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Four serially mediating mechanisms in the relationship between COVID-19 fear and employee performance

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Abstract.
BACKGROUND: During the COVID-19 pandemic, most workers were forced to work remotely, although having no prior experience, and as a result, they were exposed to new job-related stressors.
OBJECTIVES: To examine the mediating role of job stress, work-family conflict and job satisfaction between fear of COVID-19 and job performance.
METHODS: An online questionnaire was conducted a survey of remote workers in Turkey. Responses were obtained from 351 subjects. Related scales were used to measure work-life balance, job stress, job satisfaction, and employee performance as well as fear of COVID-19. Because all hypothesis constructs can be analyzed simultaneously, structural equation modeling was used for data analysis.
RESULTS: The results showed that fear of COVID-19 affects job stress ($p = .001$; $\beta = .264$). There was a significant relationship between job stress and job satisfaction ($p = .001$; $\beta = .619$). Also, work-family conflict was affected employee job stress ($p = .001$; $\beta = .516$). Job stress had a mediator role fear of COVID-19 on job satisfaction and work-family conflict on job satisfaction.
CONCLUSION: The findings of this study provide a useful measurement model that can be used to evaluate and improve job performance and job satisfaction through work stress and work-family conflict in times of crisis such as COVID-19.

Keywords: COVID-19, job performance, job satisfaction, stress, work-family conflict

1. Introduction

Remote working is an alternative working arrangement where employees spend at least part of their working hours away from the office, often completing their tasks from home and communicating with coworkers and managers using technology [1]. This method of work has become more and more popular in recent years. According to the results of a study conducted in 24 countries in 2011, 20% of employees stated that they often work from home, while 10% stated that they work remotely [2]. More recently, another study estimated that around a quarter of the total workforce worked remotely in the pre-COVID-19 era [3]. The real increase in the number of people working remotely was during COVID-19. During this period, all governments imposed social distancing rules and banned certain industries from doing

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business. As a result, millions of workers and businesses have chosen to work remotely [4].

Pre-COVID-19, employers and workers who preferred to work remotely had different reasons. Employers preferred to work remotely to reduce office costs, employ remote talent, find cheap labor, increase productivity and increase job satisfaction [5, 6]. Employees, on the other hand, tended to work remotely to benefit from numerous benefits such as saving on travel and clothing costs, getting a more autonomous workspace, and working flexibly [5].

The remote working experience during the COVID-19 pandemic is different from the previous ones. The COVID-19 pandemic has brought about an unprecedented change in working life [7]. In March 2020, when the epidemic first peaked, many governments adopted partial or total national lockdown decisions. Many people who had no previous remote working experience had to work from home without any preparation. In this process, universities and schools were closed. Distance education was started. Therefore, all family members were forced to be at home at the same time. In addition to their job responsibilities, many employees have taken on care responsibilities such as controlling their children's education and play. In addition, equipment such as IT equipment, internet and work desk at home had to be shared among family members. In addition to all these, concerns about the health status of himself and his relatives, economic recession, potential job loss anxiety, and increasing social isolation created extra stress during the pandemic period [5, 8].

In recent years, it has been increasingly recognized that stress is one of the critical problem areas in working life. Many researchers have researched stress, especially since stress is a factor that disrupts employees' physical and mental abilities and negatively affects their health status, and reduces their performance [4, 6]. Remote workers do not have to travel every day to get to work. And these people can take care of domestic chores and care activities of those at home during break times. For this reason, remote working can eliminate some sources of stress for workers. Therefore, remote working is expected to reduce work stress [8]. However, research examining the relationship between remote work and stress has shown the opposite of this expectation. Remote working blurs the boundaries between work and family duties and causes employees to experience more stress as they have to deal with work-related problems outside of working hours [9, 10]. Remote work can act as an energy-consuming and stimulating stressor, increasing tension and causing burnout [3].

During the COVID-19 pandemic, this stress increased even more because COVID-19 is a source of stress in itself. Sudden changes and uncertainties in working life and all areas of life due to COVID-19 cause fear and stress [4, 11]. The fear of COVID-19 can occur in different ways. Infected people are afraid of social exclusion and stigma [12], while uninfected people are afraid of contacting people who have a positive test result [13]. The perceived health risk combined with the loss of job and income can lead to extreme fear. As the level of fear increases, psychological distress increases, and irrational thinking becomes easier [14, 15]. COVID-19 fear has been discussed in different aspects in past research. In these studies, it was associated with stress and anxiety [16–18], depression [15, 19], life satisfaction [20, 21] psychological effects [22], media use [23], psychological adjustment skills [24], and mental health [25] were examined. What is missing in the literature is the effect of fear of COVID-19 on working life. However, fear of COVID-19 is expected to increase work-related stress and reduce job satisfaction. Based on the described relationship between these three factors, the following mediation hypothesis was established:

H_1. Job stress mediates the relationship between COVID-19 fear and employee satisfaction.

