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Analysis of the Cognitive Load of Employees Working from Home and the Construction of the Telecommuting Experience Balance Model

Ting Wei, Weiwei Wang * and Suihuai Yu

College of Art and Design, Shaanxi University of Science and Technology, Xi'an 710021, China
* Correspondence: wangweiwei@sust.edu.cn

Abstract: Adapting to working from home caused physical and psychological difficulties, leading to work–family imbalance and lower employee performance during the COVID-19 pandemic. This study intends to identify the relationship between variables affecting telecommuting experience and improve employees' perceived organizational support by constructing a balanced model of telecommuting experience. An online questionnaire survey was conducted with 142 employees from different organizations telecommuting during the epidemic in Xi'an. The NASA-TLX scale was used to quantitatively evaluate the cognitive load of employees working from home, and the Analytic Hierarchy Process method was applied to map negative experience factors with cognitive load to obtain the weight value of each factor. Finally, a balanced model of telecommuting experience was constructed through a system map. The results show that mental demand was the key factor affecting employees' telecommuting experience. A good telecollaboration system could effectively manage work tasks and reduce the psychological load of employees. Frustration and temporal demand also significantly affected employees' telecommuting experience, mainly due to work–family conflict. Adopting flexible work hours and organizing online sharing activities could reshape employees' social relationships with their families and colleagues, effectively improving the telecommuting experience. The empirical study validated the effectiveness of the telecommuting experience balance model.

Keywords: work from home; cognitive load; telecommuting experience; mental health; COVID-19

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1. Introduction

The outbreak of the COVID-19 pandemic significantly impacted work and family life. Working from home has been gradually popularized in the process of regular epidemic prevention and control [1]. It will be a challenge for the employees to adapt physically and psychologically to this work pattern. For organizations, fostering and enhancing employees' perceived organizational support (POS) enable employees to develop a positive cognitive experience of organizational support. This helps ensure the employees' loyalty to the organization and increases their work effort. Conversely, when employees feel that the organization is belittling their contributions and well-being, they reduce their emotional commitment to the organization and their performance. Therefore, ensuring POS for telecommuting employees in order to stabilize their performance has become a major challenge for organizational management during the pandemic [2].

POS is determined by the employees' subjective experience. It has been proved that POS has positive effects on employees' job satisfaction, job performance, and organizational citizenship behavior [3,4]. However, in the transition from working in the office to working from home, many changes in environmental factors lead to new problems. Previous studies have focused more on the positive and negative effects of leadership on organizational support, including employee work attitudes and job well-being [5–7]. However, little research has been performed on the new problems caused by environmental change,

especially the negative experience caused by a change in cognitive load. According to Plaskoff's view [8], an employee's work experience encompasses the overall perception of their relationship with their employer. An organization with good employee experience can enhance POS and improve employee performance [9]. Affective Events Theory (AET) also verifies this point of view. It states that (1) the employees' work environment will lead to positive or negative work events, (2) the experience of these work events will lead to emotional reactions, and (3) emotional reactions directly affect employee behavior. Scholars have discovered the different effects of telecommuting on job performance [10,11]. On the one hand, the telecommuting model gives employees more autonomy and flexibility in their schedules. Some digital tools have also improved the efficiency of coworking. However, on the other hand, the flexibility of time and space can allow work to invade the living space. This hinders the working space. Working from home causes employees to be distracted from their work and reduce their productivity [12]. After the COVID-19 pandemic, scholars focused on the study of employee experience. A qualitative study focused on the changing work stress and mental health of particular groups, such as caregivers and educators [13]. Not enough attention has been paid to the work experience of other broader employees. During the pandemic period, the factors influencing the employees' experience were various, and the employees' cognitive load, emotional response, and work performance were interactive. Given the above problems, the existing theoretical support is as follows:

(1) Firstly, the influence of employees' emotional reactions during job performance can be explained by the AET. The AET is a theory that explores the relationship between the emotional events experienced by organizational members at work, their emotional reactions, and their attitude–behavior relationships. In addition to studying the factors that influence job satisfaction, the AET emphasizes the study of telecommuting experience over time [14,15]. In the absence of appropriate workspaces, the use of remote collaboration systems and appropriate monitoring mechanisms increased; hence, the telecommuters' emotional experience was affected by working from home for long periods of time, and their job satisfaction was reduced [16]. Based on the AET, Ye et al. explored the mechanisms of team performance stress and team members' retreat behavior. It was found that team performance stresses significantly positively affected team performance in a positive manner but significantly affected the negative characteristic of individual withdrawal behavior [17]. Chang et al. examined the outcome of high-performance work systems (HPWS) in different workplace events based on the AET. The results show that different working environments affect employees' job feelings and job satisfaction. Job discretion makes employees feel positive and increases their job satisfaction. However, work intensification is seen as negative by employees and reduces their job satisfaction [18].

(2) Secondly, there is a strong relationship between cognitive load and cognitive resources. Conservation of Resources Theory (COR), which originated from the exploration of the causes of stress, has been widely used in organizational behavior research to explain behavioral motivation through individual resource stocks and their dynamics. COR theory has become one of the important theories for understanding the psychological and behavioral motivations of employees. In recent years, in-depth research has been conducted mainly in the areas of job burnout, work–family conflict, and recovery experiences. COR theory emphasizes the interaction of multiple resources, the dynamics of resources over time, and the interpersonal flow effects of resources within organizations [19]. A shift in work patterns inevitably causes organizational employees to change their perceptions and needs. From the perspective of COR theory, Darouei et al. studied how working from home affects time pressure, work–family conflict, and daily well-being. The results found that lower levels of work and family conflict are associated with lower levels of time pressure among employees. In addition, the experience of work–family conflict can also predict employees' participation the next day and their overall emotional state towards the organization [20]. In this study, the relationship between task load, affective experience, and job performance was explored by analyzing the cognitive load of employees while working

at home during the pandemic transition. It is urgent and necessary for an enterprise to forecast epidemic risk and organize the management quickly when emergencies arise.

