



Telework and technostress in educational organizations: Lessons from the COVID-19 pandemic in Mexico

*Teletrabajo y tecnoestrés en organizaciones educativas:
aprendizajes ante la pandemia por la COVID-19 en México*

Jessica Ivonne Hinojosa-López^{*1}, María Inés Salas-Rubio²,
Miguel Ángel Reyna-Castillo³

¹Universidad Autónoma de San Luis Potosí, México

²Universidad Autónoma de Tamaulipas, México

³Universidad Nacional Autónoma de México, México

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Abstract

This research aims to explain, in the context of the COVID-19 pandemic, the effect that the characteristics of telework that teachers have on techno-stress in Mexican educational organizations belonging to the public sector from preschool to undergraduate. The methodology was empirical-statistical, the data were obtained from the application of 835 surveys to teachers and were analyzed by means of the structural equation technique using second order variables. The results indicate that resources, autonomy and worklife balance are characteristics of the telework performed by teachers that explain the increase of technostress in terms of fatigue, anxiety and inefficacy when distance classes are developed, in addition, differentiated findings are presented based on the sex of the teachers. The results imply information for learning and organizational decision making by educational authorities.

JEL Code: M54; D23; J81; J01

Keywords: telework; technostress; distance classes; post-pandemic learning; COVID-19

* Corresponding author.

E-mail address: jessica.hinojosa@uaslp.mx (J. I. Hinojosa López).

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Resumen

Esta investigación tiene como objetivo explicar, en contexto de la pandemia por COVID-19, el efecto que las características del teletrabajo que los profesores tienen sobre el tecnoestrés en las organizaciones educativas mexicanas pertenecientes al sector público de preescolar a licenciatura. La metodología fue empírica estadística, los datos se obtuvieron de la aplicación de 835 encuestas a profesores y se analizaron mediante la técnica de ecuaciones estructurales utilizando variables de segundo orden. Los resultados indican que los recursos, la autonomía y el balance vida-trabajo, son características del teletrabajo realizado por el profesorado que explican el incremento del tecnoestrés en términos de fatiga, ansiedad e ineficacia cuando se desarrollan las clases a distancia, además se presentan hallazgos diferenciados a partir del sexo del profesorado. Los resultados implican información para el aprendizaje y toma de decisiones organizacionales por parte de las autoridades educativas.

Código JEL: M54; D23; J81; J01

Palabras clave: teletrabajo; tecnoestrés; clases a distancia; aprendizaje pos-pandemia; COVID-19

Introduction

Telework is a category that has been significant, both organizationally and academically, for at least the last two decades. In an investigation of the main collection of the scientific database of the Web of Science (WOS), using the keyword “Telework”, it was found that since 1985 telework has been the subject of academic analysis and there has even been a defense of its advantages, which includes the labor law enabling work outside the confines of an office, with a computer from home (Micossi, 1985). Telework has been a significant topic in scientific research, with a moderate increase in documents over the years. However, it should be noted that there has been a significant upturn in the last five years, with 38.2% of the 804 resulting documents being concentrated in this period. 2020 was the year with the highest number produced, with 13.1% of the research in all years. It is a multi-area topic, where, among the more than fifty areas of the WOS, the area of “business and economics” stands out as the predominant one, with more than 40% of the results. It is a multiregional topic where, out of the 68 regions, the USA is in first place, with almost 30% of production. According to the search parameters, Mexico only appears with one document.

Historically, the decision for an employee to work from home using information technology (IT) was in the interest of promoting good work practices within the organization, where flexible work schedules were advocated to reduce travel and cultivate family relationships (Bailey & Kurland, 2002). The social lockdowns due to the pandemic caused by COVID-19 have prompted organizations worldwide to use resources that allow them to continue carrying out their functions. This is the case of educational organizations, which had to decide to implement work from home so that teachers and

students could make the teaching-learning process possible with the use of current technological means. While telecommuting can imply positive outcomes for both employees and organizations, in the case of the sudden and forced telecommuting situation that occurred during the COVID-19 crisis, it has also led to negative aspects, one of which is technostress (Spagnoli et al., 2020).

Information technology (IT) was a functional solution but a potential problem in human resource health because the greater the technological innovation, the greater the functionality. It also implies greater technical stress, as demonstrated by the empirical study of Wang et al. (2008). The fact that educational organizations operate from home is an important challenge since digital working from home makes it almost impossible to clearly distinguish between personal space and time and that which belongs to the organization (Estrada-Muñoz et al. 2020). The latent tension to find a work-life balance leads to exhaustion, potentiating technological stress and jeopardizing teachers' efficiency and satisfaction in their educational work (Suh & Lee, 2017).