One of the factors that mediate the fear of COVID-19 to increase work stress may be anomalies in work-life balance. Work-life balance is used to describe a state of balance between work and nonwork roles. An employee who attaches sufficient importance to work-related issues and fulfills family roles in a balanced way will not only achieve happiness in his personal life, but also will show higher performance in his working life, experience less professional stress, and increase job satisfaction and job engagement [26]. The absence of this balance between work and family life is referred to as work-family conflict (WFC). Conflict can be from work to family (WFC) or from family to work (FWC) [27]. For over 20 years, flexible working arrangements have been seen to contribute to work-life balance [28, 29]. However, empirical studies do not support this assumption [1]. In one of the early studies on remote work, Shamir and Salamon [30] emphasized that remote work has very different characteristics. Therefore the results of remote work cannot be generalized. Control of working hours and autonomy are key issues affecting WFC in remote workers. Accord-

ing to Kossek et al. [31], remote workers have higher well-being and lower WFC when controlling their working hours and workplaces.

On the other hand, WFC is on the rise as remote workers more easily connect with work-related issues outside working hours. In other words, the involvement of these employees in work-related problems by calling or e-mail conflicts with the family duties of the employees. Therefore, this causes a higher WFC rate [9]. According to past research, remote workers report longer working hours than normal workers. The main reason for this situation may be that remote workers cannot separate their family and work tasks. However, all these empirical studies examining the relationship between teleworking and work-family balance were conducted before the pandemic. There was little evidence of the relationship between these two factors in the COVID-19 crisis. Different results were obtained in these studies [32–34]. Despite the lack of research in this area, it is not surprising that work-family conflict is high during the COVID-19 era. Because an increase in the time spent on work or family reduces the performance of the other and increases the tension between these two factors. Extra challenges such as duty of care, social isolation, and COVID-19 fear during the COVID-19 pandemic can cause employees to experience more stress [32]. As schools, kindergartens, and care centers were closed during this period, remote workers with children also had to take on additional responsibilities for the care of their children. According to the conservation of resource theory, they need to spend more resources on the problem area when employees encounter a problem at work or at home [36]. For example, having to learn new technologies to work remotely requires dedicating more resources to the business side and increases stress. Or, responsibilities for the care of children at home due to the closure of schools require increasing the resources allocated to the family side. This can increase stress in one area, which can spill over into another area [37]. In addition, increased psychological distress and anxiety due to COVID-19 increase the likelihood of work-family conflict [38]. This negative situation leads to a rise in job stress [39] and a decrease in job satisfaction. Using the evidence between work-family conflict, fear of COVID-19, job stress, and job satisfaction in the literature, the following two mediator hypotheses were established:

H_2. Work-family conflict and family-work conflict of remote workers mediate the relationship between COVID-19 fear and job stress.

H_3. Job stress mediates the relationship between work-family conflict and family-work conflict of remote workers and employee satisfaction.

The social isolation in remote workers in normal times has increased even more due to the pandemic. There is a relationship between the feeling of social isolation and loneliness and the stress level of the employees [10]. The overload of technological tools necessary for remote working is another stressor. Employees organize virtual meetings and conferences with communication tools such as Microsoft Teams, Zoom, WhatsApp, and Slack, and share their daily work reports through these channels. The overload or complexity of these technologies causes stress for employees [40]. Increasing job stress causes a decrease in employee performance and job satisfaction [41]. Also, many studies have shown that job satisfaction is one of the strongest predictors of performance [42]. According to Schall [43], these findings also apply to remote workers. The fact that job satisfaction is associated with both job stress and performance raises the question of whether it mediates the relationship between the other two factors. Therefore, the following mediation hypothesis was established:

H_4. Job satisfaction mediates the relationship between job stress and employee performance of remote workers.

Understanding the effects of fear of COVID-19 in working life is critical to addressing the problems of remote workers. This study was proposed aiming to (a) assess the effects of fear of COVID-19 in working life among remote workers in Turkey during the pandemic, (b) identify determinants and predictors for job satisfaction and employee performance relating to COVID-19, (c) determine the serially mediating effect of job stress, work-family conflict and job satisfaction in the relationship between fear of COVID-19 and job performance. To examine the relationship between these factors, we set up a structural model and analyzed correlations between variables. We first suggested that job stress mediates the relationship between fear of COVID-19 and job satisfaction, and between work-family conflict (both WFC and FWC) and job satisfaction. Second, we claimed that work-family conflict has a mediating effect between fear of COVID-19 and work stress factors. Finally, in our model, there was a mediating effect of employee satisfaction between job stress and job performance of remote workers during the pandemic period. The structural model we created is shown in Fig. 1.

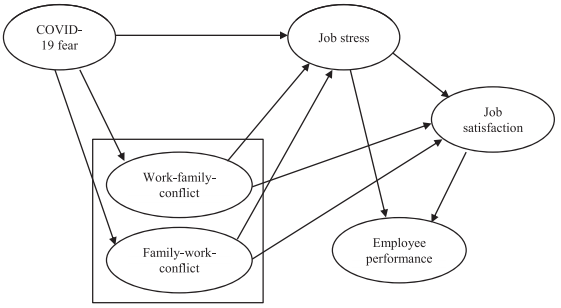

Fig. 1. Current research model.