How organizational support affects employee experience is largely unknown during the transition from working in an office to working from home. Employees face sudden changes in time, space, and tasks. They combine work, entertainment, and rest in one area of space and time while maintaining emotional ties with family and colleagues [21,22]. In terms of behavior, working from home affects employees' performance. Contreras et al. surveyed existing knowledge about telecommuting and electronic leadership. They found that e-leadership can promote telecommuting productivity and employee well-being during epidemics [23]. Van der Lippe and others found that workmates who worked from home had a negative impact on all employee performance and that team performance was worse when more colleagues worked from home [24]. Working from home has both advantages and disadvantages for employees and organizations; it is responsible for the decrease in employee productivity [25–27]. It has been noted that the telecommuting experience of employees working from home significantly affects job satisfaction [28]. Rasmieh et al. investigated factors affecting the negative moods of employees working from home during the COVID-19 pandemic. They found that anxiety and stress were significant negative emotions during the pandemic [29,30]. It can be seen that working from home greatly influenced both behavior and emotion in employees. People had to adjust their psychological habits during the pandemic by regulating their cognitive style to improve their mood [31]. Emotional regulation is a form of self-regulation that requires cognitive resources to be consumed. Negative emotional regulation drains the user's cognitive resources, which leads to compromised behavior and performance, ultimately reducing the user's job satisfaction and performance [32].

Therefore, the purpose of this study was to determine the relationship between variables, including cognitive load, emotional experience, and job performance, that affect the telecommuting experience of employees working from home. Our study proposes a telecommuting experience balance model that allows business organizations to mitigate negative experience problems through organizational support. It is important to have timely employee mental health interventions in organizations when COVID-19 outbreaks occur. Based on AET and COR theory, we focused on the nature and intersection of employees' telecommuting experience and employees' cognitive load. Finally, telecommuting experience improvement strategies were proposed. Traditional leadership and human resource management research has conducted more studies from the perspective of the leader. Improving employee performance by studying leadership is an indirect way to improve employee performance. This study focuses directly on the underlying influential mechanisms behind employee performance. Using the shift of work patterns as an affective event and using cognitive load evaluation as a resource fluctuation measure, we explored the balancing mechanisms of employee telecommuting experience. This study provides effective theoretical support for organizational management and risk prediction during the COVID-19 pandemic.

2. Materials and Methods

2.1. Background

To prevent the continued spread of the COVID-19 virus, the city of Xi'an, Shaanxi Province, China, closed all communities and units in the city at 00:00 h on 23 December 2021. The lockdown has lasted for approximately one month. Our study began on the fifth day of the outbreak, and the whole investigation lasted for 25 days. The first 10 days mainly of the study focused on the negative impact of telecommuting experience, and the last 15 days were devoted to validation of the telecommuting experience balance model. All employees faced work–family balance problems brought by the change of working from home. It created challenges for employee occupational health and safety. This study examines the factors affecting employees' job satisfaction and proposes improvement strategies by analyzing employees' telecommuting experience and cognitive load working from home.

2.2. Research Method

There are many problems in the analysis of cognitive load and the evaluation of telecommuting experience for employees working remotely. These are mainly manifested as: (1) the problem of telecommuting experience-variability brought about by office mode shift, which involves multiple influences such as the organizational management process; (2) the factors affecting the employees' work environment and family, which need to be captured more intuitively through comparative analysis of the influencing elements. With the cross-influence of multiple stress factors of remote work on work experience, it is necessary to capture the key stress elements to improve work experience to a greater extent.

This study proposes a balanced model of telecommuting experience for the above problems, as shown in Figure 1. First, the life experiences of employees working from home and in the office were compared and analyzed. Specific factors affecting the telecommuting experience at home were obtained and visually presented with the help of a user experience map. Second, the cognitive load of employees when they worked from home was quantified, and the types of cognitive resources affecting users' negative emotions were determined by the NASA-TLX scale. Then, the Analytic Hierarchy Process (AHP) was used to map and evaluate the factors that affect office efficiency and the cognitive load dimension; and a more fine-grained weight value was obtained. According to the weights, the ideal strategy of work–family balance was identified and the telecommuting experience balance model presented by the system map. Enterprise organizations can adjust employees' negative experiences through the system map and form an effective, sustainable mental health improvement model.

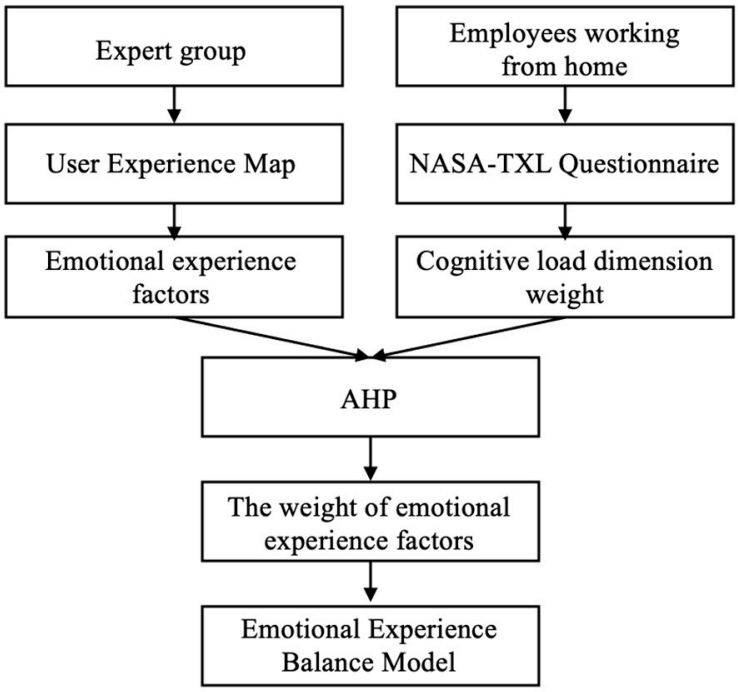

Figure 1. Process of building a balanced model of the telecommuting experience.