Technological stress in an educational organization is an issue of global concern, and the relevance of the gender approach to the problem has been demonstrated by its special impact on women. In Norway, Yildirim et al. (2020) researched the gender-differentiated impact of the pandemic on teachers. Their findings demonstrated that the gender factor, categorized into male and female, positively affected academic productivity. In particular, women reported being affected to a greater extent in terms of their routines in terms of childcare and household chores. Guy and Arthur (2020) in the USA call the effort involved for academics with children when trying to combine work and child-rearing at home as "the juggling act of the academic mother."

Chong et al. (2020) used resource conservation theory as a framework for understanding employee stress in the context of telework during the COVID-19 pandemic. They start from the premise of Hobfoll (1989) and Halbesleben et al. (2014), where resources refer to the things the individual perceives as allowing him to achieve his goals, including energy and emotions. For Halbesleben et al. (2014), episodic timing is ideal for capturing resource fluctuation. In their research, Chong et al. (2020) considered the disruptive stage of COVID-19 as an episode where telework employees experience a change in the performance of their duties and, therefore, in resources. This paper theoretically frames the work of teachers as they struggle to maintain fluidity in accomplishing their goals while preserving emotional resources versus technological stress. These pandemic-specific task-related disruptions and complications are daily task mishaps.

From what has been said, mental health in organizational contexts with telework is of academic and administrative significance. However, this disruptive historical moment caused by Covid-19 makes it urgent to discover and analyze the nuances of the phenomenon of technostress in virtual classrooms. The literature also seeks to demonstrate the differentiated result of the impact of remote

work among teachers, especially in Latin America and specifically Mexico, where almost no research has been carried out. Consequently, after the havoc caused by the impacts mentioned above, it has also sought to focus on the lessons that enable prevention and improvement in telework conditions in the legal, organizational, and governmental categories.

The Reform of telework in Mexico that came into force on January 12, 2021 (Secretaría del Trabajo y Previsión Social, 2021), is an example of action based on experience where the obligations and rights of teleworkers are made clear, ratifying fair labor practices in future situations. Accordingly, the central question of this research, from the analysis of the relation between telework and technostress in public educational organizations, is what are the implications arising from the lessons of the disruptions in educational organizations caused by COVID-19 in Mexico? Therefore, the objective is to explain, in the context of the COVID-19 pandemic in Mexico, the effect that the characteristics of teachers' telework have on technostress in Mexican educational organizations belonging to the public sector from preschool to bachelor's degree. The empirical statistical methodology was contrasted using structural equation modeling from 835 observations. The results and discussion are presented, followed by the conclusions, lessons learned, and organizational implications.

Telework

Telework is not a new phenomenon in the work environment. However, it has been understudied (López-Araujo & Segovia, 2008; Tremblay & Thomsin, 2012). Its advantages and disadvantages are still not well known (Tremblay & Thomsin, 2012), so it is of interest for this research to address the issue, especially at this time when the whole world is going through a pandemic where telework is experiencing accelerated growth (International Labor Organization, 2020).

Telework is conceptualized as all work performed from home involving digital means or the performance and organization of business from home based on information and communication technologies (ICT) (Basile & Beauregard, 2016; Sarbu, 2018). Other definitions describe telework as a flexible working arrangement where the employee performs their activities and responsibilities from an approved location other than the physical location of their organization (Madden et al., 2019; Tremblay & Thomsin, 2012) or even that which is performed from the main office but requires the use of technology for collaborators to contact each other (Allen et al., 2015). In this regard, Golden (2012) adds a differentiating element to the concept by distinguishing between two types of telework based on the schedules in which the activities are performed; he calls it traditional when, in addition to complying with the characteristics of the previous concepts, the activities are carried out in normal office hours, and identifies it as non-traditional when it is performed in different schedules, such as evenings or weekends.

He adds the importance of knowing the situation inside the teleworker's home to provide real flexibility since this context could trigger new tensions derived from work.

On the other hand, Dima et al. (2019) state that telework is multidimensional and composed of autonomy, employee work-life balance, skills, and job resources. Autonomy is defined as the worker's freedom and control to organize their activities and decide where and how to work, in other words, greater flexibility in scheduling their workday, with a positive relation between this variable and work-life balance. In this context, the demands and resources model states that when work makes extreme psychological demands and is accompanied by a low level of worker autonomy or decision-making, work stress is triggered (Demerouti et al., 2001). On the other hand, telework is beneficial because it encourages autonomy and flexibility in the activities carried out by the employee (Tremblay & Thomsin, 2012).

Another dimension of telework is the work-life balance, which means the harmony that should exist between the employee's personal life and working life when performing activities outside the office, which can be located at home, at the client's office, or at another location. There is controversy regarding the advantages and disadvantages of this work-life balance construct. Some authors recognize that for teleworkers, this category means having more time for family issues given the flexibility in working hours and therefore generating a balance between work and family (Tremblay & Thomsin, 2012). Another study claims that in this context, after an adjustment, employees can divide family life from long-term work activity (Tremblay, 2003), especially if their work duties involve being in a closed-door location (Felstead et al., 2000).

