Conclusion

Workplace diversity is becoming a strategic priority for organizations that pursue equality, inclusion, sustainable competitive advantages. However, unlocking the potential of workplace diversity is not an easy task. Both organizations and employees need to think about how to effectively make use of various resources that diversity offers and overcome those challenges and detriments when working in a diverse workplace. Thus, this thesis attempts to focus on two levels (from the management level to the employee level) and explain by what approaches and under what conditions leaders/management teams and employees themselves can smartly behave and respond to a diverse workplace. Our results imply that at the management level, knowledge-based top management team diversity is able to facilitate the strategic decision-making process, and in turn, enhance organizational performance, and that at the employee level, employees can engage in several self-customized, goal-directed proactive behaviors to maximize the benefits of workplace diversity. Thus, we suggest: (1) for organizations, it would be wise to compose a diverse-composed management team and make full use of each member's unique knowledge, perspectives, and experience to enhance the decision making and decision implementation; (2) for the employees, it is recommended to take certain self-initiated, goal-oriented actions to balance the resources and (challenging) demands presented by a diverse work environment. These actions include but are not limited to job crafting behaviors, help-seeking behaviors, and network crafting

behaviors. Moreover, organizations should identify and develop those employees who are high in emotional intelligence and openness to experience. This is because these diversity-oriented personal characteristics/abilities can help employees to navigate a diverse workplace even better.

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Summary

Managing and utilizing workplace diversity (e.g., diversity attributes in generation, ethnicity, education, and functional background) is creating incomparable challenges for leaders and managers over the world. While organizations promote diversity anticipating productivity and innovation, diversity is known to strain interpersonal trust, integration and undermine well-being. The aim of this thesis is to give insights into how and in what conditions both top management teams and employees themselves can make the best of diversity in the workplace, unlocking its potentials and overcoming its risks.

We conducted four empirical studies to answer this question. In Chapter 2, we focus on the management level and examine how knowledge-based diversity in top management teams facilitates the decision-making process, and in turn, boosts organizational environmental performance. Using an archived dataset of publicly listed firms over ten years, we found that functional diversity in top management teams (TMTs) increased firms' environmental-friendly performance via making high-quality environmental-friendly strategies. Moreover, this indirect effect became stronger when firms obtained more external resources (e.g., governmental subsidies). Thus, we uncover how and in what conditions organizations can unlock the potential of diversity attributes at the management level.

Shifting from the management level to the employee level, in Chapters 3 and 4, we investigate how and in what conditions employees *themselves* can initiate certain strategies to navigate a diverse work environment. Using a weekly diary design, we revealed that help-seeking and job crafting actions were two effective strategies to enhance employee work outcomes (e.g., performance, engagement, and creativity) in a diverse work environment. In addition, we found that openness to experience and emotional intelligence were two essential personal abilities that can enable employees to initiate proactive strategies more successfully in a diverse work environment. Thus, we highlight the importance of self-customized, goal-directed strategies and personal abilities when working in a diverse work environment.

Finally, in Chapter 5, we develop an intervention, by which we aim to teach and train employees how to engage in proactive strategies to create and use diversity in their own professional networks. Using a quasi-experimental design, we found that our network crafting self-training intervention was effective. Those who participated in our self-training showed a higher level of network crafting behaviors. Also, we found that this simple self-training indirectly increased participants' network diversity, work performance, and subjective career success (e.g., career autonomy and perceived marketability). Thus, we provide a self-management tool for employees to help them shape their professional networks and reap work and career benefits in a diverse work environment.

Altogether, this thesis makes several contributions to the existing literature. First, we add to the corporate strategy literature by highlighting how diversity attributes can be optimally used to enhance decision quality and decrease decision bias, and how diversity attributes can help the top management to identify, process, and solve ill-defined, novel organizational problems. Second, we enrich the workplace diversity literature by underlining the importance of individual proactive behaviors. We highlight how employees can smartly initiate some actions to embrace the valuable job resources included in the diverse workplace and positively respond to the challenges and difficulties presented by diversity. Third, we add to the workplace intervention literature by developing a simple but effective network crafting self-training. We provide useful tactics and guidelines on how employees can learn, practice, and strengthen a behavioral strategy to craft their professional networks and navigate a diverse work environment.

Relevant concepts in the dissertation

1. *Top management team (TMT)* refers to the relatively small group of most influential executives at the apex of an organization. TMT membership by considering the CEO and senior executives to be TMT members if the latter directly reports to the CEO and are responsible for making strategic choices for the organization.
2. *TMT functional diversity* refers to the degree to which TMT members differ with respect to their functional backgrounds (e.g., management, finance, law, etc.).
3. *Firm environmental performance* refers to how successful a firm is in reducing and minimizing its impact on the environment.
4. *TMT environmental-based decision-making*, in this study, is defined as the level of which TMTs make comprehensive, effective decisions for attaining environmental (sustainable development) goals.
5. *Government subsidy* refers to the economic incentives provided by governments including policy-related funds and discounted loans.
6. *Informational diversity* refers to (perceived) differences in type, source, or category of work-related information, knowledge, and perspectives.
7. *Job crafting* is defined as the proactive strategy aiming at balancing job resources and job demands.
8. *Emotional intelligence (EI)* refers to a suite of motivational, dispositional, affective capabilities and attributes that influence one's ability to cope with various environmental hassles.
9. *Seeking help* is defined as individuals' proactive search for resources from one another in order to solve/advance task-related matters.
10. *Work group functional diversity* refers to the extent to which workgroup members have distinctive functional backgrounds, knowledge, or experience.
11. *Openness to experience* refers to an individual's willingness to explore, tolerate, and consider new and unfamiliar ideas and experiences.

12. *Network crafting* is defined as a proactive strategy aimed at optimizing one's network that involves networking behaviors that employees utilize to balance the costs and benefits of their network.
13. *Task performance* refers to the extent to which individuals fulfill their routine tasks and requirements.
14. *Problem-solving* emphasizes the extent to which individuals think up creative and effective alternatives and solve a novel situation or problem.
15. *Career autonomy* is defined as the extent to which individuals perceive freedom and discretion to determine and influence the pacing, shape, and direction of their careers.
16. *Perceived marketability* refers to beliefs that one is valuable to his or her current employer and other employers.

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About the Author

Huatian Wang was born on April 9th, 1992, in Jinan, China. In 2014, he obtained his Bachelor's degree in International Business Management at Qingdao University. In the same year, he started his Master study of Applied Economics at the Ocean University of China. After obtaining his master's degree in July 2017, he went to the Netherlands and started his PhD research (from September 2017) in the field of work and organizational psychology at the Eindhoven University of Technology. This dissertation is the product of his PhD research on workplace (group) diversity and employee proactivity. Chapters of this dissertation were published in the *European Journal of Work and Organizational Psychology* or under review at the *Journal of Vocational Behavior*, *Applied Psychology: An international Review*, and *Group and Organization Management*.