2.2.1. Introduction to User Experience Map

The user experience map was used to capture the influencing factors and improvement measures that affect the telecommuting experience. It emphasized the visual presentation of user experience in situational and temporal dimensions, and thus the basis for evaluation and design was obtained [33,34]. For the analysis of the telecommuting experience elements, the user experience map had the advantage of being intuitive and dynamic. A schematic representation of the user experience map is shown in Figure 2. Comprehensive telecommuting experience was based on the accumulation of different stages of experience.

By dissecting the impact of different scenarios and time changes in the interaction process on the experience, problem and opportunity points can be extracted to make employee satisfaction improvements. To code the user experience map, we used ***S*** to indicate each stage of telecommuting experience; ***B*** represents the user's behavior, ***T*** is the user's feelings under different behaviors and corresponds to different emotions; ***P*** is the user's pain points; and ***O*** is opportunity points for improving telecommuting experience. The emotion curve is an intuitive presentation of the telecommuting experience. The pain point is the key indicator for improving the telecommuting experience. We compared the experience of employees before and after working from home, and the factors affecting the telecommuting experience of employees were summarized. The results obtained will serve as the basis for the cognitive load analysis.

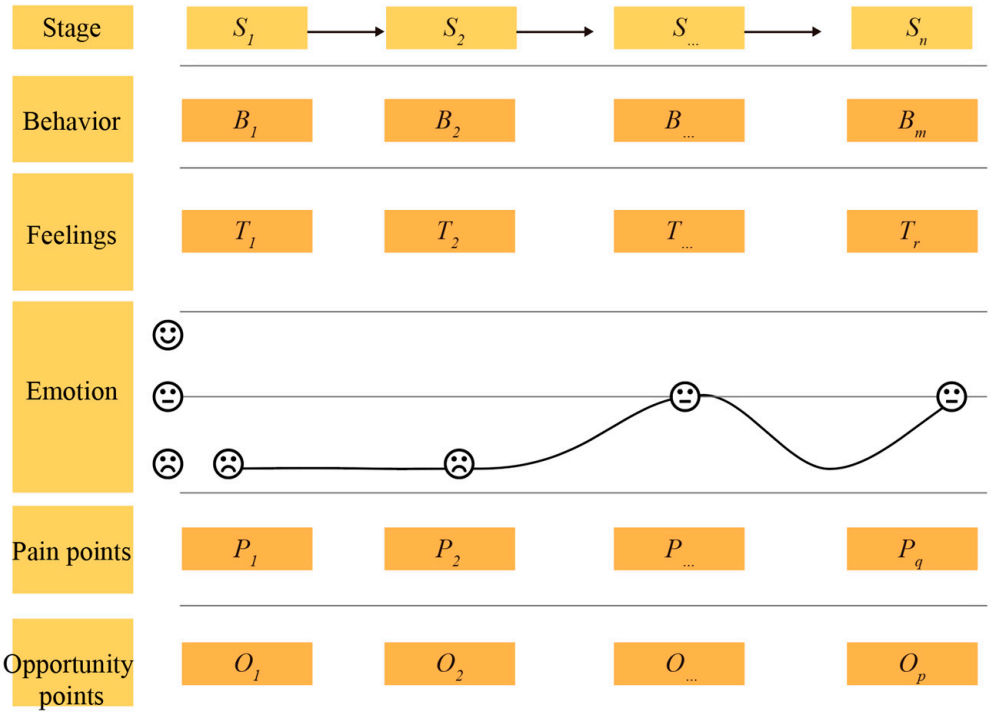

Figure 2. Example of the user experience map. Comparing the user experience of working from home and working in the office can analyze user behavior changes and emotional changes. In the pain points section, the specific factors that affect the user's telecommuting experience are available.

2.2.2. Introduction to NASA-TLX Scale

The NASA-TLX scale [35,36] was used to analyze the cognitive load weights of remote employees. It is one of the most widely used instruments for measuring subjective cognitive load to date. The user acceptance, high reliability, and strong validity of the NASA-TLX scale make it superior to other subjective assessment tools. The NASA-TLX scale assesses cognitive load in six dimensions: mental demand, physical demand, temporal demand, performance, effort, and frustration. The stress and load factors of employees working from home can be assessed more comprehensively by designing the NASA-TLX scale to capture the perceived load of employees working from home. Electronic questionnaires have numerous advantages over conventional paper questionnaires. It is simpler and more efficient to send and collect questionnaires. Meanwhile, it reduces the risk of infection from exposure to the COVID-19 virus. The cognitive load dimension with a high weight value was selected as the key indicator for improving the telecommuting experience. The scale of the NASA-TLX is shown in Figure 3.

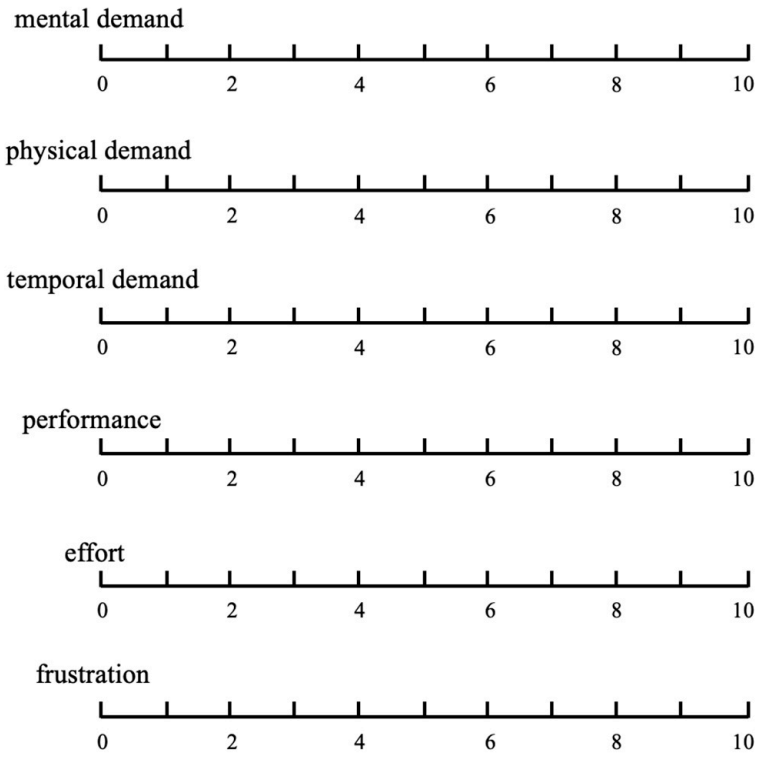

Figure 3. Diagram of the NASA-TLX scale. In the performance dimension, the better the performance, the lower the load and the closer to 0. The worse the performance achieved, the higher the load, and the closer to 10.