Meanwhile, Dimitrova (2003) agrees that the most important thing about telework is temporal and spatial flexibility; however, in her research, she showed that the benefits obtained were not so important, and additionally, longer periods of work were generated. In contrast, according to Estrada-Muñoz et al. (2020), there is a work-home conflict as there is a conflict between the personal and the work because the hours of one and the other overlap, which is considered a disadvantage; Tremblay et al. (2006) are of a similar opinion in a study carried out on the subject, affirming that there are undesired intervening elements during working hours and that the boundaries between family and working life are dissolved.

As another telework construct, the skills variable is understood as the individual's capabilities to adequately attend to their work, solving the daily problems that this implies. These skills include digital skills, exhaustion management skills, and the ability to handle distractions that may arise while teleworking (Dima et al., 2019).

Satisfaction with job resources is recognized as the set of elements that determine the degree of employee satisfaction with aspects such as working conditions and support from their superiors

(Dima et al., 2019; Nica et al., 2014), in addition to those physical, psychological, and organizational aspects that allow goals to be achieved and the demands of work to be reduced (Salanova, 2003).

According to the demands and resources model, teleworkers perceive an imbalance between the demands of work and the resources available to satisfy them, which results in the generation of technostress; however, when the person has resources, these can cushion the damage caused by technostressors (Salanova, 2003). In this regard, it should be noted that having a work-life balance provides other benefits, such as the professional satisfaction experienced by the worker in having resources, which is an important element to achieve balance (Muhammad et al., 2010).

Technostress

In the early eighties, the concept of technostress was developed by Craig Brod, referring to the inability to adapt healthily to new ICTs. It was moderated by previous experience in the use of technologies, the level of workload, and the work environment, which can lead to negative consequences triggered by technology, affecting the individual physically, mentally, and emotionally, eventually leading to burnout and a deterioration in the employee's job performance (Estrada-Muñoz et al., 2020).

Other authors conceptualize technostress as a negative psychological state that is triggered by the use of ICTs, characterized by the psychosocial effects of the use of technologies that are not pleasant or enjoyable and that cause a negative attitude toward these technologies (López-Araujo & Segovia, 2008); technostress may even be considered a disease caused by the lack of skill and incompetence of the ICT user when these are new (Salanova, 2003). Technostress involves several dimensions (Salanova, 2003), such as fatigue, anxiety, and inefficacy (Estrada-Muñoz et al., 2020).

First, fatigue is a dimension of technostress that has been studied for decades, supported by contributions such as those of Lazarus and Launier (1978). Fatigue as a technostressor refers to the physical state of tiredness and mental exhaustion experienced by the worker due to the use of ICT (Estrada-Muñoz et al., 2020; Salanova, 2003). This state is linked to a perception of inefficiency in the use of technology, currently also called information fatigue syndrome, a very common condition caused by a lifestyle that involves an excess of information due to the use of the Internet and other digital applications (Estrada-Muñoz et al., 2020).

Second, the construct anxiety is also considered a technostressor as it is conceived as a physiological state suffered by the individual that makes him feel tense and uncomfortable due to the current or upcoming use of some type of technology, which triggers negative thoughts about one's personal ability and the safety of this technology, and in some cases can even trigger fear of ICTs (Estrada-Muñoz et al., 2020). As stated by authors such as Mohr and Puck (2007) and Salanova (2003),

stress is related to anxiety whenever there is a conflict in the role of the employee, and commonly occurs in telework since they are exposed to new demands of work without the resources or information to fulfill them adequately.

Third, concerning the construct of inefficacy, it is necessary to observe the social cognitive theory that deals with efficacy, recognizing that it is the individual's belief in their ability to carry out activities in the achievement of goals and objectives, in addition to being part of the worker's attitude and behavior (Bandura & Adams, 1977). If there is a perception that an activity exceeds the person's capacity, a state also recognized as negative self-efficacy may arise, which in turn is related to burnout syndrome (Cherniss, 1993; Salanova, 2003). In the words of Cherniss (1980), inefficacy is defined as the insecurity experienced by the worker in their competencies to carry out the job, and burnout is related both to this incompetence and to inefficacy or self-efficacy crises (Cherniss, 1993; Salanova, 2003; Ventura et al., 2015).

