



# How perceived overqualification affects radical creativity: the moderating role of supervisor-subordinate guanxi

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## Abstract

This study aims to investigate the effect of perceived overqualification on radical creativity. Drawing on the conservation of resources (COR) theory, this study examined the mediating role of job crafting and the moderating role of supervisor-subordinate guanxi. Through the two-wave pre-test of 312 employees, we found that the scale reliability and validity of all variables in this study were good. According to the pre-test results, we modified the expressions of some items to obtain a more concise and effective questionnaire for the formal survey, so as to ensure the conclusions more reliable. And using two-wave survey data from 1007 employees among Chinese local organizations in the formal test to examine the hypotheses. The results indicated that perceived overqualification negatively affects radical creativity, and job crafting mediates the relationship. In addition, supervisor-subordinate guanxi reduces the effect of perceived overqualification on job crafting and the indirect effect of perceived overqualification on radical creativity via job crafting. Theoretical and practical implications are discussed.

**Keywords** Perceived overqualification · Job crafting · Supervisor-subordinate guanxi · Radical creativity · Conservation of resources theory

## Introduction

With the expansion of higher education, more and more talents enter the labor market. Data from the National Bureau of Statistics from 2011 to 2021 show that the number of college graduates is increasing year by year, reaching 7.9 million in 2020, which makes the employment situation more complicated and tough. For timely employment, many graduates take the initiative to lower their standards and choose jobs below their qualification, thus falling into the status of overqualification. According to a survey, 84% of Chinese employees feel overqualified, ranking first in the world (Lin et al., 2017). Additionally, the COVID-19 pandemic has led to a sharp decline in job opportunities, and an imbalance

between individuals' demand for high-quality jobs and the supply of jobs, resulting in a growing overqualification.

Overqualification refers to the individual's education level, skills, experience and other qualifications exceed the job requirements (Erdogan et al., 2011). It can be categorized as objective overqualification and perceived overqualification (Yang & Zhou, 2013). Objective overqualification refers to the fact that individual's education level, skills, experience and so on are higher than the actual job requirements (Erdogan & Bauer, 2009), while perceived overqualification is the subjective feeling that an individual holds qualifications exceeding their job requirements (Maynard et al., 2006; Erdogan et al., 2018) suggested that, compared to objective overqualification, perceived overqualification fully considers individual differences and can better reflect the feelings of employees. Therefore, researchers' focus in current study was perceived overqualification. Perceived overqualification will bring a series of negative effects, Li, Wen et al. (2021); Li, Chen et al. (2021) carried out a meta-analysis which showed that it would reduce employees' positive perception of the organization, work and themselves, resulting in negative work attitude (e.g., low job involvement) and work behavior (e.g., counterproductive

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behavior), as well as low work performance (e.g., task performance), and can damage their physical and mental health (e.g., pressure and depressive symptoms). However, some scholars have pointed out that perceived overqualification may also lead to some positive effects, depending on how employees view their employment status. For instance, from the capability-based perspective, Zhang, Deng et al. (2016); Zhang, Cai et al. (2016); Zhang, Law et al. (2016) proposed that perceived overqualification positively affects proactive behavior through role breadth self-efficacy. Wang (2018) also believed that employees who perceived overqualified would actively participate in creative activities and show high level of creativity by adopting the view of capability. Therefore, there are many arguments over whether perceived overqualified employees are good or bad for organizations (Zhao et al., 2018). Creativity refers to putting forward novel and unique ideas. In contrast, innovation is to implement the ideas generated by creativity. Therefore, creativity is the foundation of innovation, and creativity of the employees is considered to be the key to promote the innovative development of organizations (Yang et al., 2021; Amabile 1988) Given the proposal put forward by Chairman Xi Jinping at the Central Talent Work Conference of " we will deepen the implementation of the strategy of reinvigorating China through talent, and accelerate the construction of the world's important talent center and innovation highland " at the end of September 2021, but innovation or innovative behavior mostly depends on the level of individual creativity, therefore investigating the relationship between perceived overqualification and creativity has become an important program in both academic and practical fields.

Previous researches mostly analyze creativity in a general dimension, ignoring that different types of creativity might have different mechanisms (Wang, 2020; Madjar et al., 2011) classified creativity into radical and incremental creativity according to the degree of creative changing. Radical creativity refers to new ideas that are completely different from current organizational practices, while on the other hand, incremental creativity refers to the smaller changes to the practical framework in organization. Specifically, in terms of innovation content, radical creativity is the pursuit of new ideas, while incremental creativity requires consistency and continuous improvement of existing processes and successful products. In terms of innovation effect, incremental creativity focuses on improvement and has low uncertainty, while radical creativity focuses on change and has higher uncertainty. Compared with incremental creativity, radical creativity can lead to follow-up innovation, which enables organizations to seize opportunities in the rapidly changing environment and become the engine of organizational performance growth (Wei et al., 2020). Therefore, it is necessary to pay attention to radical

creativity. Wang (2018) believed that due to the high qualifications, overqualified employees can complete tasks faster than their colleagues and have more time, as well as energy to think deeply. And the time and energy invested are particularly important for participating in activities related to radical creativity (Wei et al., 2020). However, there is no specific research on the mechanism of perceived overqualification and radical creativity. Therefore, this study aims to explore the impact of perceived overqualification on radical creativity.

As perceived overqualification reflects the situation of waste in human resources, Li and Ding (2019) pointed out that how to alleviate the adverse situation requires certain conditions. Prior studies on the mechanism of perceived overqualification focused on employees' psychological cognition or emotions. However, Lin et al. (2017) recognized that task crafting plays a mediating role between perceived overqualification and creativity. Li and Ding (2019) also found that perceived overqualification can bring innovation performance through job crafting. Job crafting refers to a proactive and self-initiated type of behavior whereby employees re-create their jobs within the context of defined jobs (Wrzesniewski & Dutton, 2001). Obviously, the subsequent impact of perceived overqualification mainly depends on how the organization manages and guides the behavior of overqualified employees. The main effect relationship between perceived overqualification and radical creativity is still uncertain. Individuals who perceive overqualified are unwilling to change the existing system, process or system because of the great pressure and tension caused by the loss of resources and disproportionate cost vs. benefit of maintaining existing resources (Lin et al., 2022). This is strongly associated with job crafting, linking perceived overqualification and pointing to radical creativity. Hence, this study investigates whether job crafting mediates the relationship between perceived overqualification and radical creativity. Besides, perceived overqualification is a "relative" feeling, and the extent to its effect can be affected by organizational situational factors (Yu et al., 2019; Liang et al., 2019) recognized that although perceived overqualification has a negative impact on employees' active behaviors, the degree of its influence may be affected by interpersonal interaction. In addition to rules and regulations, supervisor-subordinate guanxi is also an important situation factor affecting employee's work in Chinese organizations. Supervisor-subordinate guanxi (SSG) not only maintains the concept of hierarchy, but also contains the interaction between supervisor and subordinate (Chen & Tjosvold, 2006). And it is the connection between the two parties based on interest, emotion and identity obligation, and is instrumental, emotional, and obligatory (Guo & Li, 2015). Perceived overqualification means that the skills, knowledge and experience of