2.2.3. Introduction to Analytic Hierarchy Process

The Analytic Hierarchy Process (AHP) was used to prioritize remote experience improvement strategies. The AHP is a systematic and hierarchical analysis method that combines qualitative and quantitative approaches [37,38]. Depending on the nature of the issue and the overall goal to be achieved, the problem is decomposed into different component factors and combined in different hierarchical aggregations to form a multi-level model of the analysis structure. The importance ranking of each factor was determined by the relative importance weight values. The telecommuting experience factors were mapped to the dimensions of the NASA-TLX scale, and the hierarchical analysis structure model was constructed with the help of AHP. The results of the importance ranking were used to construct a telecommuting experience balance model, which was presented through a system map.

2.2.4. Introduction to System Map

A system map is a visual integration of stakeholder interactions in a service, usually presented through icons and guidelines that indicate how information flows and operates in the system [39]. A balanced model of telecommuting experience can be derived by combining quantified influencer indicators with team management stakeholders, as shown in Figure 4. The efficiency management stakeholders, interactions, key locations, and opportunity points for improving the experience are integrated, and the relationships between the elements are represented in a visual map. **A**, **B**, and **C** are stakeholders in the stakeholder map; **Jab**, **Jbc**, etc. are the interaction relationship of each stakeholder; and $\mathbf{O_1}$, $\mathbf{O_p}$, etc. are the design opportunity points in the user experience map.

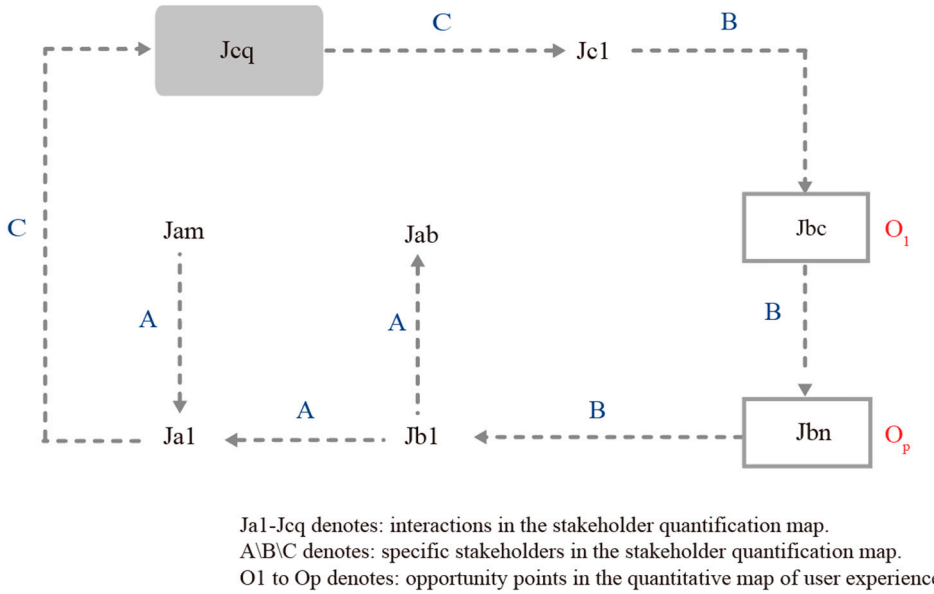

Figure 4. Example of a telecommuting experience system map.

2.3. Participants

This study was cross-sectional in that the data were quantitative data collected from home-based employees at some point during the pandemic. Unlike traditional longitudinal studies, this study focused more on strong timeliness in the context of the pandemic. Therefore, accurate and direct access to the study data was critical. The recruitment of participants was performed through online recruitment or recommendation from friends. At the same time, a certain amount of money was paid to those who met the recruitment requirements and completed the questionnaire according to the quality. The specific questionnaire questions were prepared and published through the online questionnaire platform. Ethical approval for this study was obtained from the Academic Committee of the College of Design and Art, Shaanxi University of Science and Technology. After the recruitment of completed subjects, the subjects completed and signed informed consent forms. The information provided by the researcher to all participants will be kept strictly confidential. Their privacy will not be compromised, and their data analysis will be limited to the use of this study.

We set up screening questions to better evaluate qualified users. For example, we set up simple math questions opposite to relevant questions in the questionnaire. Two main principles were used to screen eligible subjects. If participants answered the math questions incorrectly, then they would be eliminated. In addition, if inconsistent responses were found, they would also be excluded. The recommendation regarding the selection of the sample size comes from Kline [40]; the sample size should be five times the number of questions. Our questionnaire consisted of 25 questions; hence, more than 125 participants were needed to be able to support this study. Ultimately, 142 participants (73 men and 69 women) aged 26 to 55 years were asked to participate in this study. All were from small and medium-sized enterprises (less than 250 employees). All participants were employees from different organizations working from home during the closed period in the city of Xi'an. Participants were asked to complete a survey on the perceived load of working from home by means of an online questionnaire, and all questionnaires were validly returned.

2.4. Research Steps

1. Five experts were formed into a focus group to discuss and summarize the factors that influence telecommuting experience when working from home. The group consisted of 5 experts with 1 psychologist, 2 user experience designers, 1 corporate manager, and 1 employee with work-from-home experience. In order to visualize the

difference between the experience of working from home and working in the office, a telecommuting experience map was drawn.