Burnout syndrome refers to burnout from work, in other words, a worker's state of emotional exhaustion and depersonalization from work, and is also linked to anxiety and even depression, which occurs in all types of professions, including teaching (Gil-Monte & Moreno-Jiménez, 2005; Maslach, 2009; Salanova, 2003). Thus, burnout syndrome occurs when there are feelings of inefficacy (Salanova, 2003). In a teaching context, when the worker undergoes training, if the worker believes that they will not be able to perform the activity with the computer and thus take advantage of such training, this situation increases technostress; in other words, there is an increase in burnout when using ICTs (Salanova, 2003). Other authors claim that burnout is a product of crises of efficacy, or inefficacy, as it is called in this research (Gumbau et al., 2004; Ventura et al., 2015).

Finally, Salanova (2003) mentions that self-efficacy rises when the person has repeated successful experiences using ICTs, while incidents of failure contribute to inefficacy. Having more successful experiences leads workers to make stronger efforts and better resist difficult situations than people who are indecisive or doubt their competencies. From the above, some empirical models represent the crisis of self-efficacy or inefficacy, and there are models that represent the commitment to self-efficacy (Estrada-Muñoz et al., 2020; Gil-Monte and Moreno-Jiménez, 2005; Gumbau et al., 2001; Montalbán et al., 2014; Salanova, 2003; Ventura et al., 2015).

Telework: Simplification of life or complexity caused by the accumulation of tasks?

According to the International Labor Organization (ILO, 2020), telework has grown rapidly worldwide since the declaration of the pandemic at the beginning of the year 2020. The closing of schools was one of the first measures implemented to reduce people's mobility. Recent studies state that the pandemic has increased the need to study and understand the effects that telework can have on teacher technostress (Carillo et al., 2020). Previous evidence on this topic in other fields and prior to the appearance of COVID-19 has presented outcomes that led to a reconsideration of the positive effects of telework. For example, some results indicate that the appropriate allocation of telework hours contributes to improved productivity, especially when workers normally invest more than one hour in moving to the establishments where they carry out their activities (Kazekami, 2020). However, studies conducted during the COVID-19 pandemic indicate that telework in the context of a crisis involves a more difficult adjustment to this work category characterized by professional isolation (Carillo et al., 2020).

A pre-pandemic study of telework practices in educational institutions revealed that high levels of support for this alternative for conducting classes were related to increases in teacher productivity and satisfaction as well as decreases in factors such as fatigue, stress, and frustration (Tustín, 2014). In contrast, another study conducted during the pandemic indicated that telework caused an increase in teachers' workloads, reflected in the need to spend more time connected to virtual platforms, which triggered a reduction in rest and, consequently, a transition to a state of burnout and unease (Villa et al., 2020). Likewise, Song and Gao (2019) mention that working from home could generate greater stress due to the conflict in the time distribution to perform the tasks corresponding to family and work. Specifically, they mention family disagreements regarding the assignment of housework, as well as the responsibility of having children or elderly adults under their care. In this regard, Currie and Eveline (2011) add that it is more difficult for women to achieve a balance since the limits of work activity hardly respect those of the family, and vice versa. Such is the case of working longer hours or increasing the number of domestic activities. Given the above, the following hypotheses are proposed:

H1. Telework has a positive and significant effect on teachers' technostress during the COVID-19 pandemic.

H2. Telework represents a greater influence on female teachers' technostress than on that of male teachers during the COVID-19 pandemic.

