


# How and When Telework Improves Job Performance During COVID-19? Job Crafting as Mediator and Performance Goal Orientation as Moderator

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**Purpose:** Literature shows that it is a paradox whether employees can achieve performance in telework, especially during COVID-19. Our aim is to clarify the relationship between telework and employees' job performance through a moderated mediation model.

**Methods:** This study employed two-wave surveys with the aim of reducing the potential risk of common method bias. The 1309 participants of the survey were mainly employees who used telework during COVID-19, and they were mostly in positions such as product design and scheme planning. SEM was used to test the hypotheses.

**Results:** Results from two-wave surveys of 1309 Chinese employees indicated that telework positively influenced job performance via job crafting. That is, job crafting played a mediating role between telework and job performance. And performance-prove goal orientation positively moderated the relationship between telework and job crafting but performance-avoid goal orientation negatively moderated the relationship between them.

**Conclusion:** This study shows that telework can improve job performance through job crafting in COVID-19, in response to the paradox implied in the literature. In addition, we use COR theory to explain the role of performance goal orientation and job crafting in telework. We add these variables to the theoretical framework of COR theory, thereby enriching the theoretical research from the COR theory perspective.

**Keywords:** COVID-19, telework, job crafting, performance, performance goal orientation

## Introduction

The term “telework” refers to distributed work and virtual work that are revolutionary and innovative modes, which are becoming effective ways to avoid major crises and market risks.<sup>1</sup> Not incidentally, the spread of COVID-19 has brought a major blow to individuals, enterprises and even society, and isolation has been proven to be an effective means of halting the spread.<sup>2</sup> Facing the fierce global competition and environmental uncertainty, enterprises not only need to strictly prevent the spread of COVID-19 through organizational isolation, but also hope to find effective ways to maintain performance. According to several forward-thinking companies, telework is a good way to achieve the expected goals in COVID-19.

Telework is not a product of COVID-19, but it has garnered widespread attention as a result of the crisis' catalytic effect, which prompts us to reassess its significance. However, whether implementing telework can improve employee performance is

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a concern of the organizations. Scholars investigated the relationship between telework and performance,<sup>3,4</sup> and most of them acknowledged its positive role.<sup>5,6</sup> They regarded that flexible telework provides employees with more independence<sup>7</sup> as well as improving job autonomy and job engagement.<sup>8,9</sup> Telework was also considered to be an effective way to reduce job stress and turnover intention.<sup>10</sup> These were viewed as critical methods for improving employee performance.<sup>11</sup> Recently, literature emerged that offers contradictory findings. They argued that telework provides much freedom for employees,<sup>12</sup> which make it difficult for them to be monitored and interfered with. As a result, employees are more likely to deviate, thus lowering work efficiency and performance.<sup>13</sup> In addition, employees lack access to key information due to a decrease in information exchange in telework,<sup>14</sup> which improves the fuzziness of information knowledge and ultimately reduces product performance. Therefore, previous studies have failed to demonstrate a consistent association between telework and job performance.

Recently, there has been increased emphasis on exploring different mechanisms to reveal the specific relationship between telework and job performance.<sup>7,9</sup> Conservation of resources theory (COR) tries to explain the origins of individual stress and provide measures to alleviate it.<sup>15</sup> COR theory regards that when individuals are under resource pressure, they tend to protect and acquire resources. Therefore, whether it is a possible loss threat or actual resource loss, it will cause individual stress and pressure. It should be acknowledged that telework isolates employees from formal workplaces, putting them further away from colleagues, leaders, organizations and other important physical surroundings. To some extent, telework decreases the availability of employees' working resources because most of their working resources come from formal workplaces. Then, according to COR theory,<sup>15</sup> when employees' working resources are depleted, they have to take measures to save and obtain resources. Also, it is difficult for organizations to accurately describe tasks and design efficient work specifications in telework, which requires employees to actively adjust their work. The confusion faced by us is whether and how employees will adjust their work style in telework in order to save and obtain work resources. Wrzesniewski and Dutton<sup>16</sup> put forward job crafting, which is considered to be an operational or cognitive change made by individuals in their work tasks and relationships. It is indicated that job crafting is an important way to integrate resources.<sup>17</sup> Perhaps, according to COR theory,

faced with the lack of resources, employees in telework will change their formal work processes and ways to avoid losses. In this case, job crafting may be an important measure taken by employees in telework. However, it has not been examined whether employees will carry out job crafting and achieve performance in telework. These competing streams of research highlight a fundamental tension exemplified by the question: Can telework lead to job crafting and then foster job performance?

According to COR theory,<sup>15</sup> we consider self-efficacy, emotional orientation and action orientation to be important psychological resources. Hobfoll et al<sup>18</sup> added that resource caravans and caravan passageways are one of the basic principles of this theory. In short, resources owned by individuals do not exist independently, but are interrelated and influenced like vehicles on the road. For example, individual work resources (e.g. knowledge and skills, organizational support) and psychological resources (e.g. self-efficacy and motivation orientation) are intrinsically related. Then according to this principle, individual behavior will also be influenced by the interplay of different resources. In a word, we believe that individuals with different psychological resources may show different behavioral tendencies even if they are faced with resource losses. Goal orientation reflects an individual's potential goals in the achievement pursuit situation, which can provide an individual with a way to understand and cope with the achievement situation.<sup>19</sup> Performance-prove goal orientation focuses on showing the behavior tendency caused by individuals' work ability and recognition, and performance-avoid orientation emphasizes the behavior tendency caused by individuals escaping others or negative self-evaluation.<sup>20</sup> COR theory holds that the individuals' behaviors regarding resource conservation, acquisition and cultivation depend on resource pressure and how well these resources match the current requirements or goals.<sup>21,22</sup> This is why individuals with different orientations may take different actions when faced with the same situation. Therefore, we regard performance goal orientation (prove and avoid) as a moderator.