2. Methods

2.1. Participants and procedure

In this study, an online survey was conducted to determine the factors affecting the working life of remote workers during the COVID-19 pandemic in Turkey. The data collection period was from March 15 to May 1, 2021. At the time of data collection, the Turkish government was not enforcing a rigid closure policy. Employees at public institutions were allowed to work remotely, and private enterprises were encouraged to do so. As the research proceeds, the government has chosen to shut down partially initially, then lockdown two weeks later. As a result, with the exception such as manufacturing, food, and health care, some enterprises have moved to remote working, while others have ceased operations entirely. During this time, around 85 percent of workers in the country worked remotely, either entirely or partially.

Full-time job, remote work, and being above the age of 18 at the time of the survey were all inclusion criteria. Part-time employment, traditional crafts such as knitting, and spending part of their working hours in the office were all exclusion criteria. In the selection of the sample, the convenience sampling method, one of the non-random sampling selection methods, was used. Participation in the research was based on volunteerism. An informed consent form was presented after clicking the link to the survey page. Those who gave consent were able to answer the questions in the survey.

The data collection process was completed when the number of participants reached 350. According to Kline [44], ten times the number of parameters observed in structural equation modeling is needed. Boomsma and Hoogland [45] stated that at least 200 observations are needed to give good results in structural equation modeling. Therefore, the number of participants was suitable for both conditions. The data collected with the online questionnaire were transferred to the SPSS 21.0 program.

2.2. Measures

2.2.1. Work-family conflict

We used the work-family conflict (WFC) scale developed by Netenmeyer et al. [46] to measure the level of work-family conflict of employees. This scale consists of two subscales aiming to measure the levels of work-family conflict (WFC) arising from work-life and family-work conflict (FWC) arising from family life. Both scales in question have 5 items (e.g., "The demands of my work interfere with my home and family life" and "Family-related strain interferes with my ability to perform job-related duties") to determine the conflict situation. The questions in both scales are on 5-point Likert Scale. The answers given to the questions range from 1 (totally disagree) to 5 (totally agree). The Cronbach's Alpha coefficient of the original scale was 0.88 for WFC and 0.89 for FWC [46]. The Cronbach's alpha for WFC was 0.91 and 0.90 for FWC in our study.

2.2.2. Job satisfaction

To measure the job satisfaction of the employees, we used the "Job Satisfaction Scale" developed by Brayfield and Rothe [47] and a 5-item (e.g., "I feel fairly well satisfied with my present job") short form developed by Judge et al. [48]. There are two reverse items on the scale. The questions in the scale are also in the 5-point Likert type. The answers given to the questions range from 1 (totally disagree) to 5 (totally agree). The Cronbach's Alpha coefficient of the original scale is 0.88 [48]. The Cronbach's alpha was 0.86 in our study.

2.2.3. Employee performance

The employee performance scale is based on the 8-item scale used by Sigler and Pearson [49] taken from Kirkman and Rosen [50]. However, in our study, we used a 4-item scale (e.g., "I complete my tasks on time") adapted by Çöl [51] based on two previous studies. The Cronbach's Alpha coefficient of the original scale was 0.94 [49]. The Cronbach's Alpha coefficient of the scale in the study of Çöl [51] was 0.83. The Cronbach's alpha was 0.85 in our study.

2.2.4. Job stress

We used the scale prepared by Efeoğlu [52] to measure job stress. There are seven items of 5-point Likert

type on the scale (e.g., "I feel irritable because of my job"). The answers given to the questions range from 1 (totally disagree) to 5 (totally agree). The Cronbach's Alpha coefficient of the original scale is 0.88 [52]. The Cronbach's alpha for the job-related stress scale is 0.83 in our study.

2.2.5. COVID-19 fear

We used a seven-item scale (e.g., "It makes me uncomfortable to think about coronavirus-19") developed by Ahorsu et al. [14] to measure individuals' fear levels due to COVID-19. The questions in the scale were 5-point Likert type. The answers given to the questions ranged from 1 (totally disagree) to 5 (totally agree). The Cronbach's Alpha coefficient of the original scale is 0.88 [14]. The Cronbach's alpha for the COVID-19 fear scale was 0.88 in our study.

2.3. Data analysis

We tested the collected data through SPSS 21.0 and AMOS 24.0 statistical programs. The significance level was set to be 0.05 in all these statistical analyses. Reliability was verified by calculating Cronbach's α coefficient, which reflects internal consistency. First, we examined the percentage and frequency distributions. Then, we detected the missing values in the analysis of the descriptive statistical step.