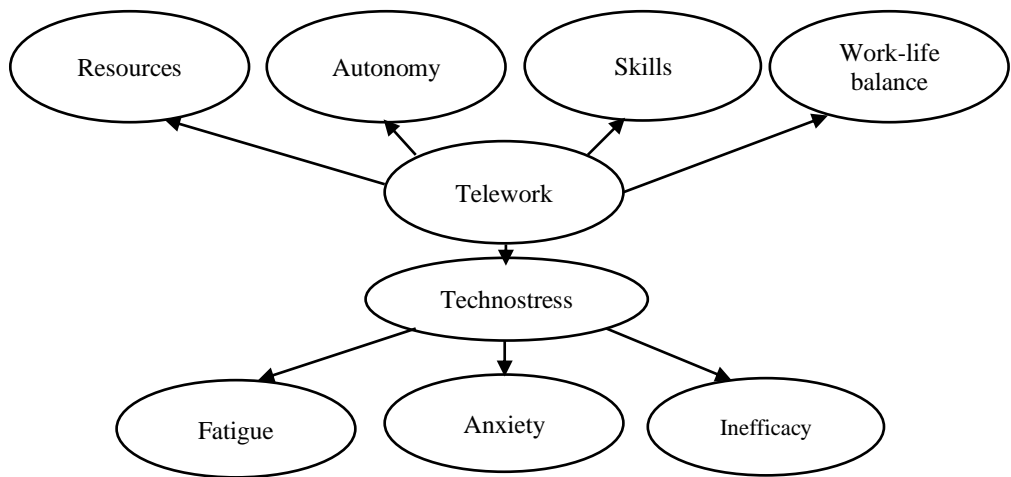


Figure 1. Second-order hypothetical causal model
Source: created by the author

Method

Design and sample

Quantitative research was carried out to explain, in the context of the COVID-19 pandemic in Mexico, the effect that the characteristics of teachers' telework have on technostress in Mexican educational organizations belonging to the public sector from preschool to bachelor's degree. A population of 1,637,694 basic education teachers and 394,189 university teachers (Secretaría de Educación Pública, 2020) was used as a base. It was decided to apply the criteria established by Hair et al. (1999) to determine the sample size when using the structural equation technique, which shows, as appropriate representative observations, the result of considering 10 times the number of parameters estimated in the model. A non-experimental cross-sectional design was used during October and November 2020 with the participation of 835 teachers assigned to Mexican public education institutions from preschool through bachelor's degree levels. In 50.7% of the cases, the participants reported having between 1 and 10 years of teaching experience, 31.5% between 11 and 20 years, and 17.8% indicated 21 years or more dedicated to this profession. Table 1 presents the demographic data for the characterization of the sample.

Table 1
 Characterization of the sample (n=835)

Variable	Frequency	%	% Cumulative
Educational level assigned to			
Preschool	106	12.7%	12.7%
Primary	224	26.8%	39.5%
Secondary School	128	15.3%	54.8%
Baccalaureate	81	9.8%	64.6%
Bachelor's Degree	296	35.4%	100%
Gender			
Female	639	76.5%	76.5%
Male	196	23.5%	100%
Marital status			
Single	295	35.3%	35.3%
Married	457	54.7%	90.0%
Divorced	77	9.3%	99.3%
Widower	6	0.7%	100.0%
Age			
22-38 years old	454	54.4%	54.4%
39-55 years old	329	39.4%	93.8%
56 or older	52	6.2%	100.0%
Region of the country working in			
Center	169	20.2%	20%
Midwest	309	37.0%	57%
North	301	36.0%	93%
Southeast	56	6.7%	100%

Source: created by the author based on survey results

The technique of structural equation modeling with second-order variables was carried out to test the hypotheses of the proposed theoretical model. The covariance-based method was considered because it had solid support for the theoretical model, a robust sample, multivariate normality, and it was a complex model developed with second-order constructs, criteria that are considered appropriate for implementing the statistical methodology based on covariances (Henseler et al., 2009; Venaik et al., 2005). Additionally, the statistical objective of the common factor models only considers the common variance between the study variables, leaving out the specific and error variance used in variance-based methods, which if included, could mean the introduction of the error variance in the prediction of the result variable (Hair et al., 2017). Considering that this study seeks to identify the implications of telework for technostress, the objective is aligned with the parameter estimation, and not with the maximization of the explained variance of technostress.

On the other hand, second-order models are generally used to reduce the complexity of a model that seeks to explain broad concepts from specific dimensions (Ciavolino, 2012; Temme & Diamantopoulos, 2016); in other words, they are models in which the construct to be explained (second order) is composed of different first-order facets that are heterogeneous but related to each other, and

which capture unique elements so they must be attended to independently (Castro et al., 2007). Accordingly, following the contributions of Polites et al. (2012), first- and second-order reflective constructs were implemented because resources, autonomy, skills, and work-life balance (first order) are highly correlated dimensions and share telework as an antecedent (second order). Likewise, the absence of any of these dimensions does not modify the conceptualization of this work category; in addition, the indicators of any of the dimensions can be interchangeable or excluded without affecting the first-order variable since the direction of the variations originates from the latent variable toward the observable indicators; this is also the case for technostress and its dimensions (fatigue, anxiety, and inefficacy).

Instruments

The first section collected demographic data on the participants; the second, adapted from the work of Dima et al. (2019), addressed four aspects of teachers' telework, including resources, autonomy, skills, and work-life balance, a sample item being "When teaching remotely I need to solve my work-related problems independently"; and the third, adapted from the research of Estrada-Muñoz et al. (2020), incorporated the dimensions of fatigue, anxiety, and inefficacy as part of technostress, a sample item being "It scares me to think that I may not be as clear in explaining content during distance learning classes." The questionnaire included 9 demographic indicators, 15 corresponding to telework and 12 to technostress. A seven-point response scale was used where 1=Strongly disagree and 7=Strongly agree.

Results

Measurement model

The data were analyzed using the statistical software programs SPSS Statistics 24 and AMOS 24. Normality tests were performed to verify the quality of the data. The results indicated kurtosis values between -0.035 and -1.383, which is considered adequate as it meets the criterion of values less than 1.60 (George & Mallery, 2001). Multivariate skewness and kurtosis were verified with Mardia's coefficient, obtaining a value of 48.39, which, being less than 70, indicates the existence of multivariate normality (Mardia, 1970).