This study makes several contributions to the current literature and practice. First, based on the paradox,<sup>5-7</sup> we clarify the relationship between telework and job performance by establishing a moderated mediation model. This not only extends the previous researches by discovering a new mechanism, but also makes up for deficiencies and responds to scholars' appeals.<sup>7,9</sup> Another important theoretical contribution is that we include telework, job crafting, goal orientation and job performance into the COR

theory framework.<sup>15</sup> Based on COR theory, we explain when and how employees in telework can avoid resource losses and achieve performance and offer a fresh theoretical perspective on understanding the relationship between telework and job performance. Finally, the practical contribution is to help firms examine the importance of telework under major crises (e.g. COVID-19).

We make indispensable and orderly arrangements. The second part is the literature review, including the construction of the theoretical framework and the hypothesis development. Specifically, we elaborate on the relationship between COR theory and these variables, as well as a series of hypotheses based on literature and COR theory.<sup>15</sup> The third part is the method, which mainly explains our sample, investigation procedure, scales and analysis strategy. The fourth part is empirical analysis, mainly including reliability and validity test, correlation analysis and structural equation model test. Finally, we discuss the results and offer several detailed theoretical and practical implications, as well as the limitations of this study.

## Literature Review

### Theoretic Framework

According to conservation of resource theory (COR), individuals have the tendency to strive to acquire, maintain, cultivate and protect their cherished resources.<sup>21,23</sup> In light of that, COR theory proposes that potential or actual loss of resources is a threat to individuals, thus they must constantly protect existing resources from loss by resource investment, so as to recover from resource loss more quickly. COR theory showed significant differences in explaining a variety of psychological and behavioral processes in individuals' daily work and life. Besides, it has gradually evolved into one of the most frequently cited theories in the field of organizational behavior,<sup>21</sup> from which many relevant research results have emerged. For example, based on COR theory, Chong et al<sup>24</sup> believed that daily COVID-19 task setbacks are stressors that will trigger a resource loss process, thus positively leading to the employee's end-of-day emotional exhaustion. Meanwhile, Guan and Frenkel<sup>25</sup> found that the supervisor-subordinate relationship can form a social resource and spill over to the workplace, affecting subordinates' work resources, job crafting and job performance. Meijerink et al<sup>26</sup> found that the relationship between employees' perceived HRM and job engagement is completely

mediated by job crafting type "increasing work resources and challenging work requirements", and has nothing to do with job crafting type "reduced obstructing work requirements".

The applicability of COR theory in the field of organizational and individual behavior, as well as the abundant literature, will provide an important theoretical basis for our research to construct the influence mechanism of telework, job crafting and job performance. In the spread of COVID-19, employees have to rely on telework to ensure the normal operation of their work. However, telework prevents them from accessing resources previously readily available, such as face-to-face communication with their leaders, temporary help from colleagues or important paper documents, or even a free printer in the office. The loss of these resources poses a threat to employees, thus motivating them to acquire resources for the purpose of reducing the loss. However, it should not be ignored that telework could bring some benefits indeed, such as flexible hours and work autonomy, which may provide effective ways to improve employees' job performance. In addition, it creates the possibility that employees can take advantage of the opportunities derived from telework to make positive changes in their work engagement, work style, and interactions with supervisors and co-workers, which is called job crafting, to reshape their work to compensate for the loss of resources and even improve their job performance. However, in terms of job crafting, it is worth noting that telework may have different effects on the employees with different performance goal orientations. In summary, drawing on COR theory,<sup>21,23</sup> this study will explore whether telework can improve employees' job performance, and further explore the mediating role of job crafting and the moderating role of performance goal orientation in the relationship between them.

## Hypothesis Development

### Telework and Job Crafting

Traditional telework is defined as the working mode away from the office or at home, and Daniels et al<sup>27</sup> later believed that telework includes the use of information and communication technologies. Based on our research background, we refer to relevant researches and regard that telework is away from the formal workplace (in a remote office or at home),<sup>4,28</sup> which includes using remote communication technologies. Job crafting is an operational or cognitive change made by individuals in their work tasks and relationships,<sup>16</sup> which reflects the

efforts made by individuals to realize person-environment fit.

Hobfoll pointed out that resources can help individuals obtain valuable things.<sup>23</sup> According to COR theory, individuals will experience work pressure when faced with resource dilemma,<sup>18</sup> which urges them to find possible ways to conserve existing resources or obtain new resources to relieve existing pressure and prepare for future work.<sup>29</sup> As mentioned above, some potential defects of telework cannot be avoided.<sup>5</sup> For example, Fonner and Roloff<sup>30</sup> pointed out that employees in remote positions keep a distance from formal organizations in time and space, which hinders the direct communication between employees and organizations. This will mainly cause obstacles for employees to obtain key resources such as relationship and task resources,<sup>14</sup> and increase the ambiguity of information they have mastered.<sup>15</sup> Therefore, when faced with the lack of organizational help and information exchange, employees in telework need to find effective ways to jump out of the resource dilemma caused by telework.

Job crafting is considered to be an important way to break through the bottleneck when individuals are faced with resource dilemma,<sup>31</sup> as employees can balance work resources and work requirements as well as acquire new resources through it.<sup>16</sup> Although employees may lose resources by telework, they can gain access to flexible working hours, reduce commuting time and costs, as well as juggling family and work, which can increase their resources to some extent. Besides, compared with individuals in formal workplaces, teleworkers have more independence,<sup>7</sup> which can inspire the intention of change through the autonomy given by telework.<sup>9</sup> Employees with these factors are more inclined to redesign their work tasks,<sup>32</sup> such as expanding task boundaries and changing task content. In addition, telework can realize the rapid exchange and feedback of information by advanced information technologies, which helps ease the rigid bureaucratic management form and enhance the flexibility of organizational management. As organizations become more flexible, employees are more motivated to break the current way of working and actively try job crafting to become more efficient and flexible. Furthermore, in order to prevent resource loss from affecting their career development, employees must adopt a growth mindset, believing that their basic qualities can be improved through their efforts.<sup>33</sup> On account of this, job crafting is the concrete embodiment of a growth mindset, which is

conducive to their career development. To sum up, we propose the hypothesis:

H1. Telework has a positive impact on employee job crafting.