Then we performed confirmatory factor analysis. At this stage, we first looked at the goodness of fit values of the measurement model created. As goodness of fit index, we used CMIN/DF (Chi-Square/Degrees of Freedom), GFI (Goodness of Fit Index), CFI (Comparative Fit Index), NFI (Normed Fit Index), IFI (Incremental Fit Index), and RMSEA (Root Mean Square Error of Approximation). Then, the standardized regression coefficients (factor load) of the items in the measurement model were examined. Kline [53] states that factor loads greater than .50 are sufficient. Following Kline's recommendation, indicators with factor loading < .50 were removed from the measurement model.

In the third step, we tested the hypotheses using structural equation modeling. Before this step, we used Mardia's multivariate normality test to check the multiple normality distribution assumptions. For the critical value (cr), we referenced the value in Kline [53]. Since the critical value, we obtained was higher than the reference value, our data set did not meet the multiple normality assumption. We performed univariate and multivariate outlier analysis to identify outliers in the data set. First, we performed univariate outlier analysis with the z test. Since the study sample was larger than 100, we took the z-score between –4.0 and +4.0 as the reference value [54]. We then calculated Mahalanobis distances to detect outliers that violate multiple normalities. As a result of this analysis, we determined the Chi-square value at .001 significance level as 63,019. Next, we repeated the multiple normality test by removing 19 observations higher than this value from the data set [53, 55]. The new critical value we obtained as a result of the test was within the reference range. Hence, we provided the multiple normality assumption. We then ran the structural equation modeling and tested the research hypotheses with path analysis.

3. Results

46.6% of the participants were female, and 53.4% were male. The ages of the respondents ranged from 18 to 68 ($M = 34.25$, SD = 9.59). While 55.7% of the respondents were married, the rest were non-married. Almost half of the participants (44.9%) had children. While very few of these people (5.7%) had remote working experience before the pandemic. They were asked if they would like to return to the office after the pandemic to determine their approach to remote working. Those who answered yes to this question were almost equal to those who said no (Table 1).

As a result of the missing value analysis, we found that some items in the WFC and FWC scales were answered incompletely. As a result of Little's MCAR test, we decided that the missing data were randomly distributed and these data could be assigned instead ($p > 0.05$). As a result, we filled in missing data with the mean of the series.

Correlations between study variables, including demographic information, means, and standard deviations, are shown in Table 2.

We used confirmatory factor analysis to examine the construct validity of the scales. First, we created a six-factor measurement model. To test the model goodness of fit indices of the measurement model, we took the cut-off values from the studies of Kline [53] and Schumacker and Lomax [56] as reference. The initial fit index values of the model are not included in the cutoff criteria (CMIN/DF = 2.285; GFI = .83; CFI = .93; NFI = .84; IFI = .90; RMSEA = .61). Therefore, we reviewed the modification indices and made the suggested revisions. In this context, we identified variables that reduced the fit and created new covariance for those

Table 1
Respondent's profile ($n = 350$)

Variables		*F*	%
Gender			
	Female	163	46.6
	Male	187	53.4
Age			
	18–27	90	25.7
	28–37	143	40.9
	38–47	71	20.3
	48+	46	13.1
Marital status			
	Single or divorced	155	44.3
	Married	195	55.7
Education level			
	Elementary school	1	0.3
	Middle school	5	1.4
	High school	10	2.9
	Bachelor	178	50.9
	Master or PhD	156	44.6
Child			
	0	179	55.1
	1	71	20.3
	2	85	24.3
	3	12	3.4
	4	3	0.9
Remote work period			
	Before COVID-19	20	5.7
	After COVID-19	330	94.3
Volunteered for remote working			
	Volunteer	156	44.6
	Non-volunteer	194	55.4

with high covariance among residual values. After the revision, the model goodness of fit values came to the desired range. However, we observed that the standardized factor loads of the 1st and 7th items in the job stress scale were lower than the reference value of .50. That's why we looked again at the modification indices. We observed the relationship of these two items with other dimensions in the model. Theoretically, we decided to exclude these two items from the model. After the revisions, we repeated the test, and we ensured that the constructed model fits very well with the theoretical model (CMIN/DF = 2.065; GFI = .87; CFI = .93; NFI = .87; IFI = .93; RMSEA = .057). Path coefficients of all observed variables in the model were statistically significant.

Harman Single Factor test is used to measure the presence of common method bias. This technique uses exploratory factor analysis, in which all variables are loaded on a single factor and restricted so that there is no rotation [57]. This new factor is not typically included in the researcher's