The exploratory factor analysis identified some factor loadings with values below 0.5, which, according to Hair *et al.* (1999), suggests eliminating three telework and three technostress indicators. Subsequently, a confirmatory factor analysis was performed, in which it was identified that the standardized residuals for the two remaining indicators of the telework skills dimension offered values

greater than +/- 2, so the decision was made to eliminate the dimension from the model. With the final model, Cronbach's alpha analysis was performed, obtaining a value of 0.877 for the complete instrument, 0.868 for telework, and 0.826 for technostress, which is considered adequate as the values are higher than 0.70 (Nunnally, 1978). The Kaiser-Meyer-Olkin (KMO) measure was 0.881, indicating that the sample is sufficient by exceeding the recommended value of 0.70 (Kaiser, 1974), and Bartlett's Test of Sphericity, being significant ($p=0.000$), shows that there is no correlation between the variables.

The reliability and validity of the model ensured the absence of measurement errors (Table 2). Construct reliability was satisfactory by obtaining composite reliability coefficient (CR) values above 0.70 (Hair *et al.*, 2014). For convergent validity, the criterion of Average Variance Extracted (AVE) was used, obtaining values of 0.654 for telework and 0.676 for technostress, which are satisfactory as they share more than 50% of the variance with their indicators (Hair *et al.*, 2014). Discriminant validity was confirmed by determining the square root of AVE and confirming that the value obtained for telework (0.808) and technostress (0.822) was higher than the correlation between telework and technostress (0.485) (Fornell & Larcker, 1981).

Table 2
 Measurement model result

Variable (second order)	Dimension	Indicators	\bar{x}	Standardized regression weights	CR	AVE	\sqrt{AVE}
Telework	Resources	REC1	4.765	0.490	0.847	0.654	0.808
		REC2	3.626	0.760			
		REC3	4.738	0.679			
	Autonomy	AUT1	3.764	0.658			
		AUT2	3.992	0.865			
		AUT3	3.792	0.822			
	Work-life balance	BVT1	4.023	0.717			
		BVT3	2.745	0.718			
		BVT4	3.393	0.747			
Technostress	Fatigue	BVT5	3.702	0.875			
		FAT1	3.093	0.775	0.861	0.676	0.822
		FAT2	2.557	0.839			
	FAT3	3.865	0.762				
	Anxiety	ANS1	3.902	0.778			
		ANS2	3.181	0.730			
		ANS3	4.411	0.549			
	Inefficacy	IEF2	3.939	0.737			
IEF3		2.872	0.456				
IEF4		3.268	0.597				

Correlation Telework-Technostress = 0.485

Source: created by the author based on survey results

Structural model

Once reliability and validity were achieved, the next step was to develop the structural model with the maximum likelihood method. Absolute, incremental, and parsimonious fit were attended to as means of goodness of fit verification (Escobedo et al., 2016). As for the absolute fit, a root mean square error of approximation (RMSEA) of 0.068 and a residual standardized root mean square residual (SRMR) of 0.065 were obtained. Regarding the incremental fit, the value was 0.915 for the comparative goodness of fit index (CFI). Finally, the parsimonious fit showed values of 4.814 for the normed Chi-square. All the absolute and incremental fit values are acceptable as they are within the thresholds suggested by Hu and Bentler (1999), as is the parsimonious fit between the lower limit of one and the upper limit of five, as shown in Table 3.

Table 3
Overall model fit

Goodness of fit measure	Absolute Fit		Goodness of fit measure	Incremental Fit		Goodness of fit measure	Parsimonious Fit	
	Result	Acceptable fit level		Result	Acceptable fit level		Result	Acceptable fit level
RMSEA	0.068	<0.08	CFI	0.915	>0.90	CMIN/DF	4.814	.1-5
SRMR	0.065	<0.08						

Source: created by the author based on Hu and Bentler's (1999) fit criteria

Method: maximum likelihood

Subsequently, with the intention of verifying whether telework represents a greater influence on the technostress of female teachers than that of male teachers, an analysis by group was carried out, for which Table 4 presents the result, indicating that the model grouped by gender also had an acceptable absolute, incremental, and parsimonious fit, showing values of RMSEA=0.051, SRMR=0.070, CFI=0.902, and normed Chi-square=3.151 (Hu & Bentler, 1999).