employees are not fully displayed, which is not only a waste of resources, but also hinders the process of accumulating more resources through the full use of their qualifications. In this case, employees who perceive overqualified will feel the loss of their own resources, and then result in negative work behaviors. Supervisor-subordinate *guanxi* reflects the status of individuals' acquisition of work resources such as trust and material (Guo & Li, 2015). Low quality supervisor-subordinate *guanxi* cannot meet the needs of subordinates in material or other work resources and it is difficult to gain the trust of supervisors, so they will take evasive measures to avoid the loss of resources again. While high quality supervisor-subordinate *guanxi* is conducive to improving resource availability and trust of subordinates (Yi et al., 2021). Due to the high quality supervisor-subordinate *guanxi*, it provides a guarantee of "resource security" and "trust security" for employees in the organization, which will encourage employees who perceive overqualified to adjust their job needs and job resources to redesign their work without worrying about the loss of their own resources. Therefore, supervisor-subordinate *guanxi* can support perceived overqualification and job crafting, providing a platform for the positive effect of perceived overqualification. However, there is still no relevant research to examine the moderating effect of supervisor-subordinate *guanxi* on the relationship between perceived overqualification and job crafting. Therefore, from the perspective of COR theory, this study investigates the moderating effect of supervisor-subordinate *guanxi* on the relationship between perceived overqualification and job crafting. In addition, grounding in COR theory, this study further investigates the moderating effect of supervisor-subordinate *guanxi* on the indirect effect of perceived overqualification on radical creativity via job crafting by constructing a moderated mediation model.

This study makes several contributions to the literature. First, this study focuses on an important but under-researched aspect of creativity, radical creativity, as the outcome of perceived overqualification. By integrating literature on perceived overqualification with literature on radical creativity, this study not only finds antecedents of radical creativity, but also contributes to the perceived overqualification literature by adding radical creativity to the outcomes of perceived overqualification.

Second, although there have been studies investigated mediators between perceived overqualification and its outcomes, most of them are from the perspective of cognition or emotion, ignoring the key role of employee behaviors (Liu & Wang, 2012). Based on employees' job crafting behavior, this study discusses the mediating role of job crafting on the relationship between perceived overqualification and radical creativity. The results can help to reveal the specific mechanism of perceived overqualification on radical

creativity, and enrich the mediating research on perceived overqualification.

Finally, based on the Chinese organizational context and conducted the study in China, this study investigates a key boundary condition of the relationship between perceived overqualification and its outcomes. By examining supervisor-subordinate *guanxi* as a moderator, this study helps to enrich the boundary conditions for the process of perceived overqualification and has Chinese characteristics, making it more convincing to explain how Chinese organizations benefit from the employment of workers who perceive overqualified.

## Theoretical basis

### Conservation of Resources (COR) Theory

Conservation of resources (COR) theory indicates that individuals have the tendency to strive to acquire, maintain, cultivate and protect important resources. Among them, resources refer to the things that the individual considers valuable or the ways that can help him or her to obtain valuable things (Hobfoll, 1989). When individuals face resource loss or threat, they will feel tension and pressure, which will lead to negative reactions such as burnout, emotional exhaustion and depression (Hobfoll et al., 2018). From the perspective of resources, qualifications such as knowledge, skills and work experience that exceed job requirements are obtained by overqualified employees through investment methods such as professional learning, skill training or work practice, and are valuable resources for employees (McKee-Ryan et al., 2011). Therefore, the perception that individual resources are wasted caused by the situation of overqualification will stimulate employees' behavior of maintaining, protecting and acquiring resources. Meanwhile, how they feel, recognize and evaluate their own resources will affect their subsequent attitude and behavior (Hobfoll, 1989).

## Theory and hypotheses

### Perceived Overqualification and Radical Creativity

Perceived overqualification refers to the individuals' belief that they possess higher levels of skills, experience, and knowledge than is required by their job (Maynard et al., 2006). Previous studies have focused on the negative effects of perceived overqualification and found that it was associated with lower job satisfaction (Alfes et al., 2016), lower affective commitment (Arvan et al., 2019), higher counterproductive behaviors (Liu et al., 2015), and higher

withdrawal behaviors (Maynard & Parfyonova, 2013). However, there is no unified conclusion has been drawn on the relationships between perceived overqualification and job performance, positive behavior and creativity (Qiao & Yang, 2015). Overqualified employees are considered to be the main force of organizational innovation due to their redundant resources and performance expectations (Wang et al., 2020; Wang, 2020) even proposed that the improvement of organizational innovation depends on the creativity of highly qualified talents. Thus, the relationship between perceived overqualification and creativity is an important but understudied area. Previous researches on the above topic mainly include the following three viewpoints, firstly, Liu and Wang (2012) pointed out that perceived overqualification positively affects creativity; secondly, Zhao et al. (2015) found that employees who perceive overqualified tend to be less interested in their work, which makes them less likely to seek out and come up with new ideas; thirdly, Lin et al. (2017) believed that there is an inverted U-shaped relationship between them. Wang (2020) pointed out that the reason for the inconsistent conclusion might be that studies were focusing on the relationship between perceived overqualification and general creativity, and creativity is measured in a single dimension, thus neglecting some specific types of creativities, such as radical creativity. Compared with general creativity, radical creativity is more specific, focuses on creative change in a greater degree, and deals with different types of problems (Madjar et al., 2011). Therefore, there may be different mechanisms from perceived overqualification to radical creativity.

Drawing on COR theory, radical innovation usually requires more resources and time flexibilities and involves greater risks, which makes employees feel the loss of resources (Feng & Hu, 2019). COR theory refers that individual has the motivation to protect and expand their resources. Resource threats, effort–reward imbalance and loss of resources will lead to stress and affect employee behaviors (Hobfoll, 1989). When employees feel overqualified, their skills, knowledge and experience are not fully utilized, which is not only a waste of resources, but also hinders the process of accumulating more resources. Therefore, employees will feel the loss of their resources (Li et al., 2021a, b; Wei et al., 2020) proposed that once people realize the possibility of resource loss, they will try to avoid it. Therefore, when employees perceive overqualification, they will reduce affective and cognitive engagement, and may be reluctant to devote extra time and energy to produce radical creativity. Thus, the hypothesis is proposed as follows:

H1: Perceived overqualification is negatively associated with radical creativity.