### Job Crafting and Performance

Job crafting is a systematic process of goal setting and self-improvement,<sup>16</sup> embodying that employees change their work cognition, work relationship or work task positively and proactively. The researches show that self-directed job crafting behavior is often accompanied by creative activities,<sup>51</sup> which have been proven by many studies to be positively related to employee performance.<sup>34,35</sup>

Hobfoll (1989) emphasized in COR theory that the organizations believe employees can reasonably use existing resources and are responsible for them,<sup>23</sup> expecting them to bring constructive changes to the organizations.<sup>22</sup> Job crafting can help employees adjust the matching degree of work resources and requirements by increasing structural and social work resources,<sup>16</sup> and improve individual performance under the balance of resources and work.<sup>36</sup> Therefore, job crafting can be considered as a process of integrating resources or a resource coping strategy. This way can enable employees to obtain resources, which plays an important role in improving job performance. In addition, employees can also obtain psychological resources, such as psychological availability<sup>37</sup> and job meaningfulness<sup>38</sup> from job crafting. These resources can intrinsically motivate employees to work, thus investing more time and energy to improve job performance. Moreover, it is worth noting that relevant researches also provide evidence for the relationship between job crafting and individual performance. Studies have found that job crafting can help individuals maintain a high level of work enthusiasm and work engagement in tasks.<sup>32</sup> This kind of job focus can effectively improve employee performance.<sup>36</sup> In addition, Luu<sup>39</sup> found in a recent study that job crafting enables employees to fully participate in daily work related to the organization, which greatly improves their organizational citizenship behavior and promotes their performance.<sup>40</sup> Of course, scholars have also found that job crafting, a redesign of the content and boundaries of individual jobs, can effectively promote employees' job autonomy and job prosperity,<sup>41</sup> which are considered as important factors to promote performance.<sup>42</sup> Therefore, we propose the hypothesis:

H2: Job crafting has a positive impact on job performance.



### The Mediating Effect of Job Crafting

According to COR theory, when individuals experience resource loss, it will not only be accompanied by tension and stress, but also trigger the individuals' motivation to take actions to acquire resources to avoid resource loss.<sup>21,23</sup> At the same time, initial resource acquisition benefits further resource acquisition. Based on this, in order to relieve the pressure of resource loss caused by telework, employees will conduct job crafting to acquire resources. Furthermore, such resource acquisition can bring more resources to employees, thus improving their job performance.

Specifically, it can be explained from three aspects. First, due to the limitation of the physical environment caused by telework, it is not convenient to realize the communication between positions, teams and departments. Notably, job crafting can redefine work tasks and expand the boundaries of work relationships, which is conducive to the realization of cross-functional, cross-team, cross-department communication and cooperation by remote collaborative office system, so as to obtain more information and resources in a wider range to improve job performance. Meanwhile, it is important to stress that although telework may cause resource loss of employees, it provides employees with a certain degree of work autonomy and decision-making power, so that they can keep their interests, motivation and passion consistent with their work through job crafting. In this case, it is helpful to further increase their psychological resources such as job satisfaction, which has been proven by many studies to improve job performance.<sup>43,44</sup> Finally, due to the need of alleviating hurdles and constraints in the context of Covid-19 lockdown and telework, employees' alertness to useful information may also trigger the "serendipity mechanism", widely seen in scientific discoveries and technical innovations.<sup>45</sup> Thus, the changes brought by telework will help employees realize the importance of changing the current way of working, thus trying to enhance their job performance through job crafting according to their actual situation. In short, we propose the hypothesis:

H3: Job crafting plays a mediating role between telework and job performance, that is, telework can promote job performance through job crafting.

### The Moderating Effect of Performance Goal Orientation

Individuals often have different types of goal orientations, such as performance-prove goal orientation and

performance-avoid goal orientation, which exerts a powerful effect upon people's work behavior and final job performance.<sup>46</sup> Specifically, individuals with performance-prove goal orientation are eager to be recognized by others, while individuals with performance-avoid goal orientation are afraid of being negatively evaluated by others.<sup>47</sup> Therefore, we believe that job crafting in telework will show differentiation according to different performance goal orientations.

Zhou (1998) believed that individuals with performance-prove goal orientation tend to have higher achievement motivation and work autonomy.<sup>48</sup> They tend to try new working methods and improve their work through the feedback and their pursuit in their work. Therefore, when such employees are faced with a lack of resources in telework but have to meet their needs and prove their work ability, they often adopt the way of job crafting to achieve the established goals. Individuals with performance-prove goal orientation have strong expectations for success and hope to obtain ideal results through fast and direct methods.<sup>37</sup> However, due to the limitations of knowledge, technology and information resources in telework, they often adopt job crafting to open up new resource channels. According to COR theory, the individuals' behaviors of resource protection, acquisition and cultivation not only depend on the resources stress, but also correspond to whether existing resources match their goals.<sup>39</sup> Employees with performance-prove goal orientation want to be guaranteed by resources to complete performance, but they are hard to get effective resource supply in telework, so they tend to increase structural resources and social resources through job crafting. Notably, employees with performance-prove orientation tend to pay more attention to potential positive outcomes, so they can positively view telework, make full use of the autonomy, flexible time, online collaborative working and other resources it gives them, and try new things like job crafting to engage in the best work. In conclusion, we propose the hypothesis:

H4: Performance-prove goal orientation plays a positive moderating role between telework and job crafting, that is, individuals with performance-prove goal orientation are more willing to practice job crafting in telework.