Table 4
Model fit by gender

Goodness of fit measure	Absolute Fit		Goodness of fit measure	Incremental Fit		Goodness of fit measure	Parsimonious Fit	
	Result	Acceptable fit level		Result	Acceptable fit level		Result	Acceptable fit level
RMSEA	0.051	>0.90	CFI	0.902	>0.90	CMIN/DF	3.151	.1-5
SRMR	0.070	<0.08			>0.90			

Source: created by the author based on Hu and Bentler's (1999) fit criteria

Method: maximum likelihood

Contrast of hypotheses

The hypothesized relations proposed for the second-order model were supported. Figure 2 presents the standardized coefficients of the general model (H1) and shows the predictive capacity of the model through the statistic R2 (Chin, 1998), indicating that telework explains 24% of the variations in teachers' technostress with a positive and significant effect of moderate strength ($\beta = 0.485$, $p < 0.000$). Another aspect of interest is the substantial effect of the coefficients of the dimensions that make up the second-order variables. As seen in Figure 2, the standardized coefficients for resources ($\beta = 0.63$), autonomy ($\beta = 0.93$), and work-life balance ($\beta = 0.84$) suggest that they are important components for characterizing telework, just as fatigue ($\beta = 0.69$), anxiety ($\beta = 0.90$), and inefficacy ($\beta = 0.86$) are for technostress. The results obtained indicate that telework performed by teachers is an antecedent of technostress, and particularly that satisfaction with resources ($\bar{x} = 4.38$) and autonomy ($\bar{x} = 3.85$) to teach online are moderate. However, work-life balance was the dimension with the lowest evaluation of telework ($\bar{x} = 3.47$). In terms of technostress, dimensions addressing fatigue ($\bar{x} = 3.17$), anxiety ($\bar{x} = 3.83$), and inefficacy ($\bar{x} = 3.36$) during online classes were also observed to be moderate.

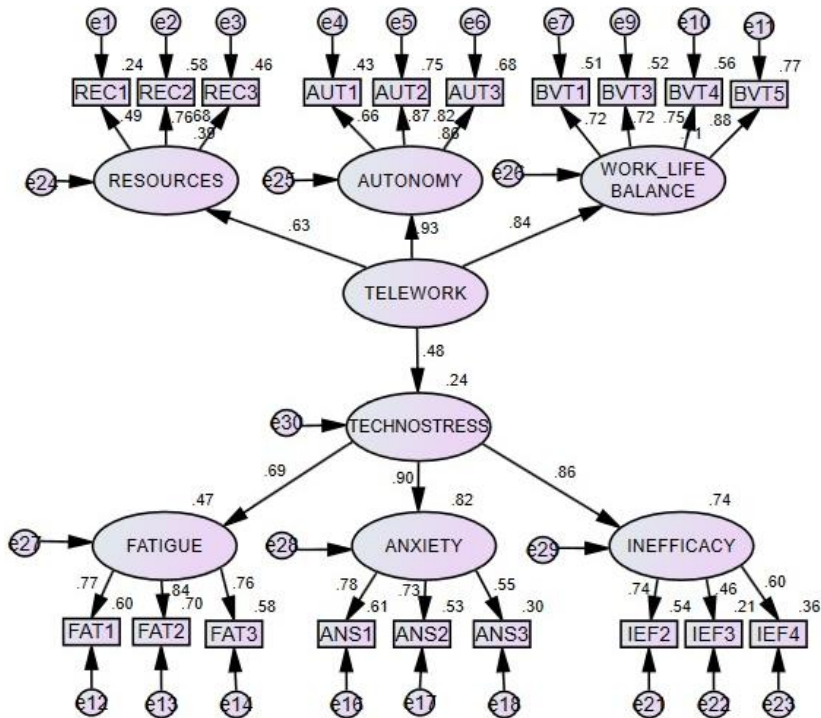


Figure 2. Second-order general hypothetical causal model results
 Source: Created by the author

Table 5 shows the results obtained for the analysis performed by group based on the gender of the participants (H2). The R² statistic for women indicated that telework explained 22% of the variations in technostress, while for men it accounted for only 16%. The effect was positive and significant in both cases with moderate strength ($\beta_{\text{female}} = 0.472, p < 0.000; \beta_{\text{male}} = 0.395, p < 0.000$).

Table 5
 Structural model result by gender

Telework - Technostress Hypothesis	R ² technostress	Coefficient (β)	p-value
General Model (H1)	24%	0.485	0.000
Model by gender group (H2)			
Female	22%	0.472	0.000
Male	16%	0.395	0.000

Source: created by the author based on Chin's criteria (1998)

Discussion

The results from this research provide relevant information on the telework performed by teachers and its effects on the triggering of technostress. Although telework is a category that has been increasing in recent years, it has accelerated in educational organizations due to the declaration of the COVID-19 pandemic, which led to the development of a second-order theoretical model that was empirically tested in Mexico. In light of the result, telework is characterized by resources, autonomy, and work-life balance; and technostress involves the factors of fatigue, anxiety, and inefficacy.