## The Mediating Role of Job crafting

Job crafting refers to the physical and cognitive changes made by individuals in their job boundaries. It can be divided into three dimensions, that is task crafting, relationship crafting and cognition crafting (Wrzesniewski & Dutton, 2001). Employees with high job crafting will adjust work tasks and relationships to match themselves, thus improve job satisfaction and well-being (Zhang et al., 2012). Prior research has revealed that resource supports can promote employees to adopt job crafting (Luu, 2020; Kim et al., 2018). Along with job crafting, employees' needs, interests and motivations will turn to be consistent with their work, and then improve work engagement, and produce more positive results (Hu et al., 2020).

According to the COR theory, individual's resources (such as time, physical strength, energy, etc.) are limited. People will instinctively protect their resources and avoid resource loss (Hobfoll, 1989). Job crafting is a kind of voluntary change behavior (Ben & Yin, 2021), but in the process of job crafting, employees are often restricted by several factors (Berg et al., 2010), so they need to invest a lot of time, energy and other resources (Zhao et al., 2021). Particularly, when facing the unsatisfactory situation of overqualification, employees are more likely to be limited by their job responsibilities, information resources and guanxi (Xie et al., 2015), while the time, energy and other resources invested in job crafting come from employees themselves (Liu & Cheng, 2010). This intensified the feeling of a further loss of resources for employees who perceive overqualified. Therefore, in order to protect resources, employees who perceive overqualified are less likely to take action to reshape their jobs. Thus, we propose the following hypothesis:

H2: Perceived overqualification is negatively associated with job crafting.

Job crafting is the behavior of employees to actively change their cognition, task, work relationship, which is conducive to improve employees' psychological state (Xin & Miao, 2018). Firstly, by reflecting and affirming the value and significance of their work (Tims et al., 2016), employees dare to meet challenges by investing more time and energy, thus provide more innovative ideas (Hao, 2020). It lays a foundation for the emergence of radical creativity. Secondly, employees may regard their work from different perspectives through changing the work mode or task. They will finally find innovative working methods, so as to produce radical creativity more easily. Thirdly, relationship crafting is accompanied by knowledge sharing (Zhang, Deng et al. 2016; Zhang, Cai et al., 2016; Zhang, Law et al., 2016), which can help to connect ideas from different

sources, thus improving the level of radical creativity. In summary, the hypothesis is made as follows:

H3: Job crafting is positively associated with radical creativity.

Based on the COR theory, individuals would put their physiological resources, emotional resources and cognitive resources into their roles when participating in work. However, when feeling their work is meaningless, individuals will successively withdraw cognitive resources, emotional resources and physiological resources from the work, and job crafting disappears naturally (Xie et al., 2015). Overqualified employees experience a lower sense of meaning in their work because they think their work was lack of challenging, creative and autonomous (Li, Zhou et al., 2020; Li, Mei et al., 2020). Therefore, employees who perceive overqualified will gradually withdraw resources from their work and reduce job crafting in order to protect their resources from loss. And this value judgment will further affect their psychological state, resulting in lack of drive, and then reduce work engagement, inhibiting the emergence of radical creativity. Therefore, job crafting may mediate the relationship between perceived overqualification and radical creativity. Thus, we propose the following hypothesis:

H4: Job crafting mediates the relationship between perceived overqualification and radical creativity.

### Moderating role of Supervisor-Subordinate Guanxi

Supervisor-subordinate guanxi refers to the personal relationship developed in the interaction between supervisor and subordinate, including the personal communication, affective interaction and responsibility recognition outside work (Cheung et al., 2009; Cai et al., 2021). Supervisor usually divides subordinates into “in-group members” and “out-group members” based on the quality of their relationship (Van Dyne et al., 2008; Zhang, Deng et al., 2016; Zhang, Cai et al., 2016; Zhang, Law et al., 2016). China is a guanxi-oriented society. Subordinates’ lives and work are influenced by their supervisors. Therefore, supervisor-subordinate guanxi is the key to Chinese organizations (Yang, 2002). Although supervisor-subordinate guanxi and leader-member exchange both focus on the relationship between supervisor and subordinate, however, the two concepts are fundamentally different. Specifically, leader-member exchange is concerned with the fair exchange relationship between supervisor and subordinate developed from the interaction within the work (Li & Chen, 2015), while supervisor-subordinate guanxi involves activities outside of work developed from social interaction (Guo & Li, 2015). High-quality supervisor-subordinate guanxi can make them trust each other, and supervisors often offer extra opportunities and resources to their subordinates. However, low-quality

supervisor-subordinate guanxi provides fewer opportunities and resources for their subordinates (Liu & Wang, 2016).

Prior studies have shown that in Chinese organizations, supervisor-subordinate guanxi is an important interpersonal relationship (Ding & Su, 2021), which is the important factors affecting employee behaviors (Zhang & Deng, 2016). Supervisors usually are the controllers of scarce resources, the better relations with supervisors brings more trust, care and resources (Ren et al., 2019), which can make employees who perceive overqualified feel psychological security. Subordinates will re-understand their tasks and redesign their work to realize job crafting. On the contrary, when the level of supervisor-subordinate guanxi is low, employee behaviors are more influenced by their perceived organizational membership (Cao et al., 2019). More specifically, due to the lack of recognition from leaders and organizations, employees who perceive overqualified will have lower organizational membership cognition (Zhao et al., 2018) and greater difficulty in obtaining resources (Jiang et al., 2019). They tend to focus on avoiding further loss of existing resources as the first principle (Cao & Qu, 2014). Therefore, in the low level of supervisor-subordinate guanxi, the employees who perceive overqualified will reduce the intention of job crafting for protecting resources, thus will resist job crafting. Hence, we propose the following hypothesis:

H5: Supervisor-subordinate guanxi moderates the relationship between perceived overqualification and job crafting, such that the negative effect is weaker when the level of supervisor-subordinate guanxi is high than when it is low.