However, employees with performance-avoid goal orientation usually have an evasive attitude, feel negative about daily work tasks, and are unwilling to realize self-worth through work due to fear of failure.<sup>20</sup> As mentioned, job crafting is an act of changing the content and boundaries of

a task by redesigning the work, which highlights the innovative thinking and adventurous spirit in the work. Therefore, when telework itself is fraught with uncertainty and adventure, employees with performance-avoid orientation will adopt an evasive attitude towards job crafting in telework, fearing that it will lead to failure. Besides, employees with performance-avoid orientation do not want to prove their abilities through job results, and the demand for results is not as strong as that of individuals with performance-prove orientation.<sup>49</sup> Also, they try to avoid negative comments from others and do not want to harm their own image by doing risky or unusual things. However, avoiding risk all the time often leads to a lack of growth, limited vision and boring daily routine.<sup>50</sup> Therefore, employees with performance-avoid orientation usually see telework as a threat, and lack a comprehensive understanding of job crafting. And they tend to follow normal and traditional procedures to carry out their work tasks rather than increasing emotional and cognitive involvement in telework tasks and obtaining further growth through job crafting. Finally, performance-avoid ones are usually unwilling to make changes in their work in order to avoid negative outcomes. Therefore, when faced with resource loss in telework, they will be more inclined to hold negative attitudes towards the job crafting in telework and try to avoid it, holding that it is a deviant behavior that will negatively change their work and make them lose more resources. Thus, we put forward the hypothesis:

H5: Performance-avoid goal orientation plays a negative moderating role between telework and job crafting, that is, individuals with performance-avoid goal orientation are not willing to practice job crafting in telework. The hypothesized model is presented in Figure 1.

## Methods

### Sample and Procedures

For the seriousness of COVID-19, we mainly collected data online. The subjects of the survey were mainly employees who used telework during COVID-19, and they were mostly in positions such as product design, scheme planning and product analysis. The enterprises involved were mainly from Fujian, Jiangsu, Guangdong, Zhejiang and Shanghai in China, and their main business scope was exhibition, e-commerce and tourism. In order to correctly examine the causal relationship among variables, we collected data in late February 2021 by two-time codes, which took a total of 6 months. We used random sampling because it could help us approach the overall characteristics. Before the investigation, we communicated with the managers to seek the participation consent from these teleworkers. With the help of these managers, we sent out the questionnaires. In the first stage, employees were mainly allowed to complete the telework, prospective personality and performance goal orientation scales. And in the second stage, employees were mainly allowed to complete the job crafting and job performance scales. Each participant was numbered so that the next questionnaire could be accurately matched. Our principle of distribution and recovery were that the first phase of distribution was universal and all of the data were recycled because we need more participants, and the distribution of the second stage depended on the completion of the first stage. For example, we would not continue to distribute the questionnaires to the participants who have missed and not completed. Finally, all questionnaires were screened and then made into a database. A total of 1744 questionnaires

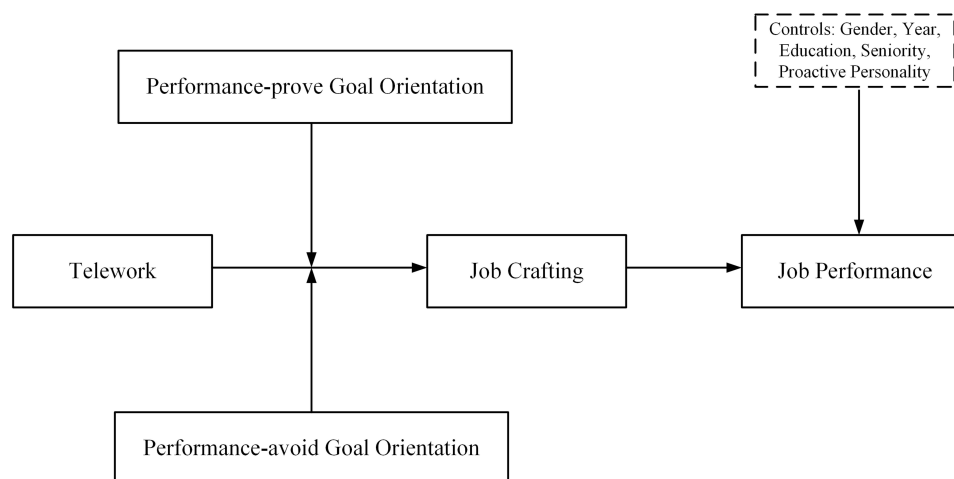


Figure 1 Theoretical model.

were collected, of which 1309 were valid, with an effective rate of 75.05%. Table 1 shows the demographic characteristics of the sample.

## Measures

The scales used in this research are primarily referred to mature foreign scales, and a five-point Likert scale was used, with scores ranging from 1 (strongly disagree) to 5 (strongly agree). Two bilingual professors were asked to translate the original English scales into Chinese individually, and two other bilingual professors then compared the translations to the original and determined which version to use.

### Telework

Currently, the main methods of measuring telework are asking participants if they are teleworkers and then coding the percentage of total hours in telework per week.<sup>51,52</sup> We used the second measure, including a separate item to collect information about how often they work at home per week. Our question was: On average, how many days a week do you work at home during COVID-19? This measure has been adopted in many studies and proved to be feasible.<sup>52</sup> We found that affected by COVID-19, the participants we surveyed worked at home for 3.36 (SD = 1.262) days per week.

### Job Crafting

Drawing on the scale developed by Tims et al,<sup>53</sup> it contains 15 items, typical items such as “I try to improve my working

ability” and “I try to deepen my professional skills”. The Cronbach’s alpha was 0.956 in this study.