2. After signing the consent form with the participants through the questionnaire platform [41], the NASA-TLX scale questionnaire was administered to the participants. The NASA-TLX scale was calculated in two parts. The first part was scored in each of the six dimensions. Under each dimension, there is a line divided into 10 equal segments. The participants select and mark the line on the scale that corresponds to their cognitive load level. The mark is then multiplied by 10 to obtain the initial load value for each dimension. In the second part, the six dimensions were matched two by two to form fifteen pairs. The factors that caused more cognitive load in each pair were selected. Eventually, the weights were calculated according to their contribution to the overall cognitive load. The final cognitive load value and the overall cognitive load value of each dimension were obtained after weighing the six dimensions.
3. The AHP method was used to map the negative experience factors to workload, which constitutes the index layer of the hierarchical analysis. The weight value was obtained by the experts after analysis and evaluation. The improvement strategy of work–family balance was further obtained. The balance model of telecommuting experience was constructed through the system map.

3. Results

3.1. Analysis of Telecommuting Experience Factors

By comparing the experience of the employee's work status before and after working from home, the telecommuting experience map was drawn, as shown in Figure 5. It can be noticed that employees' negative emotions increase after working from home. The main reason is the blurring of work and family boundaries in time and space [12], which leads to some additional conflicts as work and life invade and merge with each other. Working remotely may make work available anywhere and anytime, but it also triggers longer working hours and a weaker perception of the boundary between work time and family time. At the same time, the uncertainty of family life leads to a fragmentation of work time and takes away attention from work. The workspace is affected by several distractions from home, such as noise or communication with family members. Tasks are not managed effectively and in a timely manner due to remote work. Health injuries are caused by the inability to leave the house as well as prolonged sitting. Family relationships are affected due to confusion between work and life. Dilution of relationships between colleagues and loneliness is brought about by remote communication. By analyzing the employees' pain points and opportunity points, the factors affecting the telecommuting experience of working from home were summarized based on the dimensions of the NASA-TLX scale. The details are shown in Table 1.

3.2. Subjective Cognitive Load Analysis

3.2.1. Normal Distribution and Multicollinearity Analysis

The data collected from the 142 questionnaires were imported into SPSS 26.0 software(SPSS, Inc., Chicago, IL, USA), and kurtosis and skewness were analyzed to test the normality of the data. The results revealed that all items conformed to a normal distribution. The kurtosis of the data was between 0 and 2 [42], with a standard deviation of 0.404. The skewness [43] was between −1 and 0, with a standard deviation of 0.203. Tolerance (TOL) and variance inflation factor (VIF) were employed for multicollinearity diagnosis to predict multicollinearity among dimensions of cognitive load. The VIF value should be less than 5, the TOL value should be greater than 0.1, and the condition index should be less than 15. The Durbin–Watson value is around two, indicating that the data are not directly serially correlated. The results of the multiple covariance analysis in this study are shown in Table 2. Based on the VIF, TOL, and conditional indices, it is clear that there is no multicollinearity problem in all cognitive load dimension indicators.

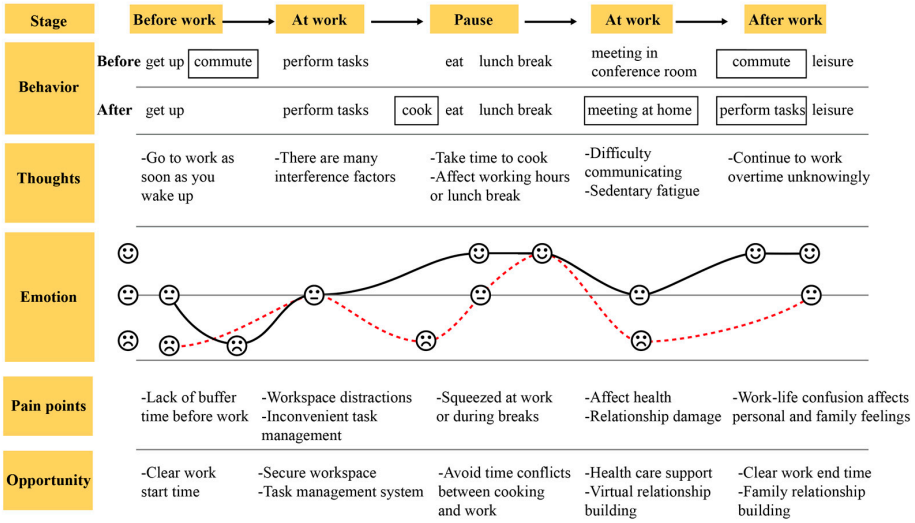

Figure 5. Example of the telecommuting experience map. In the row of behavior, the comparison of employees before and after working from home is carried out, and the difference of user behavior is marked by rectangles. In the row of emotion, the solid black line indicates the change curve of emotion before the employee works from home. The red dashed line shows the change in emotion after working from home.

Table 1. Comparison of factors influencing the telecommuting experience of working from home with the NASA-TLX.

NASA-TLX Factor	Influence Factors	Improvement Strategies (Opportunity Points)
Mental demand	Task management inconvenience	Remote collaborative task management
Physical demand	Physiological health compromised	Organizational physical health care
Temporal demand	Lack of perception of working time boundaries	Remote attendance management
	The conflict between work and cooking time	Establish a WFH schedule
Performance	Workspace disruptions	Secure workspace
Frustration	Virtual relationship shaping with colleagues	Organize online sharing events
	Relationship maintenance with family members	Spend time with family
Effort	/	/

Table 2. Multiple covariance analysis among the six dimensions of the NASA-TLX scale.