The above arguments represent an integrative framework in which job crafting mediates the relationship between perceived overqualification and radical creativity. The impact of perceived overqualification on job crafting is contingent on the level of supervisor-subordinate guanxi. Therefore, it is reasonable to speculate that the model in this study may have a moderated mediation effect, that is, the mediating effect of job crafting on the relationship between perceived overqualification and radical creativity is also moderated by supervisor-subordinate guanxi. Specifically, when the level of supervisor-subordinate guanxi is high, the negative impact of perceived overqualification on job crafting is weak, so the indirect effect of perceived overqualification on radical creativity via job crafting will be correspondingly reduced. Thus, we proposed the following hypothesis:

H6: Supervisor-subordinate guanxi positively moderates the indirect effect of perceived overqualification on radical creativity via job crafting, such that the indirect effect is weaker when supervisor-subordinate guanxi is high than it is low.

The proposed model was displayed in Fig. 1.

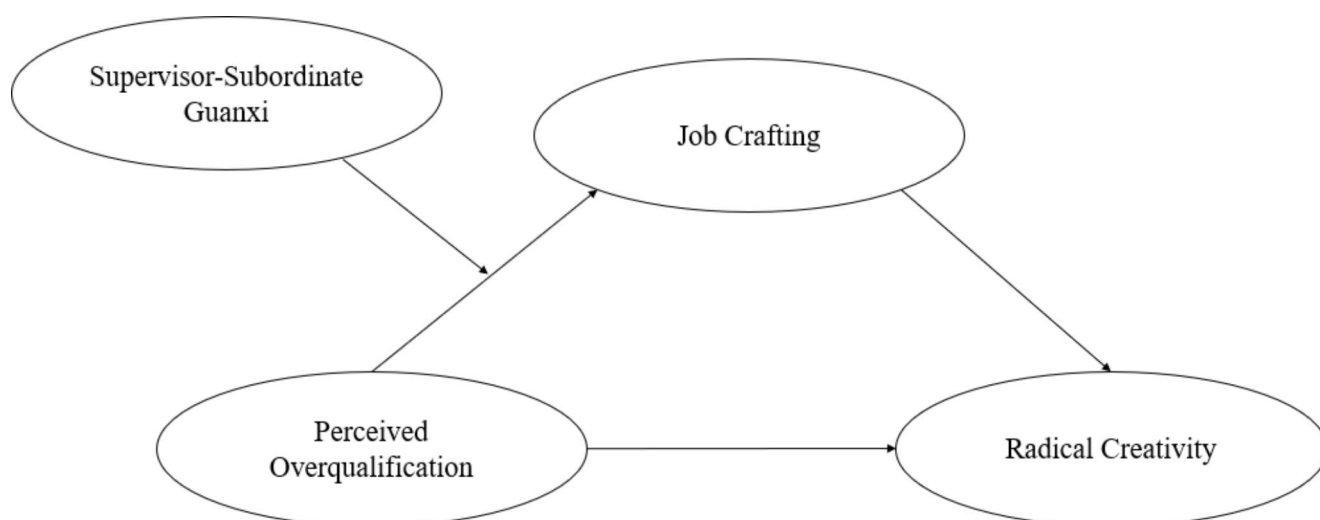


Fig. 1 Theoretical model

## Materials and methods

### Participants and procedure

The investigation of this study is divided into two steps: pilot test and formal test. A questionnaire survey was designed to collect research data from September, 2021 to June, 2022 and adopt simple random sampling technology to choose the research objects. We conducted the survey through the human resource departments of each firm. Since perceived overqualification has become a common problem in all enterprises and public institutions, this study has no special requirements for the research objects, as long as they are ordinary employees. In order to ensure the generalizability and representativeness of the sample, the questionnaire was sent to companies in different regions of China, including traditional and emerging industries such as manufacturing, new media communication and IT operation. We designed two formal surveys for each firm with an interval of 2 months in the pre-test and 2 weeks in the formal test to avoid common method variance (Podsakoff et al., 2012). Before the questionnaire was issued, the research team explained the purpose of the survey to the respondents, and ensured the confidentiality and anonymity of the survey, so as to eliminate the anxiety of the participants and feel relieved to answer the questionnaire.

### Pre-test

#### Pre-test questionnaire

In order to ensure the reliability and validity of the survey results, a pre-test was conducted before the formal test in order to test the scientific design of the questionnaire and

the validity of the test items. In the stage of pre-test, reliability analysis and factor analysis are carried out for the data collected, which can effectively screen the measurement questions of the variables. All in all, pre-test is to get a concise and effective scale.

The pre-test questionnaire was distributed online on sojump. The first survey of pre-test was distributed to 322 employees measure demographics, perceived overqualification, supervisor-subordinate guanxi. Two months later, the second survey was conducted to the same respondents to measure job crafting and radical creativity. 312 matched data were checked available for final analysis, and the effective recovery rate was 96.89%. In addition, the criteria for eliminating are as follows: first, eliminating the questionnaire with perfunctory answers; second, eliminate incomplete questionnaires; third, eliminate questionnaires that took too little time to answer. Of the respondents, 54.31% were male, 45.69% were female. According to the education background, the distribution of senior high school and below accounts for 1.28%, junior college for 5.43%, bachelor's for 84.66%, master for 8.31% and doctor accounts for 0.32%.

### Measures

To ensure the validity and appropriateness of all the scales in the Chinese context, the questionnaire was first designed in English and then translated to Chinese, using translation and back translation process (Brislin, 1986). The measurement selected in this study are all from foreign mature scales. In order to ensure the effectiveness of the English scale in the Chinese context as much as possible, this study followed a two-way translation procedure, inviting an English expert and a business management expert to translate into Chinese

together. Two doctoral students of organizational behavior and human resource management translated Chinese back into English. After repeated comparison until there was no difference, the final Chinese version of the scale was determined. All the items in the questionnaire were on a 5-point Likert scale, with “1” to “5” ranging from “completely disagree” to “completely agree”. Besides, all the scales we used in this study were the scales that had been used in the Chinese context.

### Perceived overqualification

The perceived overqualification items were adopted from Maynard et al. (2006). The nine items were rated on a 5-point Likert scale. A sample item is “Even though I don’t have previous work experience, I can successfully complete my current job”.

### Job crafting

The job crafting items were adopted from Slemp et al. (2015). This scale consists of three dimensions, task crafting, relationship crafting and cognitive crafting, with a total of 15 items, and each dimension contains 5 items. The 15 items were rated on a 5-point Likert scale. Items include “I take on new and additional tasks at work”, “I think about how to achieve goals at work” and “I try to get to know people at work”.

### Supervisor-subordinate guanxi

The supervisor-subordinate guanxi items were adopted from Law et al. (2000). The six items were rated on a 5-point Likert scale. A sample item is “I care about and understand my supervisor’s family and work situation”.