### Performance Goal Orientation

The scale was developed by Vandewalle and Cummings.<sup>54</sup> The performance-prove goal orientation consists of four items, a typical item such as “I show my performance to others better than my colleagues”, the Cronbach’s alpha was 0.764 in this study. Performance-avoid goal orientation includes 4 items, a typical item such as “I will avoid new tasks that may make me appear incompetent”, and the Cronbach’s alpha was 0.846 in this study.

### Job Performance

The job performance scale was referred to Chen et al<sup>55</sup> based on the Chinese situation. The scale consists of 4 items, a typical item such as “My work performance always meets the expectations of leaders”. The Cronbach’s alpha was 0.784 in this study.

### Control Variables

Considering that job crafting and job performance may be influenced by gender, age, educational level, seniority and prospective personality of individuals,<sup>32,56,57</sup> we contained these as control variables to make the results more reliable. Prospective personality: Seibert et al<sup>58</sup> revised this scale on the basis of Bateman and Crant.<sup>59</sup> The scale consists of 10 items, typical items such as “I have been looking for new ways to improve my current work and life.” and

**Table 1** Basic Characteristics of Sample

| Variables | Types         | n   | Freq  | Variables | Types         | n   | Freq  |
|-----------|---------------|-----|-------|-----------|---------------|-----|-------|
| Gender    | Male          | 719 | 54.9% | Firm type | Service       | 173 | 13.2% |
|           | Female        | 590 | 45.1% |           | E-commerce    | 549 | 41.9% |
| Age       | < 30          | 306 | 23.4% |           | Culture       | 247 | 18.9% |
|           | 30~40         | 587 | 44.8% |           | Other         | 340 | 26.0% |
|           | 40~50         | 340 | 26.0% | Scale     | < 100         | 176 | 13.4% |
|           | > 50          | 76  | 5.8%  |           | 101~200       | 394 | 30.1% |
| Education | High school   | 91  | 7.0%  |           | 201~300       | 478 | 36.5% |
|           | College       | 395 | 30.2% |           | > 300         | 261 | 20.0% |
|           | Bachelor      | 644 | 49.2% | Firm age  | < 3 years     | 195 | 14.9% |
|           | Master/Doctor | 179 | 13.7% |           | 3 ~ 6 years   | 447 | 34.1% |
| Seniority | < 3 years     | 213 | 16.3% |           | 6 ~ 10 years  | 517 | 39.5% |
|           | 3 ~ 6 years   | 645 | 49.3% |           | > 10 years    | 150 | 11.5% |
|           | 6 ~ 10 years  | 340 | 26.0% | Location  | East China    | 475 | 36.3% |
|           | > 10 years    | 111 | 8.5%  |           | Central China | 147 | 11.2% |
| Location  | East China    | 475 | 36.3% |           | South China   | 591 | 45.2% |
|           | Central China | 147 | 11.2% |           | Other         | 96  | 7.3%  |
|           | South China   | 591 | 45.2% |           |               |     |       |
|           | Other         | 96  | 7.3%  |           |               |     |       |

“Wherever I am, I am a powerful force for constructive change.” The Cronbach’s alpha was 0.908 in this study.

### Methodology and Analysis Strategy

Because we proposed a moderated mediation model, the structural equation model (SEM) implemented by Mplus 7.4 was used in hypothesis testing. SEM is a method of establishing, estimating and testing causality models. The model contains both obvious variables that can be observed and potential variables that cannot be directly observed. SEM can replace multiple regression, path analysis and other methods, and analyze the effect of individual indicators on the population and the relationship between individual indicators. Simply speaking, SEM is a widely used method in current researches. We followed the paradigm of empirical researches. First, the reliability and validity of the questionnaire were tested. Subsequently, we analyzed the correlation between variables, which provided a harbinger for some hypotheses. Finally, we used SEM to evaluate the model and verify these hypotheses with the help of literature.<sup>60</sup>

the Omega value of all factors was greater than 0.7, which indicated that all items in the questionnaire had high credibility. In addition, the factor loading, construct reliability (CR) value, and average variance extracted (AVE) of all items satisfied these requirements,<sup>61</sup> which indicated that the questionnaire had good structural validity. In addition, it can be seen from Table 3 that the AVE of each variable in the study was greater than 0.5, and the correlation coefficient between variables was less than the square root of AVE, so the scales in this study had high discrimination validity. Moreover, the Harman single-factor test was used to test for common method bias.<sup>62</sup> The first main component obtained without rotation accounted for 28.72%, which did not exceed 40%. Therefore, common method bias did not exist in this study. We also conducted confirmatory factor analysis, in order to investigate discriminant validity (Table 4).<sup>63</sup> The results indicated that the single-factor model exhibited the worst fit, whereas the goodness of fit of the six-factor model satisfied requirements ( $\chi^2/df = 2.660$ , CFI = 0.959, IFI = 0.956, TLI = 0.960, RMSEA = 0.036).<sup>64</sup>

## Results

### Reliability and Validity Test

The software like SPSS 24.0, Mplus 7.4 and Jamovi were used for reliability and validity test. In this study (Table 2),

### Endogeneity Test

We used the SEM with strict verification strategy for theoretical verification. One of the advantages of the SEM is that the estimation of the relationship between

**Table 2** Quality Criteria of Constructs

| Measures | Loading  | Omega | CR    | AVE   | Measures | Loading  | Omega | CR    | AVE   |
|----------|--|-------|-------|-------|----------|--|-------|-------|-------|
| PP       | 0.700<br>0.835<br>0.717<br>0.721<br>0.748<br>0.700<br>0.728<br>0.755<br>0.738<br>0.743 | 0.908 | 0.923 | 0.546 | JC       | 0.793<br>0.781<br>0.786<br>0.802<br>0.785<br>0.821<br>0.798<br>0.792<br>0.776<br>0.848 | 0.956 | 0.960 | 0.620 |
| PPGO     | 0.781<br>0.757<br>0.784<br>0.740   | 0.765 | 0.850 | 0.586 |          | 0.808<br>0.791<br>0.760<br>0.743   |       |       |       |
| PAGO     | 0.842<br>0.825<br>0.818<br>0.824   | 0.847 | 0.896 | 0.684 | JP       | 0.725<br>0.797<br>0.775<br>0.767<br>0.777  | 0.784 | 0.860 | 0.607 |

**Abbreviations:** PP, proactive personality; JC, job crafting; JP, job performance; PPGO, performance-prove goal orientation; PAGO, performance-avoid goal orientation.