	Adjusted R Square	Std. Error of the Estimate	Durbin–Watson	Sig.	Collinearity Statistics		Collinearity Diagnostics	
					Tolerance	VIF	Dimension	Eigenvalue
(Constant)	0.966	2.16144	1.841	0.008			1	1.000
Mental demand				0.000	0.528	1.891	2	8.841
Physical demand				0.000	0.662	1.511	3	11.299
Temporal demand				0.000	0.512	1.953	4	12.117
Effort				0.000	0.593	1.685	5	13.215
Performance				0.000	0.588	1.701	6	14.596
Frustration				0.000	0.541	1.850	7	14.858

3.2.2. Reliability and Validity Analysis

Six cognitive load dimensions were subjected to reliability analysis, which yielded a Cronbach's alpha of 0.824. This indicates that the reliability indicators of NASA-TLX are good and can be used as a reference for the assessment of the degree of cognitive load. It can be seen from Table 3 that the value of CMIN/DF is 0.351, which is less than 3, indicating that the adaptation is ideal; RESEA is 0.034, which is less than 0.05, indicating that the adaptation is ideal; the values of NFI, CFI, IFI, and TLI are greater than 0.9, and the results indicate that the adaptation is good.

Table 3. Table of overall fit coefficients for the NASA-TLX scale.

CMIN/DF	RMSEA	NFI	CFI	IFI	TLI
0.351	0.034	0.991	0.981	0.981	0.979

3.2.3. Correlation Analysis

The correlations between the six dimensions of the employees' cognitive load of working from home and the total load were analyzed. The results showed that there was a significant correlation between each factor and the overall load level, as shown in Table 4.

Table 4. Correlation analysis between the six dimensions of the NASA-TLX scale and total cognitive load scores.

	Physical Demand	Temporal Demand	Performance	Effort	Frustration	Total Cognitive Load
Mental demand	0.491 **	0.634 **	0.387 **	0.374 **	0.444 **	0.761 **
Physical demand		0.540 **	0.295 **	0.296 **	0.341 **	0.671 **
Temporal demand			0.383 **	0.318 **	0.410 **	0.742 **
Performance				0.543 **	0.566 **	0.730 **
Effort					0.570 **	0.712 **
Frustration						0.764 **

Note: ** At the 0.01 level (two-tailed), the correlation is significant.

3.2.4. Exploratory Factor Analysis

An exploratory sub-analysis of the six dimensions was performed using the principal component method, and a KMO value equal to 0.819 and Bartlett's sphericity test significance of 0.000 were obtained by setting the criterion that the characteristic root is greater than or equal to 1. Two communal factors were extracted, and the factor analysis is shown in Table 5. The cumulative contribution of the two factors was 70.76%. Effort, performance, and frustration had a greater factor loading on the first factor; and temporal demand, physical demand, and mental demand had a greater loading on the second factor. It can be interpreted that temporal demand, physical demand, and mental demand are work engagement factors for working from home, while effort, performance, and frustration reflect the telecommuting experience factors for working from home. The weight values of each dimensional loading on the overall cognitive loadings were calculated by factor analysis. The standardized values of the rotated component scores of each dimension were weighted with the standardized values of the contribution of the common factors, and the weights of the six indicators of mental demand, physical demand, temporal demand, performance, effort, and frustration were obtained as 0.175, 0.153, 0.173, 0.165, 0.16, and 0.174, respectively.

Table 5. Exploratory factor analysis of the NASA-TLX scale.

	Each Factor Loading		Common Factor Variance
	F1	F2	
Mental demand	0.833	0.160	0.702
Physical demand	0.807	0.215	0.665
Temporal demand	0.789	0.291	0.755
Pperformance	0.230	0.838	0.697
Effort	0.141	0.803	0.719
Frustration	0.306	0.780	0.708
Contribution rate (%)	35.562	35.202	
Cumulative Contribution rate (%)	35.562	70.764	

3.2.5. Validation Factor Analysis

As shown in Table 6, the factor loadings of each topic corresponding to the six latent variables of mental demand, physical demand, temporal demand, performance, effort, and frustration are all greater than 0.5. This indicates that each latent variable is highly representative of the topic to which it belongs. In addition, the mean-variance AVE of each latent variable is greater than 0.5, and the combined reliability CR is greater than 0.6, which indicates that the convergent validity is ideal. The diagram of the validation factor analysis is presented as shown in Figure 6.

Table 6. Validation factor analysis of the NASA-TLX scale.

Path			Estimate	Confidence Coefficient	Measurement Error	CR	AVE
Mental demand	<—	F1	0.788	0.620944	0.379056		
Physical demand	<—	F1	0.647	0.418609	0.581391	0.793	0.5631
Temporal demand	<—	F1	0.806	0.649636	0.350364		
Effort	<—	F2	0.732	0.535824	0.464176		
Performance	<—	F2	0.722	0.521284	0.478716	0.7921	0.5599
Frustration	<—	F2	0.789	0.622521	0.377479		

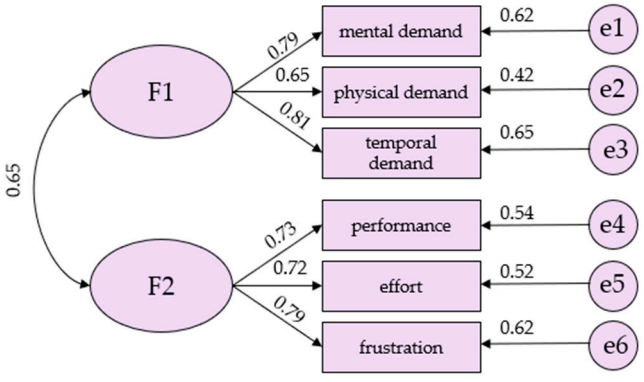

Figure 6. Diagram of the validation factor analysis.