### Radical creativity

The radical creativity items were adopted from Madjar et al. (2011). The three items were rated on a 5-point Likert scale. A sample item is “I often come up with highly creative new ideas”.

### Control variables

Previous studies have shown that demographic characteristics such as gender and education affect employee creativity (Zhao et al., 2020). In order to reduce the interference of other irrelevant variables, gender, and education were also controlled in this study. In addition, because of leader-member exchange and supervisor-subordinate guanxi both focus on the relationship between supervisors and subordinates,

and their theoretical basis is both social exchange theory. The leader-member exchange was taken as a control variable in this study and measured at the time 1 to exclude its interference to the model. The leader-member exchange items were adopted from Graen and Uhl-Bien (1995). The seven items were rated on a 5-point Likert scale. A sample item is “My leader pays attention to the needs of employees”.

### Pre-test reliability analysis

Reliability analysis is used to test whether the data obtained from the survey is reliable and stable, and whether the data can effectively reflect the objective situation of the research object. Generally, Cronbach’s  $\alpha$  coefficient can be used to measure the reliability of the variables. The value of this coefficient is in the range of 0 to 1. Higher Cronbach’s  $\alpha$  coefficient indicates better reliability. When the Cronbach’s  $\alpha$  coefficient of all scales involved in the research is above 0.60, it indicates that the data obtained by the research is relatively reliable. After reliability analysis by using SPSS 23.0, Cronbach’s  $\alpha$  coefficients of each scale are all greater than 0.6 so the reliability of the measured variables in this study is good, and further research can be carried out on this basis. The Cronbach’s  $\alpha$  of perceived overqualification is 0.73, the Cronbach’s  $\alpha$  of job crafting is 0.74, the Cronbach’s  $\alpha$  of supervisor-subordinate guanxi is 0.74, the Cronbach’s  $\alpha$  of radical creativity is 0.69, and the Cronbach’s  $\alpha$  of Leader-member exchange is 0.74.

### Factor analysis

In this study, KMO and Bartlett are measured to whether the scale in the study suitable for factor analysis. For perceived overqualification, KMO is 0.79 and the result of Bartlett is significant, indicating that the scale had good validity. For job crafting, KMO is 0.81 and the result of Bartlett is significant, indicating that the scale had good validity. For supervisor-subordinate guanxi, KMO is 0.81 and the result of Bartlett is significant, indicating that the scale had good validity. For radical creativity, KMO is 0.67 and the result of Bartlett is significant, indicating that the scale had good validity. For leader-member exchange, KMO is 0.79 and the result of Bartlett is significant, indicating that the scale had good validity.

### Formal test

After analysis, we modified the literal expression of the questionnaire and formed the final questionnaire to formal test. We still used the platform of sojump to issue questionnaire and contact the subjects by sending QR coding online to ensure the randomness of sampling. The first survey of

**Table 1** Confirmatory factor analysis

Model	Factor	$\chi^2$	df	$\chi^2/df$	CFI	TLI	IFI	RMSEA
Model 1	Four-factor model (POQ,JC,SSG,RC)	1140.676	489	2.333	0.964	0.961	0.964	0.036
Model 2	Three-factor model (POQ+JC,SSG,RC)	3043.244	489	6.223	0.859	0.848	0.860	0.072
Model 3	Two-factor model (POQ+SSG,RC+JC)	2972.668	491	6.054	0.863	0.853	0.864	0.071
Model 4	Two-factor model (POQ+JC,RC+SSG)	4355.034	492	8.852	0.787	0.772	0.772	0.788
Model 5	One-factor model (POQ+JC+RC+SSG)	5233.582	492	10.618	0.739	0.720	0.740	0.098

Notes: df, degrees of freedom; CFI, comparative fit index; TLI, Tucker-Lewis index; IFI, incremental fit index; RMSEA, root mean square error of approximation; POQ, perceived overqualification; JC, job crafting; SSG, supervisor-subordinate guanxi; RC, radical creativity

formal test was distributed to 1115 employees measure demographics, perceived overqualification, supervisor-subordinate guanxi. Two weeks later, the second survey was conducted to the same respondents to measure job crafting and radical creativity. 1007 matched data were checked available for final analysis, and the effective recovery rate was 90.31%. In addition, the criteria for eliminating are as follows: first, eliminating the questionnaire with perfunctory answers; second, eliminate incomplete questionnaires; third, eliminate questionnaires that took too little time to answer. Of the respondents, 54.12% were male, 45.88% were female. According to the education background, the distribution of senior high school and below accounts for 1.09%, junior college for 5.66%, bachelor's for 84.71%, master for 8.14% and doctor accounts for 0.40%.

## Analysis tools

Software SPSS 23.0 and AMOS 23.0 were used to analyze the data of formal test. Firstly, AMOS 23.0 was used to conduct a confirmatory factor analysis on four latent variables: independent variable (perceived overqualification), mediating variable (job crafting), dependent variable (radical creativity) and moderating variable (supervisor-subordinate guanxi). Secondly, SPSS 23.0 was used for testing the common method deviation of the variables, and descriptive statistics and correlation analysis. Finally, SPSS 23.0 and its macro program PROCESS are used to test the hypothesis. And bootstrap sampling times were 5000.

## Results

### Confirmatory factor analysis

As shown in Table 1, the four-factor model (perceived overqualification, job crafting, supervisor-subordinate guanxi, radical creativity) showed the best fitting index:  $\chi^2/df=2.333$ , CFI=0.964, TLI=0.961, IFI=0.964, and RMSEA=0.036,

all of them reached the recommended standard. Meanwhile, in addition to the four-factor model, the fitness indexes of the other four alternative models are also listed in Table 1 respectively. By comparison, it can be seen that the fitting effect of the four-factor model (perceived overqualification, job crafting, supervisor-subordinate guanxi, radical creativity) is better than that of other alternative models, proving that the four main variables in this study belong to different concepts and the questionnaire has good structural validity.

### Common method deviation

On the one hand, anonymous questionnaires were used for prior control in consideration of the possible influence of common method deviation. On the other hand, Harman's single factor test was used to test it, and all items were included in the factor analysis to obtain the first principal component without rotation, which explained the variation of the total variance of 24.013%, which was lower than 40%, indicating that the common method deviation was not serious (Zhou & Liao, 2013).