Table 3 Descriptive Statistics and Correlation Analysis

| Variables    | M    | SD   | 1       | 2        | 3      | 4        | 5            | 6        | 7            | 8            | 9            | 10           |
|--------------|------|------|---------|----------|--------|----------|--------------|----------|--------------|--------------|--------------|--------------|
| 1. Gender    | -    | -    |         |          |        |          |              |          |              |              |              |              |
| 2. Year      | 2.14 | 0.84 | -0.029  |          |        |          |              |          |              |              |              |              |
| 3. Education | 2.70 | 0.79 | 0.028   | 0.048    |        |          |              |          |              |              |              |              |
| 4. Seniority | 2.27 | 0.83 | -0.074* | 0.414*** | -0.003 |          |              |          |              |              |              |              |
| 5. PP        | 3.35 | 0.61 | 0.006   | 0.032    | 0.064* | 0.015    | <b>0.739</b> |          |              |              |              |              |
| 6. TW        | 3.36 | 1.26 | -0.057* | -0.001   | -0.019 | 0.108*** | 0.053        | -        |              |              |              |              |
| 7. JC        | 3.55 | 0.77 | 0.033   | 0.015    | -0.045 | 0.071*   | 0.256***     | 0.390*** | <b>0.787</b> |              |              |              |
| 8. JP        | 3.41 | 0.69 | -0.039  | 0.034    | -0.032 | 0.116*** | 0.184***     | 0.346*** | 0.435***     | <b>0.779</b> |              |              |
| 9. PPGO      | 3.48 | 0.76 | 0.027   | -0.002   | 0.023  | -0.011   | 0.053        | -0.002   | 0.073**      | 0.131***     | <b>0.766</b> |              |
| 10. PAGO     | 2.82 | 0.94 | 0.013   | -0.018   | -0.007 | -0.006   | -0.079**     | 0.027    | -0.141***    | -0.095**     | -0.582***    | <b>0.827</b> |

Notes: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001; Diagonal bold is the square root of average variance extracted (AVE).

Abbreviations: PP: proactive personality; TW: telework; JC: job crafting; JP: job performance; PPGO, performance-prove goal orientation; PAGO, performance-avoid goal orientation.

latent variables is not affected by the measurement error. At the same time, we adopted the data collection method of lagging dependent variable to control the reverse causality between dependent variable and independent variable. Before using SEM for hypothesis testing, we used Durbin-Wu-Hausman test to evaluate endogeneity.<sup>65</sup> As JC was an endogenous latent variable, it can be known from the simultaneous equation that only the endogeneity of moderation variables (PPGO and PAGO) needs to be tested. Firstly, in order to obtain the residual error of the moderation variable, PPGO and PAGO were used as dependent variables, TW and other control variables were used as independent variables for regression analysis, and the residual error of the moderation variable was obtained and retained. Secondly, taking JP as the dependent variable, the independent variable, the control variable, the moderation variable and the residual error were regressed. Regression analysis showed that the effect of the residual of the moderation variable on the dependent variable was not significant ( $\beta = 0.062, p > 0.05; \beta = 0.015, p > 0.05;$ ), which indicated that there was no significant endogeneity in this study.

### Correlation Analysis

The software SPSS 24.0 was conducted for correlation analysis. Table 3 indicates that there was a significant positive correlation between telework and job performance ( $r = 0.346, p < 0.001$ ). Telework and job crafting ( $r = 0.390, p < 0.001$ ), and job crafting and job performance were also significantly positively correlative ( $r = 0.435, p < 0.001$ ). It was worth noting that prospective personality was significantly positively related to job crafting and job performance ( $r = 0.256, p < 0.001; r = 0.184, p < 0.001$ ), so we could prove that it was reasonable to contain prospective personality as the control variable. The confirmation of the correlation between these variables provided preliminary evidence for our hypotheses and laid a foundation for subsequent researches.

### Hypotheses Testing

We constructed a structural equation modeling (SEM) to check our model, and the software Mplus 7.4 was conducted for testing. Referring to some literature methods, we mainly used the path model to evaluate these hypotheses.<sup>60</sup> The mediation effect was tested by repeated sampling of 5000 times with deviation correction nonparametric percentile Bootstrap method, and the confidence interval was set to 95%. As shown in Figure 2, telework had a significant positive impact on