Table 2
Correlations between variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1- Gender	1.53	.500	1												
2- Age	34.72	9.609	–.245**	1											
3- Marial status	1.56	.497	–.228**	.473**	1										
4- Child	1.82	.970	–.206**	.616**	.743**	1									
5- Education level	5.38	.643	–.117*	.224**	.018	.027	1								
6- Volunteered for remote working	1.55	.498	–.013	.027	–.019	.031	–.105	1							
7- Underlying illness	1.33	.646	.005	.075	.017	.043	–.057	.011	1						
8- COVID-19 fear	2.574	.827	.100	.013	.067	.024	.025	–.084	.092	1					
9- Job stress	2.623	.775	.020	–.034	–.048	–.031	.073	.046	.184**	.297**	1				
10- Performance	4.061	.633	.010	.055	.006	.056	.110*	–.044	.000	–.008	–.036	1			
11- Job satisfaction	3.733	.758	–.074	.117*	.139**	.126*	.068	.065	–.045	–.160**	–.432**	.250**	1		
12– WFC	3.042	1.071	.087	–.095	–.044	.005	.045	.137*	.035	.073	.455**	–.061	–.268**	1	
13- FWC	2.334	.970	–.003	–.001	.116*	.115*	.062	.002	.069	.121*	.198**	–.146**	–.087	.487**	1

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed). Sd = Standard deviation.

Table 3
Convergent validity results

	AVE	CR
COVID-19 fear	0.50	0.86
Work-family-conflict	0.68	0.91
Family-work-conflict	0.66	0.91
Job stress	0.59	0.88
Employee satisfaction	0.57	0.87
Employee performance	0.59	0.85

model; introduced for this analysis only and then discarded. If the newly introduced common latent factor explains more than 50% of the variance, common method bias may be present. Fuller et al. [58] have argued that if common method bias is strong enough to actually bias results, then Harman's single factor test is sensitive enough to determine if a problem exists. All variables were subtracted into explanatory factor analysis using unrotated principal components factor analysis and forcing one factor out. It shows that the obtained values differ considerably from the model and become insignificant (CMIN/DF = 12.596; GFI = .314; CFI = .098; NFI = .091; IFI = .098; RMSEA = .187). The combined factor explained less than 50% (33.6%) of the variance. Therefore, a general factor is not evident. Although the results of this analysis do not rule out the possibility of common method variance, it was assumed that common variance is not a major concern and therefore unlikely to confuse interpretations of results.

Convergent validity is an assessment made to measure the level of correlation of multiple indicators of the same construct that are in agreement. Factor loading of the indicator, composite reliability (CR), and mean variance subtracted (AVE) be considered to ensure convergent validity [59]. The value is between 0 and 1. The AVE value must exceed 0.50 to be sufficient for convergent validity. The CR value should be greater than 0.7 [60]. After analysis, "Covfear6" item was subtracted so that the AVE value exceeds .50. Hence, construct reliability was established for each construct in the study. Convergent validity analysis results are shown in the Table 3.

Discriminant validity in the study was assessed using Fornell and Larcker Criterion and Heterotrait-Monotrait (HTMT) Ratio. According to Fornell and Larcker criterion, discriminant validity is established when the square root of AVE for a construct is greater than its correlation wit the other constructs in the study. However, Fornell and Larcker criterion has recently been criticized and a new method to assess the discriminant validity that is HTMT ratio is increasingly utilized. In the present study, discriminant validity is not entirely established using Fornell and Larcker criterion (Table 4). However, when assessed using HTMT ratio, all ratios were less than the required limit of .85 [61]. Hence, discriminant validity was established (Table 5).

Structural equation models were analyzed after all the tests related to data and scales (Fig. 2). Firstly, the effect of COVID-19 fear on employee satisfaction was tested and found to be significant ($p = .009$; $\beta = .167$). When mediation analysis was performed, the effect of COVID-19 fear on job satisfaction became insignificant ($p = .93$; $\beta = .005$). Looking at the other relationships in the model, the fear of COVID-19 has a significant effect on job stress ($p = .001$; $\beta = .264$) and job stress has a significant

Table 4
Fornell and Larcker criterion

	COVID-19 fear	Job stress	Performance	Job satisfaction	WFC	FWC
COVID-19 fear	0.707					
Job stress	0.297	0.765				
Performance	–0.008	–.036	0.771			
Job satisfaction	–0.160	–0.432	0.250	0.758		
WFC	0.073	0.455	–.061	–0.268	0.825	
FWC	0.121	0.198	–0.146	–0.087	0.487	0.811

Table 5
HTMT ratios

	COVID-19 fear	Job stress	Performance	Job satisfaction	WFC
Job stress	0.26				
Performance	0.03	0.12			
Job satisfaction	0.14	0.54	0.26		
WFC	0.10	0.56	0.07	0.30	
FWC	0.07	0.11	0.01	0.05	0.01