### Descriptive statistics and correlations

The means, standard deviations, and correlation coefficients of the variables in this study can be seen in Table 2. It was found that perceived overqualification was negatively related to radical creativity ( $r=-0.51$ ,  $p<0.01$ ) and job crafting ( $r=-0.59$ ,  $p<0.01$ ), as well as supervisor-subordinate guanxi ( $r=-0.28$ ,  $p<0.01$ ). Job crafting was positively related to radical creativity ( $r=0.59$ ,  $p<0.01$ ). Hypotheses were initially confirmed, but further analysis is still needed.

### Hypothesis testing

#### Mediating effect

As shown in Table 3, perceived overqualification has a significant and negative effect on radical creativity ( $\beta = -0.48$ ,



**Table 2** Results of the descriptive statistical analysis

Variables	M	SD	1	2	3	4	5	6	7
1.Gender	1.46	0.50	0.05	0.08*	(0.85)	(0.92)	(0.94)	(0.87)	(0.82)
2.Education	3.01	0.45	0.01	0.04	0.12**	-0.59**	0.42**	0.14**	
3.LMX	3.58	0.69	0.12**	-0.05	-0.09**	-0.28**	0.59**		
4.POQ	3.26	0.90	-0.01	-0.01	0.02	-0.51**			
5. JC	3.70	0.75	-0.06	-0.07*	-0.03				
6.SSG	3.18	0.83	-0.01						
7.RC	3.64	0.85							

Notes: n = 1007; Cronbach's alpha reliability coefficients are displayed on the diagonal. LMX, leader-member exchange; POQ, perceived overqualification; JC, job crafting; SSG, supervisor-subordinate guanxi; RC, radical creativity

\*P < 0.05; \*\*P < 0.01; \*\*\*P < 0.001

<sup>a</sup>Male = 1; Female = 2.

<sup>b</sup>High school and below = 1; College degree = 2; Bachelor's degree = 3; Master's degree = 4; Doctor's degree and over = 5.

**Table 3** Mediating effect of job crafting

Variables	JC		RC			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
1.Gender	0.00	0.01	-0.00	0.01	-0.00	0.00
2.	-0.08	-0.05	-0.13	-0.11	-0.08	-0.08
Education	-0.10**	-0.02	-0.03	0.05	0.04	0.06
3.LMX	3.615*	-0.49***	1.906	-0.48***	0.66***	-0.24***
4.POQ	0.01	136.039***	0.01	89.590***	134.451***	0.50***
5.JC	0.01	0.35	0.01	0.26	0.35	
F		0.34		0.26	0.35	
R <sup>2</sup>						
R <sup>2</sup> change						

Notes: n = 1007. LMX, leader-member exchange; POQ, perceived overqualification; JC, job crafting; SSG, supervisor-subordinate guanxi; RC, radical creativity. \*P < 0.05; \*\*P < 0.01; \*\*\*P < 0.001

p < 0.001, Model 4). Thus, Hypothesis 1 was supported. It also can be seen from Table 3 that perceived overqualification is negatively associated with job crafting ( $\beta = -0.49$ , p < 0.001, Model 2) and job crafting is positively related to creativity ( $\beta = 0.66$ , p < 0.001, Model 5). Thus, Hypothesis 2 and 3 were supported. After controlling for job crafting, the relationship between perceived overqualification and radical creativity is still significant, but the level of effect is significantly decreased ( $\beta = -0.24$ , p < 0.001, Model 6). This means that job crafting partially mediated the relationship between perceived overqualification and radical creativity. Hence, Hypothesis 4 was supported.

**Moderating effect**

We tested the moderation model by using regression analysis. As shown in Table 4, the interaction term of perceived overqualification and supervisor-subordinate guanxi was statistically significant ( $\beta = 0.06$ , p < 0.001, Model 4). Figure 2 further revealed that the negative relationship between perceived overqualification and job crafting was weaker for

**Table 4** Moderating effect of supervisor-subordinate guanxi

Variables	JC			
	Model 1	Model 2	Model 3	Model 4
Gender	0.00	0.01	0.03	0.03
Education	-0.08	-0.05	-0.05	-0.04
LMX	-0.10**	-0.02	-0.04	-0.04
POQ	3.615*	-0.49***	-0.43***	-0.47***
SSG	0.01	136.039***	0.26***	0.21***
SSG*POQ	0.01	0.35	148.221***	0.06***
F		0.34	0.43	126.969***
R <sup>2</sup>			0.07	0.43
R <sup>2</sup> change				0.01

Notes: n = 1007. LMX, leader-member exchange; POQ, perceived overqualification; JC, job crafting; SSG, supervisor-subordinate guanxi. \*P < 0.05; \*\*P < 0.01; \*\*\*P < 0.001

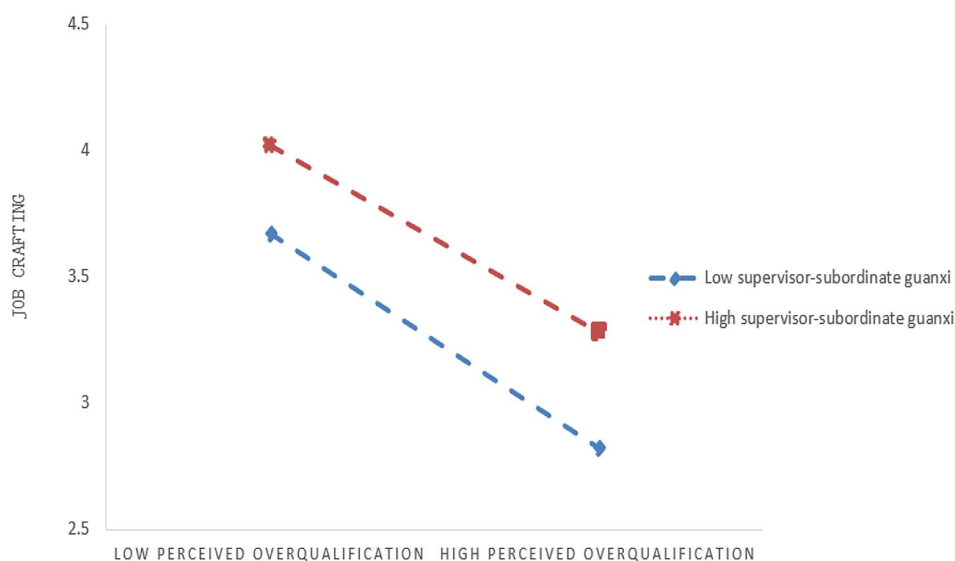
the higher level of supervisor-subordinate guanxi. Thus, Hypothesis 5 was supported.