**Table 4** Results of Confirmatory Factor Analysis

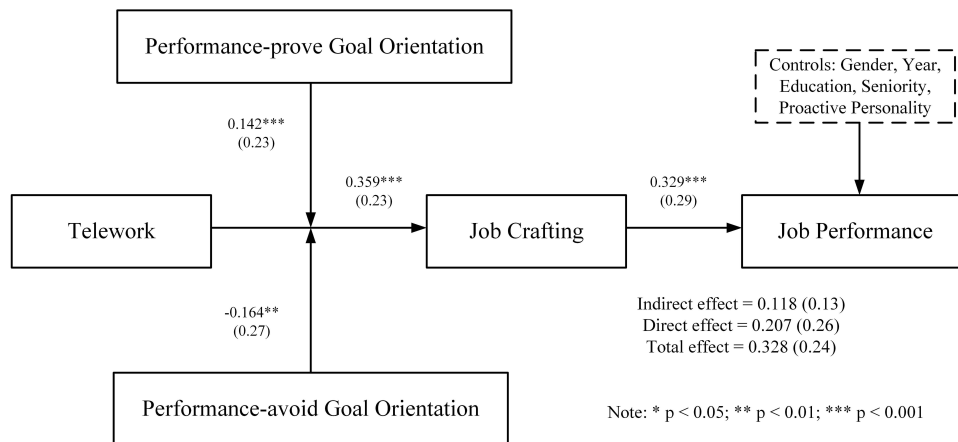
| Models                                       | $\chi^2/df$ | CFI   | TLI   | IFI   | RMSEA |
|--|-------------|-------|-------|-------|-------|
| Six-factor model: PP; TW; JC; PPGO; PAGO; JP | 2.660       | 0.959 | 0.956 | 0.960 | 0.036 |
| Five-factor model: PP; TW; JC; PPGO+PAGO; JP | 3.227       | 0.945 | 0.941 | 0.945 | 0.041 |
| Four-factor model: PP; TW; JC; PPGO+PAGO+JP  | 5.732       | 0.742 | 0.813 | 0.833 | 0.060 |
| Three-factor model: PP; TW+JC; PPGO+PAGO+JP  | 5.730       | 0.822 | 0.875 | 0.883 | 0.060 |
| Two-factor model: PP; TW+JC+PPGO+PAGO+JP     | 9.893       | 0.778 | 0.765 | 0.779 | 0.082 |
| One-factor model: PP+TW+JC+PPGO+PAGO+JP      | 18.048      | 0.574 | 0.550 | 0.575 | 0.114 |

**Abbreviations:** PP, proactive personality; TW, telework; JC, job crafting; JP, job performance; PPGO, performance-prove goal orientation; PAGO, performance-avoid goal orientation.

job crafting ( $\beta = 0.359, p < 0.001$ ), which showed that employees will try to remold their jobs in telework, assuming that H1 was supported. The standardized coefficient between job crafting and employees' job performance was 0.329 ( $p < 0.001$ ), which indicated that job crafting had a significant positive impact on employees' job performance, that was, job crafting helped employees achieve more performance in their work, so H2 was supported. We also found the indirect effect of telework on job performance through job crafting was significant ( $\beta = 0.118, SE = 0.013, 95\% CI[0.094, 0.145]$ ), with a total effect of 0.328 ( $SE = 0.024, 95\% CI[0.277, 0.373]$ ). The mediating effect accounted for 35.98%. Therefore, H3 was confirmed again. In addition, performance-prove goal orientation played a positive moderating role between telework and job crafting ( $\beta = 0.142, p < 0.001$ ), but performance-avoid goal orientation played a negative moderating role between telework and job crafting ( $\beta = -0.164, p < 0.01$ ). Thus H4 and H5 were both confirmed again.

### Discussion

On the issue of how telework promotes job performance, we build a model including job crafting as the mediator and performance goal orientation (prove and avoid) as the moderator based on COR theory.<sup>21,23</sup> Through theoretical derivation and empirical analysis, the results support the proposed hypothesis. First, telework predicts job performance and job crafting played a mediating role. Specifically, telework is significantly and positively related to employees' job performance. This conclusion is similar to previous concerned studies.<sup>9,11</sup> In addition, we also find that telework has a significant positive impact on job crafting, which means that telework could effectively stimulate employees to practice job crafting. Previous studies believed that flexible telework provides employees with more independence,<sup>7</sup> improves their work autonomy and work engagement,<sup>8,9</sup> and our research also provide support for these conclusions accordingly. Notably, we find that telework improves employees' job performance through job crafting, thereby offering a fresh and critical



**Figure 2** Test results of SEM.

mechanism. The COVID-19 lockdown and telework modality may have some positive effects on boosting creative performance, due to the need of alleviating hurdles and constraints. In this case, individuals' alertness to useful information may also trigger the "serendipity mechanism", which is common in scientific discoveries and technological innovations.<sup>45</sup> This conclusion shows that teleworkers will make full use of the autonomy granted by the organization to try to redesign the work content and task boundaries, and improve their work performance by continuously obtaining and adjusting resources to match the work requirements. Second, individuals with performance-prove goal orientation are more willing to try job crafting in telework, because they desire to prove their abilities and maintain higher performance. On the contrary, individuals with performance-avoid goal orientation appear differently. Under the condition of telework, they are unwilling to try job crafting even faced with the resource dilemma. Our research results have not been paid attention to before, which has a number of important implications in theory and practice.

## Theoretical Implications

Our results have important theoretical implications. First, we have clarified the relationship between telework and job performance as well as its specific mechanism. Scholars conducted a lot of discussions on the relationship between telework and performance,<sup>3,4</sup> but the conclusions appeared differently. For example, Golden and Veiga<sup>5</sup> believed that telework could positively predict employee performance, while Taskin and Devos<sup>12</sup> argued that these employees cannot complete the established work tasks and performance due to the lack of direct supervision. We find that telework can improve their job performance through job crafting, which scholars have not paid attention to. Therefore, our contribution reveal the specific relationship between telework and job performance by establishing a mediating mechanism, and reconcile the contradictions existing in previous researches. In addition, scholars stressed the need to explore different influence mechanisms and conditions to reveal the specific relationship between telework and employee performance.<sup>7,9</sup> Inspired by the literature, we explore a new mediating mechanism that can explain how telework affects employees' job performance. Therefore, we move forward the research topic and respond to scholars' appeals.