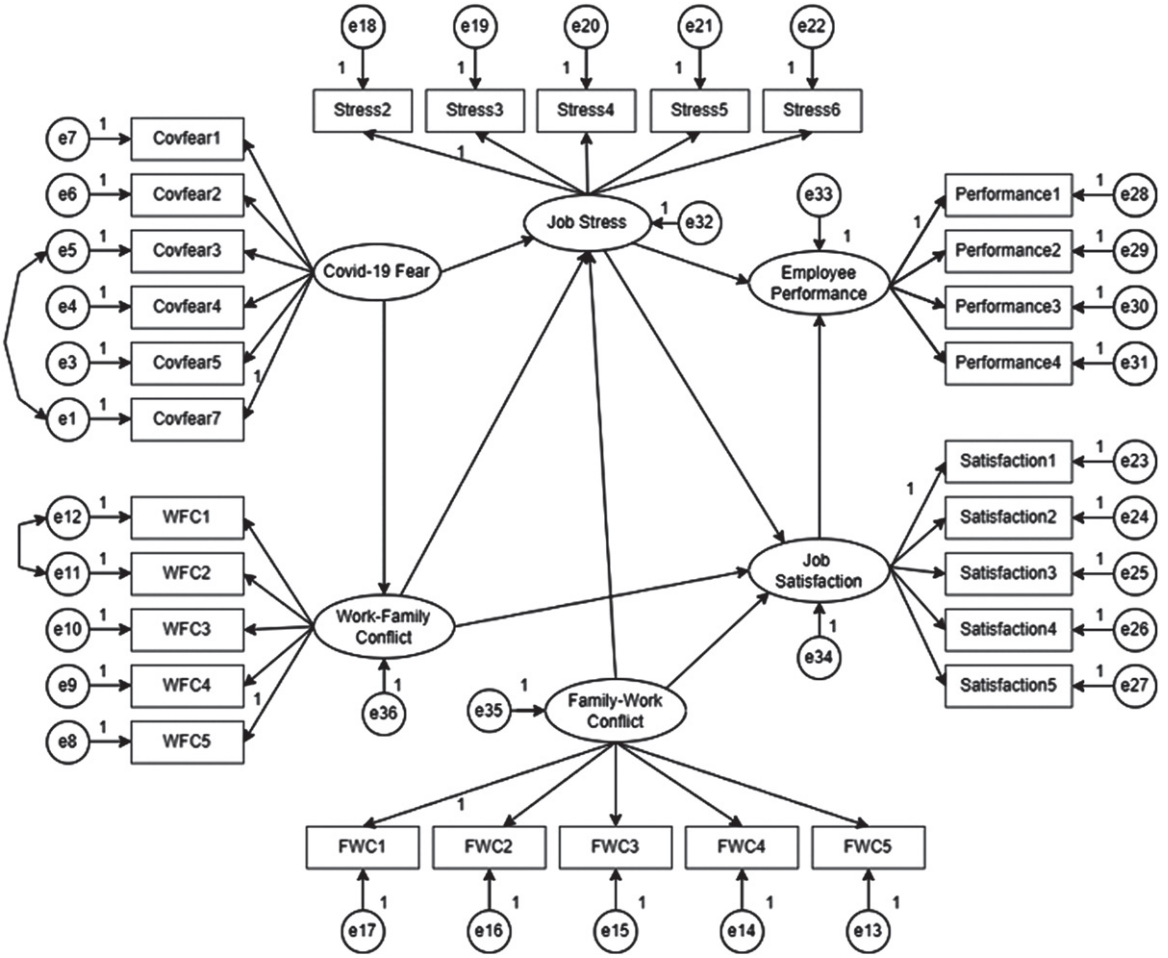

Fig. 2. Structural model.

effect on employee satisfaction ($p = .001$; $\beta = .619$). As a result, job stress has a full mediating effect on the relationship between COVID-19 fear and job satisfaction. Therefore, the H_1 hypothesis was accepted.

Then, the analysis of the model created for the H_2 hypothesis was started. Before the mediation analysis, the relationship between COVID-19 fear and job stress was found to be significant ($p = .001$; $\beta = .266$). Then, mediation analysis was carried out. Although the effect of COVID-19 fear on job stress has decreased, it is still significant ($p = .001$; $\beta = .214$). However, it was found that COVID-19 fear had no significant effect on work-family conflict ($p = .089$) and family-work conflict ($p = .227$). For this reason, H_2 hypothesis was rejected as sufficient conditions for mediation analysis could not be provided.

Thirdly, the model created for the H_3 hypothesis was tested. Before moving on to the mediation analysis, the relationship between work-family conflict and family-work conflict and job satisfaction was examined. Work-family conflict ($p = .001$; $\beta = .377$) has a significant effect on employee satisfaction. The effect of family-work conflict, on the other hand, was not significant ($p = .139$). Family-work conflict was removed from the model and reanalyzed. The effect of work-family conflict on job satisfaction has become insignificant ($p = .931$; $\beta = .005$). Looking at the other relationships in the model, it was seen that job stress had a significant effect on employee satisfaction ($p = .001$; $\beta = .618$) and work-family conflict had a significant effect on job stress ($p = .001$; $\beta = .516$). Therefore, it was concluded that job stress has a fully mediating role in the relationship between work-family conflict and employee satisfaction. Therefore, the H_3 hypothesis was partially accepted.