**Moderated mediating effect**

We used bootstrapping procedures to test the moderated mediation. As shown in Table 5, the indirect effect of perceived overqualification on radical creativity through job crafting varies significantly across levels of supervisor-subordinate guanxi. That is, when the level of supervisor-subordinate guanxi was low, the relationship between perceived overqualification and radical creativity through job crafting was negative and significant [indirect effect = -0.2663, 95% CI (-0.3309, -0.2079), excluding 0]. Correspondingly, when the level of supervisor-subordinate guanxi was high, the relationship between perceived overqualification and radical creativity through job crafting was still negative, but the relationship was weaker [indirect effect = -0.1966, 95% CI (-0.2390, -0.1594), excluding 0]. Eventually, the difference between the two groups were significant, with 95% CI (-0.2940, -0.1802), excluding 0. Therefore, Hypothesis 6 was supported.

**Discussion**

We grounded the hypotheses in COR theory to examine how perceived overqualification related to radical creativity. Findings from the formal test among 1007 employees sample supported our model. Specifically, our findings are as follows: first, perceived overqualification had a significant negative effect on radical creativity, and job crafting could partially mediate their relationship. According to COR theory, in the process of job crafting, overqualified employees should redesign their work actively with their rich individual resources. When individuals perceive overqualified, their willingness and motivation of job crafting will be greatly weakened due to the preservation of existing



**Fig. 2** Moderating effect of supervisor-subordinate guanxi on the relationship between perceived overqualification and job crafting

**Table 5** Results of the moderated mediation effect between perceived overqualification and radical creativity

Moderator	Level	Effect	Boot SE	95% CI
Supervisor-subordinate guanxi	Low (-1 SD)	-0.2663	0.0309	(-0.3309, -0.2079)
	High (+1 SD)	-0.1966	0.0200	(-0.2390, -0.1594)

Notes:  $n = 1007$ . Bootstrapping repetitions,  $N = 5,000$ . CI, confidence interval

resources, which would further cause the job involvement and enthusiasm to decline, thus inhibit the radical creativity. In the long run, the external uncertain environment brings unprecedented challenges to the organization, and radical creativity is an important asset for an organization to cope with competition, survival and development. The verification of the mediating role of job crafting extended the mechanism between perceived overqualification and radical creativity.

Second, supervisor-subordinate guanxi positively regulated the relationship between perceived overqualification and job crafting, that is, the relationship between perceived overqualification and job crafting was weaker under higher level of supervisor-subordinate guanxi. A higher level of supervisor-subordinate guanxi would improve individual resources, thus promoting job crafting and seeking resource gain spiral. That is, employees with higher level of supervisor-subordinate guanxi will obtain richer psychological resources, which encourage them to work harder to reshape their work. Meanwhile, the better the relationship with the supervisor, the more trust the supervisor has in him or her. Therefore, they are more likely to redesign their work according to their own abilities and experience.

Third, the indirect effect of perceived overqualification on radical creativity via job crafting was moderated by supervisor-subordinate guanxi, that is, the indirect effect is weaker when supervisor-subordinate guanxi is high than it is low. Ford (1996) proposed that only under certain conditions can employees' creativity be stimulated, So as radical creativity as a special type of creativity. For employees who perceive overqualified, the higher level of supervisor-subordinate guanxi, the more job security, confidence and psychological resources they have, thus increasing the resources stock and inducing the spiral motivation to pursue resources and make more job crafting. This is beneficial to increase the job involvement and enhance create expectations. Thus the effect of job crafting on radical creativity was enhanced. On the contrary, when the level of supervisor-subordinate guanxi is low, it is more difficult for overqualified employees to get the corresponding resource return on their input, and even may cause further depletion of their own resources. Therefore, in order to avoid further depletion of resources, they show less job crafting, which weakens the impact on radical creativity.

This study reveals that perceived overqualification has a positive effect under certain conditions. Based on the COR theory, we found that guiding the overqualified employees to job crafting and fostering a good relationship between supervisor and subordinates can inspire radical creativity.

### Theoretical implications

This study made several important theoretical implications. First, our results extended the influence of perceived overqualification from creativity to radical creativity, enriching

the research of relationship between perceived overqualification and creativity. Drawing on COR theory, this study found that perceived overqualification negatively associated with radical creativity. In recent years, radical creativity is an important content of management research, but the research focusing on the field of organizational behavior is relatively scarce. Prior studies focused on the relationship between perceived overqualification and employees' overall creativity, but ignored the effect of perceived overqualification on specific creativity. By introducing radical creativity into the field of organizational behavior, this study not only revealed the effect of perceived overqualification on radical creativity, deepening the understanding of the formation process of the overqualified employees' radical creativity, but also provided a new framework to explain the process of how perceived overqualification affects creativity and provided a new perspective in solving the controversy over the relationship between perceived overqualification and creativity.

Second, this study indicated the mediating effect of job crafting on the relationship between perceived overqualification and radical creativity. Current literatures mainly focused on cognitive or emotional variables as an important process that can link perceived overqualification to creativity (Liu & Wang, 2012), while the discussion on the role of employee behaviors is limited. This study expands the research on the effect and form of overqualification. Most previous studies were based on the assumption that work content is fixed to investigate the mechanism of perceived overqualification (Oldham et al., 2010). Based on the COR theory, this study believes that perceived overqualification will have an impact on crafting from the perspective of resources, thus affecting radical creativity. Thus, our research contributed to perceived overqualification and radical creativity literature through identifying job crafting as a powerful mechanism that helps to enrich the antecedents of radical creativity and provides the foundation for researchers to investigate other processes. It also lays a theoretical foundation for exploring the positive effect and mechanism of the sense of overqualification.

Third this study confirmed the moderating effects of supervisor-subordinate guanxi. From the perspective of organizational context, this study examined that the supervisor-subordinate can induce the job crafting of employees who perceive overqualified by increasing the resource, and stimulate them to participate in the process of innovation, thus improve their radical creativity. The results are helpful to reveal the boundary conditions on explaining the indirect effects of perceived overqualification on radical creativity and further enrich the achievements of the COR theory. "Guanxi orientation", originated from Confucianism, is an important theme in Chinese society and organizational

activities (Tian & Zhang, 2019; Wu, 2020; Yang, 2002) suggested in the context of "guanxi-oriented" Chinese society, supervisor-subordinate guanxi was a key factor affecting employee behaviors. In this study, we found that high level supervisor-subordinate guanxi could buffer the noxious effects of perceived overqualification. Specifically, the higher level of supervisor-subordinate guanxi, the weaker negative effect of perceived overqualification on job crafting. This result confirmed the importance effect of guanxi on employee behavior in Chinese organizations. Additionally, this study further verified that supervisor-subordinate guanxi could moderate the indirect relationship of perceived overqualification with radical creativity via job crafting. Previous researches on perceived overqualification rarely discussed the role of supervisor-subordinate guanxi. This study not only provided a good suggestion for the application of supervisor-subordinate guanxi in the study of perceived overqualification, but also enriched the research in the field of guanxi. In addition, under different organizational situations, individuals who perceive overqualified have different intensity of perception and response to resources. When employees who perceive overqualified are at a higher level of supervisor-subordinate guanxi, they will prefer to pursue resource gain because they obtained more trust and resources from their supervisor. Therefore, this study further verifies the boundary effect of supervisor-subordinate guanxi in the process of "perceived overqualification - job crafting - radical creativity". This result not only directly responds to the future research suggestions put forward by Chen et al. (2017) about providing a good boundary condition for the process of perceived overqualification, but also conducive to a deeper understanding of the mechanism of perceived overqualification on radical creativity.