3.3. Telecommuting Experience Balance Model

The top three load indicators of cognitive load weight value and the impact factors of telecommuting experience were selected to construct an Analytic Hierarchy Process. The experts were invited to evaluate the improvement strategies for the telecommuting experience. Eventually, the weight values of each improvement strategy were obtained, as shown in Figure 7. The final weight of the remote collaborative task management system is 0.175. The final weight of remote work attendance is 0.069. The final weight of developing working hours applicable to work from home is 0.104. Creating time with family has a final

weight of 0.052, and the final weight of 0.122 is for organizing online sharing activities. A telecommuting experience balance model was constructed based on the weight values and telecommuting experience improvement strategies, as shown in Figure 8. The stakeholders involved in this model include decision-makers, managers, administrators, and employees. These stakeholders form the basic structure of the company's positions. Among them, decision-makers represent the people above the company's executives; these people have the power to make decisions about the progress of the project. Managers represent the role of managing the progress of the entire project. Administrators represent the role of being responsible for normal office attendance and employee employment status. Employees refer to the role of performing specific project tasks. The decision-makers decide on the task management system based on the telecollaboration system to reduce the employees' mental cognitive load. The managers decide on home office hours and adopt a flexible office approach to avoid family and work timing conflicts. Administrators conduct remote work attendance management, which enables employees to enhance their time perception of commuting to balance time overload. Companies organize online sharing activities and wellness support to shape virtual social relationships between employees and provide timely care for employees' physical health issues when working from home. Based on the sustainable cycle of the balance model, employees can spend time with their families through co-creation activities, which ultimately improves the telecommuting experience of working from home.

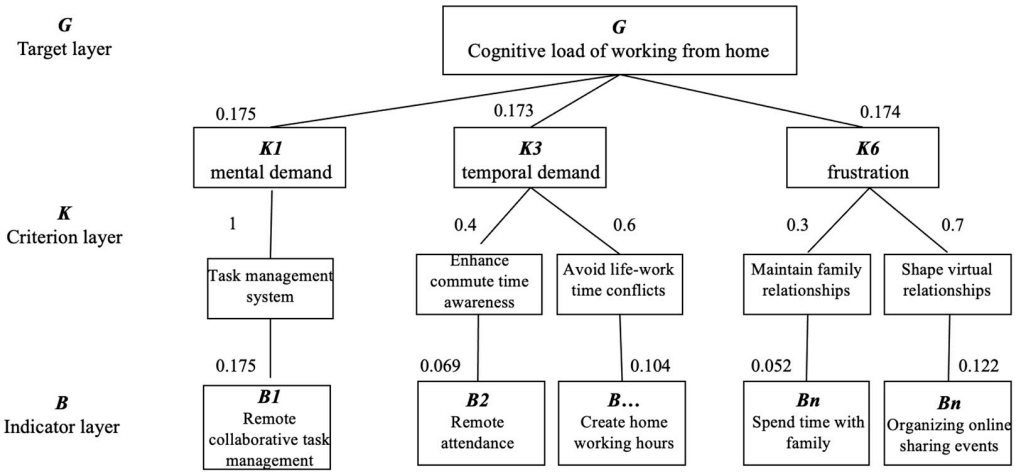

Figure 7. Hierarchical model of the factors influencing cognitive load and affective experience.

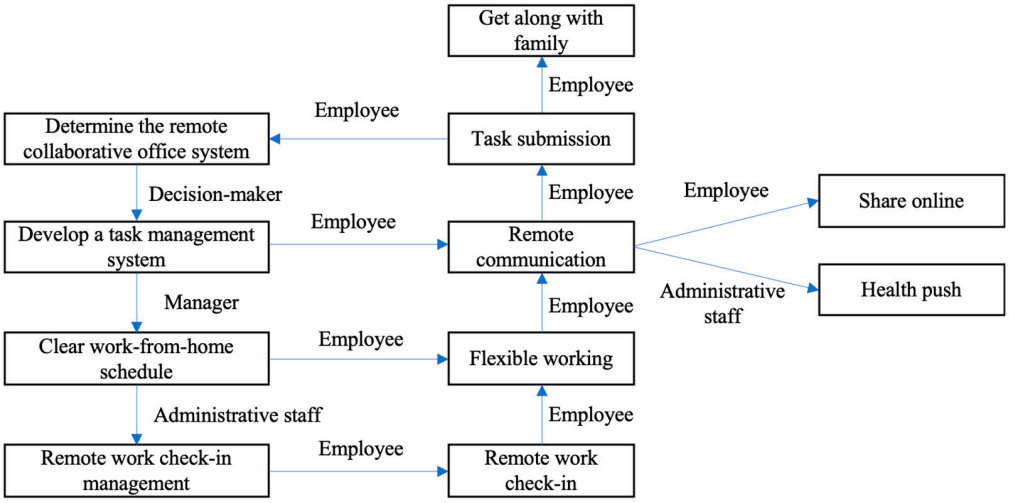

Figure 8. Telecommuting experience balance model for employees working from home.

4. Discussion

In the context of the global pandemic, the active introduction of teleworking has been proposed by governments worldwide as a necessary measure to effectively prevent the spread of COVID-19 [44]. The literature has focused more on teleworking before COVID-19, and relatively little attention has been paid to how teleworking affects employees' POS after COVID-19. In fact, employees can have different emotional experiences during telecommuting periods. For example, high job autonomy gives employees a positive experience. The lack of interpersonal interaction and emotional support brings negative experiences to employees [45]. This study presents research on how working from home affects telecommuting experience and cognitive load during the transition from office to home when an epidemic occurs. The purpose is to help organizations prevent or adjust to the negative impact of an epidemic on employees' mental health and telecommuting experience in a timely manner, enhance employees' POS, and further stabilize employee performance.

In general, by visually dismantling the process of employees' experience of working from home, it was found that the conflict caused by the overlap between life and work in time and space is the main factor that affects the telecommuting experience during a work-from-home period [46]. In time, working from home leads to the blurring of work time boundaries and loss of work time control. At the same time, having a work space away from the office increased the workload and difficulty of task management. In addition, spatial separation causes social isolation, which affects employees' relationships with colleagues and family members [47,48]. All of these factors tend to shape negative emotional experiences, but it is ambiguous to which extent these influencing elements have an impact on employees' experiences. Therefore, we investigated the cognitive load of employees working from home with the help of the NASA-TLX scale. The results showed that the three dimensions with the highest weight of the cognitive load for telecommuting employees were mental demand, temporal demand, and frustration. Combined with the AHP, we constructed a hierarchical model to evaluate the priority of strategies to improve the telecommuting experience, and we created a balanced model of user experience during the work-from-home period according to the priority ranking of the weights. The model correlates the process with stakeholders and clarifies how the enterprise organization can effectively improve the negative telecommuting experience of employees working from home through organizational management and gradually reach a balanced, sustainable model of work and family status.