Finally, the model created for the H_4 hypothesis was tested. Before proceeding to the mediation anal-

ysis, the effect of job stress on job satisfaction was tested and found to have a significant effect ($p = .001$; $\beta = .62$). Afterward, mediation analysis was carried out, but no significant result was obtained. There was virtually no change in the effect of job stress on employee satisfaction ($p = .001$; $\beta = .621$). Additionally, job stress had no significant effect on job performance ($p = .14$; $\beta = .122$). Therefore, the H_4 hypothesis was rejected.

4. Discussion

During the COVID-19 pandemic, working life has been dramatically changed. Many people started to work from home by using IT equipment. Home-based work is affecting not only our working life but also our private and family life. In this sense, with home-based work, there may be some conflicts between work and life, leading to work stress or lower performance and lower job satisfaction. Also, fear and stress due to COVID-19 can affect these factors. We tried to understand how COVID-19 fear will change work and family-related issues when they work at home in Turkey. Moreover, we tested the mediating role of job stress, work-life conflict, and employee satisfaction in this model. Related scales were used to measure work-life balance, job stress, job satisfaction, and employee performance as well as COVID-19 fear. Structural equation modeling was used to analyze the variables. Consistent with the hypotheses of this study, we found that fear of COVID-19 and the level of work-family conflict increased work stress. As job stress rose, job satisfaction diminished. The decrease in job satisfaction decreased employee performance. Contrary to our expectations, we determined that job stress did not significantly reduce employee performance in our samples.

Similar to past epidemics, COVID-19 has caused fear [14], threatening human health and well-being. Studies investigating the source of the fear of COVID-19 have found that people generally fear infection, illness of relatives and friends, economic uncertainties, insecurity, increased discrimination and xenophobia, inaction due to lockdown, exposure to negative news in the media, and traumatic stress symptoms [62]. In previous studies, it was found that the level of fear of COVID-19 increases the stress in general life [4, 11, 22, 24]. In this study, we proved that fear of COVID-19 also increases work stress. Few studies examining the relationship between fear of COVID-19 and job satisfaction found that fear of COVID-19 also causes job dissatisfaction [63, 64]. Our findings are consistent with findings in previous studies between these two factors. There was also evidence in the literature that employees who experienced high fear and anxiety in the pre-pandemic period experienced more job stress and had lower job satisfaction [41, 65]. We have proven that this pre-pandemic evidence also applies to the fear of COVID-19. In other words, we found that job stress mediates the relationship between fear of COVID-19 and job satisfaction.

Shortly after the COVID-19 outbreak, the vast majority of workers started working from home due to partial shutdowns by the Turkish government (similar to other countries). This sudden change in working life revealed the potential for a conflict between work and family roles. According to role theory, which theoretically explains work-family conflict, conflict arises when the time to work and family compete with each other [66]. According to the conservation of resources theory that another theory explains this conflict, conflict arises when strain in one role limits the capacity to fulfill responsibilities in the other role [36]. According to our expectation, the effort to adapt to the new working conditions that emerged from the first periods of COVID-19 may not have increased the stress of the employees. Especially learning new technologies and tools required by remote working and increasing family responsibilities have forced employees to balance work and family life and increased their stress. However, there were different findings in the literature showing how work-family conflict changed during the pandemic period. Medina et al. [32] found that both work-family conflict and family-work conflict increased during the COVID-19 pandemic. Reiman et al. [33] found that work-family conflicts have increased during the COVID-19 pandemic, but this finding applied only to conflicts in the family-to-work direction. Schieman et al. [34] found that work-family conflict decreased during the COVID-19 pandemic.

The decrease in work-family conflict during COVID-19 is consistent with Greenhaus and Beutell's theory [66] that sets light on the conflict between roles. Because the restriction of social life during the pandemic period allowed people to spend more time with their families and reduced the pressure on the life side of the business. However, we predicted that people's fears about their family and their own health and well-being were affecting the allocation of resources between family and work during the pandemic and causing stress on the work side.

In a small number of previous studies, it was found that fear of COVID-19 increases both work-family conflict and family-work conflict [67, 68]. However, in our study, we found that fear of COVID-19 did not have a significant relationship on either side of the work-family conflict.

There was evidence in the literature that work-family conflict was associated with job satisfaction, both before COVID-19 [69–71] and during the COVID-19 pandemic [72]. Partly similar to the literature, we found that the deterioration in work-family balance during the COVID-19 pandemic reduced job satisfaction. However, this relationship was only valid for the work-family conflict sub-scale. There was no significant relationship in terms of family-work conflict. Job stress also mediated this relationship between work-family conflict and job satisfaction. Two models have been presented in the literature on how work-family conflict affects job satisfaction. The first model is the cross-domain relationship assumption put forward by Fron et al. [73]. The basic rationale behind this assumption is that although conflict arises in one area, it causes problems in the other. As schools, kindergartens, and daycare centers were closed during the pandemic period, home workers also had to take on additional responsibilities for family care. These challenges led to higher family-work conflict. For this reason, problems may have arisen in the work-life of the employees and their job satisfaction may have decreased. The second model is the matching-hypothesis proposed by Amstad et al. [74]. This model assumes that the primary effect of work-family conflict lies in the domain where the conflict originates. According to this theory, remote working may have created an unusual new situation for employees and the effort of the employees to adapt to these new conditions may have caused stress on the work side and reduced job satisfaction.