## Practical implications

This study also has some guiding significance for human resource management. Firstly, on the one hand, the Implementation Plan of National Pilot Construction of Industry-Education Integration issued by the National Development and Reform Commission and the Ministry of Education of the People's Republic of China pointed out that a group of characteristic industry-education integration enterprises should be built based on regional advantages. Therefore, schools could set up "order classes" according to the demand of enterprises and the will of students to improve the correlation between what they learn and the actual work of enterprises, which will improve the fit between the employee and the post and reduce the employee's perception of overqualification. On the other hand, managers need to be aware that although there may be some risks in hiring employees who perceive overqualified (such as low radical

creativity), they should abandon the attitude of refusal and adopt scientific and reasonable management strategies to stimulate overqualified employees to play their potential. Li and Ding (2019) put forward that from the perspective of career planning, internal and external career are often in an unbalanced state, and overqualification may be a natural phenomenon of the interactive development of internal and external career. Cheng et al. (2019) also believed that if perceive overqualified employees are properly managed, they can become assets of the organization.

Secondly, considering the mediating role of job crafting in the relationship between perceived overqualification and radical creativity, managers should authorize job crafting for overqualified employees. According to COR theory, individuals protect their resources mainly through resource acquisition and avoiding loss (Zhang & Cao, 2020). In the process of job design for overqualified employees, managers should appropriately reduce the work control and provide them with free space for job crafting. Managers need to understand the demands of overqualified employees and provide them with appropriate work resources based on their needs. In this way, employees who perceive overqualified could be motivated to take the initiative to job crafting. Additionally, Tang & Naumann (2016) proposed that organizations should formulate incentive policies to encourage employees to make radical innovations to gain competitive advantages and compensate employees for such efforts. Zhang et al. (2021) also believed that work-related incentives could help employees to develop radical creativity. Therefore, managers should formulate a reasonable reward structure for job crafting, and induce the motivation of job crafting among overqualified employees, thus enabling them to take risks, try new things, connect ideas from different sources, and persist until they break through the critical point (Gilson & Madjar, 2011). Besides, the overqualified individuals should improve their integration ability to cope with the tension of their overqualified situation, not only to deeply understand the antagonism between various work designs in the job task, but also to explore the potential power of job redesign, and accurately choose reasonable methods to control the contradictory tension between things.

Thirdly, organizations should also pay attention to the cultivation of high level of supervisor-subordinate guanxi. Based on COR theory, when employees perceive that they have sufficient resources, they will deem that they are valued by the organization (Jiang et al., 2019), thus affect their behaviors (Dou et al., 2021). From the perspective of managers, they could develop and maintain a good personal relationship with overqualified employees through strengthening interaction, thus to establish a high level of trust with each other (Yu et al., 2015), so as to make the overqualified employees get more resources and promote them to

job crafting. As the saying of China goes, “Good granaries know courtesy; well-fed granaries know honor”, only when employees can get resource support and resource guarantee, can they be free from their responsibilities (Dou et al., 2021) and dare to conduct job crafting. From the perspective of overqualified employees, they need to understand the implicit rules governing the operation of Chinese society, such as favors and guanxi, which hidden under formal rules (Liu et al., 2017), and maintain a good relationship with leaders. In this way, they can participate in job crafting with a relaxed and positive attitude. In short, managers should be aware that, employees who perceive overqualified does not always bring negative impacts, high level of supervisor-subordinate guanxi can help to enhance the trust and resource perception of overqualified employees, thus promote them to job crafting. Finally, they can put forward more innovative ideas and get positive effects.

### Limitations and directions for Future Research

This study had some limitations. Firstly, we collected data from a single source, especially the measurement of radical creativity is self-evaluation by employees, this may lead to the data deviated from the actual situation. Future research will adopt supervisor and subordinate pairing method to avoid potential bias. Secondly, the influence of team perceived overqualification was ignored. Prior researches have shown that team perceived overqualification can stimulate higher performance requirements of employees who perceive overqualified, thus improving their performance (Zhang & Li, 2020). Therefore, future research should further explore the role of team perceived overqualification in the above mechanism. Thirdly, supervisor-subordinate guanxi focused on the individual level. Due to the variability and complexity of the environment, employees not only need to perform their responsibilities, but also need to deal with the complex external environment (Li, Zhou et al., 2020; Li, Mei et al., 2020), which requires employees to have more knowledge and skills (Homburg et al., 2009). It is conducive to reducing perceived overqualification. Therefore, organizational factors will be further considered to investigate the mechanism of perceived overqualification on employee behaviors in the future, so as to provide diversified theoretical explanations for the current research status and provide more effective guidance for the management of employees who perceive overqualified.

### Conclusions

The phenomenon that employees perceive overqualified seems to be increasingly prevalent around the world.

Through this study, we have shown several crucial findings. First, perceived overqualification has a negative effect on radical creativity, and job crafting could partially mediate their relationship. Second, supervisor-subordinate guanxi moderate the relationship between perceived overqualification and job crafting. Third, supervisor-subordinate guanxi can further moderate the mediated relationship. We consider that it contributes to deepening perceived overqualification and radical literature by investigating the mediating and moderating factors between perceived overqualification and radical creativity. Our research also provides the basis for practical recommendations for increasing the overqualified employee's radical creativity.

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**Author contributions** All authors have made significant intellectual contributions to the manuscript and are recognized for publication of the submitted version.

**Data Availability** The raw data supporting the conclusions of this study will be made available from the corresponding author on reasonable request.

## Declarations

**Compliance with Ethical Standards** Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent was obtained from the participants and the participants were all over 18 years old.

**Conflict of interest** The authors declare that they have no conflict of interests.

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