Similar to the results of Liu's study, it is important for employees to improve their job performance and employee goal orientation through job shaping by teleworking [49]. It is consistent with the results of this study in encouraging the establishment of flexible office hours and shaping the social competence of teleworking employees. Blahopoulou et al. [50] studied the impact of telecommuting satisfaction on subjective well-being and self-reported performance in the first weeks of the strict blockade in Spain. One interesting phenomenon was found in the results of their study: employees with children were less satisfied with remote work and had higher subjective well-being. This is in line with our results, where the influence of family factors on working from home is a double-edged sword. It creates opportunities for employees to spend time with family members while also adding distractions to their work. According to the findings of Stempel et al. [51], people without remote work experience felt changes in all job characteristics when there was a sudden change in the work environment. Occupational well-being can be promoted when appropriate working conditions are designed and work activities are encouraged. This is also similar to the results of our study, which pointed out that organizing online sharing activities and wellness support in companies can shape healthy psychology for employees. Such findings also echo the call in He W's study to regulate emotional states and autonomously reduce the negative emotional experiences associated with telecommuting [52].

4.1. Theoretical Implications

Our results have important theoretical implications. First, we highlight the importance of the impact of teleworking on job performance and the mechanisms behind it. Many studies have been conducted by national and international scholars on the relationship between teleworking, performance, and satisfaction, with varying conclusions. For example, Golden [10] argued that teleworking could positively affect job performance, stemming from the flexibility and freedom of teleworking. On the other hand, Taskin [11] argued that the lack of supervision tends to make employees burn out and affects job performance. Our study finds that constructing a balanced model of employee telecommuting experience of remote work through organizational support can effectively enhance user experience and improve job performance. The results of Lan and Randall's study also showed that POS is strongly associated with employees' job satisfaction and performance [53,54], ultimately leading to more work output and contribution to the company [55]. Therefore, it can be said that organizational support can indirectly maintain employees' physical and psychological health [56,57]. In contrast, scholars have neglected to focus on the point of employee cognitive load and affective experience from the perspective of organizational support. Therefore, our contribution is to analyze both of these elements that affect the telecommuting experience and to uncover the critical load from the perspective of the cognitive load so a model to enhance work experience and efficiency through the combination of both can be proposed. Inspired by the literature on employee mental health, we focused on explaining how factors of telework impact employee emotions from an affective experience perspective. Therefore, more scholars are called to participate in the research on this topic.

Taking Xi'an X Design Company as an example, we conducted an online user interview to verify the effectiveness of the telecommuting experience balanced model for work-from-home employees. Communication was conducted for the employees' overall feelings before and after 15 days of using the telecommuting experience balance model. We found that employees showed high satisfaction with the organizational support and team management approach provided by the company during the work-from-home period. They noted that the remote collaboration tool simplified the process of task management, saved time in work docking, and improved work efficiency. The flexible office hours gave them POS and increased trust between superiors and subordinates. It also better creates opportunities to balance life and work while avoiding conflict. The online sharing approach reactivated social interactions with colleagues, shaped new emotional experiences, and provided proactive regulation of negative emotions. Comparing the performance appraisal of the company before and after working from home, the financial officer of Company X said that the average performance level of employees during the work-from-home period increased by 10.5% compared with that during the office period. She said that she would continue to optimize and share the successful management methods of the work-from-home period in the subsequent corporate management. Although there are some deficiencies in the proposed methods, the overall train of thought is feasible.

4.2. Limitations and Future Directions

Our study has several limitations that should be recognized and should inform future research. First, we need to test the validity of this telecommuting experience model in different cultural contexts. This study was conducted in China, and it is unclear whether it applies to other countries. Second, we should also continue to expand the scope of our study. Only employees working from home in Xi'an were analyzed, which affects geographic homogeneity, and may cause bias when analyzing the data. In the future, sampling from different geographic regions in China could be explored to verify whether there are differences in employees' telecommuting experiences when working from home. Finally, given the uncertainty of an epidemic and people's adaptability to such changes over time, the impact of the length of time spent working from home on employees' telecommuting experience could affect results. These questions need to be further studied later.

5. Conclusions

The COVID-19 pandemic's impact on employees' mental health shows the cognitive load changes due to changes in employees' work situations. Mental demand, physical demand, and temporal demand are the leading indicators that reflect work engagement and its impact on job performance. In contrast, the level of performance, effort, and frustration reflect more on the telecommuting experience of employees. In particular, the level of frustration significantly affects the psychological feelings of employees working from home, and thus a negative impact on job satisfaction is generated. Mental cognitive load is still the primary factor affecting users' experience of working from home. Remote collaboration can easily cause heavier employee mental cognitive loads due to the mistakes of office equipment and collaboration tools, which affect employees' telecom-muting experience. Therefore, the decision-making and validation of the effectiveness of remote collaboration systems is a matter of careful consideration for enterprise organizations.

This study quantifies the cognitive load and telecommuting experience of employees working from home during the COVID-19 pandemic and makes an innovative attempt to propose a balanced model of telecommuting experience. The model is applicable to the sustainable management of employee mental health through organizational support in companies working from home. Employees' cognitive load and affective experience play an important role in this process. Our study found that cerebral demand, physical demand, time demand, performance level, effort level, and frustration level were all significantly related to overall cognitive load. Among them, the weights of cerebral demand, time demand, and frustration level were 0.175, 0.173, and 0.174, respectively. Our study extends the research on the influence mechanisms behind telework performance and makes some contributions to the current literature.

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