Finally, we focused on the professional performance of remote workers during the COVID-19 pandemic. Baudot and Kely [35] revealed that the performance of employees during the pandemic period is slightly higher than before the pandemic. In the findings of the same studies, it was stated that those who had the experience working remotely before the pandemic and those who worked as managers had a higher productivity perception. This result confirms the negative association of remote workers' control over their working hours with work stress and work-family conflict. Mas-Machuca et al. [75] revealed that the sense of autonomy in remote workers reduces work-family conflict, and these individuals show higher employee performance. Although working from home experience provides numerous benefits to employees, research has shown that work performance deteriorates, job satisfaction decreases, and family-related problems arise when employees have difficulty managing the boundaries between work and home [9, 76]. As explained above, COVID-19 has blurred the lines between family and work. For this reason, the roles between work and family have become intertwined and complex. Stress is the leading factor among the factors that hinder the performance of employees in normal times [77, 78]. During the COVID-19 pandemic, both positive and negative effects of work stress on employee performance were found [79, 80]. We predicted that this situation would cause more stress for the employees and decrease employee performance by reducing job satisfaction. Contrary to our expectations, we did not find a significant relationship between job stress and employee performance. We think that this result is due to the nature of remote work. The negative impact of the work stress caused by COVID-19 on employee performance may be balanced with the high performance due to the autonomy in remote working. Another reason for this result may be that job stress reduces some components of employee performance and increases others. Employee performance has three components: task performance, contextual performance, and adaptive performance [77]. Job stress encourages employees to learn more and use their knowledge to achieve organizational goals. So, their adaptive performance increase. We think that this benefit may have eliminated the negativity in other components of performance.

5. Limitations and future work

This study has several limitations. First, an online survey of random participants weakens the generalizability of the study findings. Another limitation is that the measurements obtained are based on the perceptions of the participants. Participants may have given desired answers rather than actual job performance and job satisfaction. Particular attention was drawn to the fact that participants tended to give high scores in questions measuring job performance.

Future studies may add factors that affect positive and negative outcomes in working life, such as perceived social support, managerial support, and the capacity to cope with stress, different from the factors included in the model in this study. Also, another

scale other than self-efficacy can be used to measure performance. Finally, in our study, we focused on those who were forced to work remotely due to the pandemic. However, in most sectors, remote working was not permanent and employees returned to the offices. It would be interesting to examine the relationship between job stress and other findings in employees who return to the office after teleworking.

6. Conclusion

This study contributes to the existing literature in three ways. First, we expand on the scarce current literature on remote workers' work-family conflict, job stress, job satisfaction, and job performance. We also empirically demonstrated that work-family conflict increases work stress as well as general stress. Secondly, we have contributed to previous a few findings on how the relationship between these variables was during the COVID-19 pandemic. We added the COVID-19 fear level variable to our model and investigated the relationship of this variable with other factors. We did not detect a direct effect of the COVID-19 fear level on job performance. But we found that the level of fear of COVID-19 increased job stress and work-family conflict. It also decreased job satisfaction. We also identified the serial mediating role of work stress and work-family conflict between the fear of COVID-19 and job satisfaction. Thirdly, we have determined that the indicators related to working life are negatively affected by the concerns related to COVID-19. Our findings provide clues as to how people's indicators such as job stress, job satisfaction, work-family balance, and employee performance are affected in crisis situations such as COVID-19. We contribute to researchers both in terms of illuminating the current crisis and being prepared for similar unexpected situations in the future.

In a practical way, the results of this study are useful as a starting point for designing policies at various levels. Our findings offer several recommendations for decision-makers and managers designing or overseeing teleworking arrangements. First, we found that COVID-19 fear forced people to work from home, which increased conflict between family and work life. We also found that job stress did not have a direct significant effect on employee performance. According to the results, some regulations related to flexible work models should be enacted to ease home-based working challenges. In particular, measures should be taken to reduce the COVID-19 fear levels of employees, and steps should be taken to make them worry less about their health and future. Stress-coping training is likely to help with this. Second, managers should help balance work and family roles for these individuals with no previous remote work experience. Employers and managers should pay attention to the fact that the duties assigned to the employee do not exceed the working hours, especially because of the tendency of remote working to extend the working hours. Employee autonomy to control work hours should be seen as an important means of reducing work-family conflict and work stress. In addition, the personal situations of each employee that may lead to a work-family conflict should be taken into account, and alternative solutions should be produced based on the factors that will cause work stress for these people.

Ethical approval

The study was approved by the Ethics Committee of Ağrı İbrahim Çeçen University (2021/67).

Informed consent

Not applicable.

Conflict of interest

The authors declare that they have no conflict of interest.

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