Second, we expand the boundary conditions for the relationship between telework and job crafting. The

literature tended to use organizational factors as moderating variables to explore the boundary conditions. For example, Luu<sup>39</sup> believes that authentic leadership can better motivate employees to job crafting under the condition of high human resource flexibility. In addition, the organizational support and high-performance work practice can also become the moderating variables for job crafting.<sup>66,67</sup> However, these boundary factors are mainly from the organizational level, and the discussion on the individual level is insufficient. We find that employees' performance goal orientation (performance-prove and performance-avoid) plays different moderating roles between telework and job crafting, which has not been noticed before. Individuals with performance-prove goal orientation are more willing to try this innovative practice while performance-avoid ones tend to be conservative. Therefore, this study was expanded on the basis of previous studies.<sup>39,66,67</sup>

More importantly, we brought the influence mechanism and boundary conditions of telework on job performance into the COR theory framework,<sup>21,23</sup> which is a valuable effort. COR theory points out that individuals tend to strive to acquire, maintain, cultivate and protect their precious resources.<sup>21,23</sup> The investment principle is one of the contents of COR theory. It is regarded that individuals must constantly invest in resources to protect existing resources from losses, recover from resource losses and acquire new resources. This is also an explanation of a series of behaviors about resource protection taken by individuals under the pressure of resource loss. In this study, we explain how telework can improve employee performance through the mediating role of job crafting, in line with the resource investment principle of COR theory. Specifically, individuals will be faced with the loss of working resources (e.g. working facilities and physical environment) in telework. Then, according to COR theory,<sup>21,23</sup> these teleworkers may change their workflow based on the existing resources, which may increase the value of resources or acquire new resources. Therefore, our conclusion verifies the applicability of COR theory under telework, and job crafting is an important way to preserve resources. In addition, we explain the different effects of different psychological resources on resource-related behaviors in the face of resource loss. As mentioned, resource caravan is another principle of COR theory, and the core view is that the resources owned by individuals are not independent, and these resources are related and will influence each other. According to COR theory,<sup>21,23</sup> we regard performance goal orientation as an important psychological resource, and discuss its effects on individual behavior in

telework. We find that different performance goal orientations have different effects on job crafting in telework, which supports our hypothesis. At the same time, it also implies that when individuals are faced with the pressure of resource loss, psychological resources will have an impact on individual behavior, and the effects of different psychological resources are different. Therefore, the conclusion relating to the moderating effect of performance goal orientation supports the resource caravan principle of COR theory.<sup>21,23</sup> In summary, our findings extend the scope of the COR theoretical framework.

## Implications for Practice

The following suggestions are put forward. First, organizations should pay attention to the importance of telework, and it is necessary to elevate this new working style into the organization's strategic management practice. Telework provides employees with freedom, which effectively avoids meaningless time loss caused by shift work. That is, flexible time and work efficiency are positively related. In particular, the COVID-19 strikes the traditional working ways and offline transactions. Telework is not only a new and effective way in work, but also a driving force for economic recovery and development. Of course, telework puts forward new tests for enterprises. In other words, how to better monitor employees in telework is the issue organizations should pay considerable critical attention. Second, organizations should encourage employees to practice job crafting and provide a necessary resource for their behaviors.<sup>68,69</sup> For instance, organizations should provide employees with a more relaxed environment and more freedom by training empowered leadership and HRM practices. Job crafting is a new work practice, and employees may inevitably make mistakes during job crafting. This requires the organizations to provide help. For example, organizations need to tolerate and understand the mistakes in the process of job crafting, and organize employees to learn and discuss mistakes together, which provides a reference for the future. Of course, organizations cannot ignore the importance of resources to employees' innovative practices. In order to ensure that the practice can be carried out more successfully, the organization should provide necessary resources, such as skills training, relevant knowledge and information resources, etc. Finally, organizations should pay attention to recruiting and training positive goal-oriented employees, which is helpful to revitalizing the organization and improving employees' performance. When recruiting, organizations should pay more attention to their valued orientation in their career, and try to select candidates

with positive goal orientation and match their goals with organizational goals. In addition, the organization needs to actively guide employees to positive values when training. For example, organizations can build learning platforms for employees to learn about craftsmanship spirit, and encourage them to incorporate it into their daily work.

## Limitations and Directions for Future Research

Our study has several limitations that should be recognized and that inform future research. First, we need to test the reliability of results under different backgrounds. This study was carried out in China, however, whether these conclusions are applied under different cultural backgrounds is not clearly. And admittedly, the samples mainly come from the service industry and e-commerce, so it is unknown whether our conclusions can explain the laws of other industries. Thus, these need to be further tested. Notably, we carried out the study in COVID-19, thus whether these conclusions are persuasive in general conditions needs to be discussed. Second, more mediating mechanisms need to be revealed. We find that job crafting is an important mediating role to connect telework and job performance. But we believe that there may be other mediating mechanisms. For instance, whether employees will try to improve job performance through opportunity recognition and exploitation in telework could be explored in the future. Of course, telework is a double-edged sword.<sup>8</sup> Although it can improve employees' work autonomy and engagement, it is also possible to cultivate employees' inertia without organizational monitoring, which is obviously not conducive to individual and organizational development. Therefore, scholars are required to clarify the potential relationship between telework and performance from different perspectives to provide suggestions for management decisions. Finally, we find that performance goal orientation (performance-prove and performance-avoid) is an important moderating variable, but the boundary conditions between telework and job crafting need to be further explored. For example, self-monitoring personality may be related. Admittedly, there may be endogenous problems in our model, which requires adding more variables to test.

## Conclusion

In conclusion, this study verifies how telework affects employee performance in the context of COVID-19. Specifically, employees mainly improve their performance through job crafting in telework. In this process, the

employees' performance goal orientations play an important role. For example, the performance-prove goal orientation can promote their job crafting, while the performance-avoid goal orientation plays a negative role. We extend our knowledge of telework and performance to make several contributions to the current literature, and also provide guidance for the management practice.

## Ethics Statement

It was carried out in accordance with the recommendations of moral rules for empirical researches, and approved by the Academic Committee of Business School of Huaqiao University. We confirm that all participants provided informed consent. All participants were assured that their participation was voluntary and that their anonymous responses would be kept strictly confidential. On the cover page of the questionnaire, it was clearly stated that "All your responses in this survey will be collected anonymously and be kept confidentially, and only be used for research".

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## Disclosure

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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