The working hypothesis was supported by realizing that conducting remote classes during the pandemic has generated a positive and significant effect on teachers' technostress, which is consistent with previous research (Song & Gao, 2019; Villa et al., 2020). This finding presents several aspects of interest: first, the teachers indicated that they do have appropriate resources for distance learning. In particular, they indicated that they had received training to adapt their lessons and mentioned that they have their own technological equipment to carry them out; on the other hand, they also stated that they did not have sufficient resources in terms of spaces at home to carry out this activity. Thus, teachers were partially satisfied with the resources available for telework, which is a product of the evaluation made regarding the conditions to carry out their classes, similarly to what is mentioned by Dima et al. (2019) and Nica et al. (2014).

Secondly, teachers indicated moderate autonomy in terms of having the flexibility to organize their work schedules. In this regard, Demerouti et al. (2001) mentioned the efficacy of high levels of autonomy to prevent stress in workers; therefore, the moderate result obtained could imply an alarm signal that should be heeded so as not to contribute to further teacher technostress. A similar effect can

be observed in the third variable of telework. Tremblay and Thomsin (2012) mention that telework provides the possibility of achieving a balance between work and family activities thanks to flexibility in time management. However, recent research has shown that telework in a crisis requires a greater adjustment due to the professional isolation that leads to decreased interaction with co-workers, superiors, and the organizational environment in general (Carillo et al., 2020). The latter provides support for the moderate effect on the work-life balance reported by the teachers in this research, and is a reference for the response received about not having total control over combining family and work activities, which has generated a conflict by having to mix the time allocated to both activities, which could be considered a disadvantage when teaching from home (Estrada-Muñoz et al., 2020).

The above findings arrived at an understanding of telework as a cause of teacher technostress. Previous studies support these results; for example, Currie and Eveline (2011) mention that for teachers who telework, on the one hand, recreation time is decreased, and on the other hand, it increases the time they must be available through technological means to attend to students or colleagues 24/7, which causes their work to become more stressful. In this context, the teachers' responses in this research coincide; they reported having not yet achieved a balance between family and work activities, feeling exhausted at the end of the classes and expressed insecurity regarding their ability to cover all the contents of the educational programs. At the same time, they are concerned that they are not as clear when explaining the topics as in face-to-face classes. Overall, this research found that fatigue, anxiety, and inefficacy are dimensions that strongly define technostress in the context of professor teleworkers during the COVID-19 pandemic, which is consistent with the results of Villa et al. (2020).

Finally, with the results obtained by dividing the group of teachers by gender, significantly differentiated results were detected, consistent with the results of Yildirim et al. (2020), where telework represents a greater influence on women technostress than on men. In particular, women perceived greater difficulty in teaching from home and stated that they had a worse work-life balance (domestic work and childcare) and greater difficulty in relaxing after the workday, aspects that according to Currie and Eveline (2011), generate a stressful and unsatisfactory work environment in women, who feel overwhelmed at home by work.

Conclusion

This research sought to answer the question: What are the implications of learning from the disruptions in educational organizations caused by COVID-19 in Mexico? After the analysis of the results, the contrast of the hypotheses of the model and the discussion of the findings, it is concluded that telework has a positive and direct effect on the technostress of the teacher of educational organizations who

teaches remotely during the lockdown due to COVID-19. Overall, this research found that fatigue, anxiety, and inefficacy are dimensions that strongly explain technostress in the context of telework during the COVID-19 pandemic, consistent with the results of Villa et al. From a conservation of resources theory framework, the COVID-19 pandemic was an event that led to disruptions and complications related to teachers' organizational goals. Telework was a change in working conditions that placed the conservation of emotional resources at stake and, therefore, put the achievement of daily objectives at risk.

Telework is a disruptive strategy in Mexican educational organizations, which was chosen as an ad hoc measure, with almost no preparation or experience on the part of the institution, faculty, and students. Therefore, despite the availability of innovative information and communication technologies, telework from home is a significant factor in teachers' experience of technological stress. Although this work uses a gender differentiation of the technostress generated by telework, it is limited to presenting its impact and does not delve into the causes of this differentiated effect. For future lines of research, it is proposed to delve further, from a critical stance of gender social roles, into the social ideologies regarding women teachers that systematize the unequal burden in their physical and emotional fatigue.

These results are an appeal to the conscience of decision-makers in educational organizations since teachers' accumulated fatigue due to technostress leads to a deficiency in their quality of life, as it affects emotional and physical health in the medium term. Educational organizations have the challenge of establishing guidelines and strategies that foment psychoeducation, containment, and emotional management skills in their human capital of teachers. In particular, the findings draw attention to the gender culture that prevails in the institutional and family situations of women teachers so as to stop normalizing the physical and emotional violence caused by the overburdening of care and domestic work at home. Institutions with emotional care and care for gender justice in their educational human capital will make it possible to advance toward the development of more socially sustainable organizations.

Organizational implications and lessons

The COVID-19 pandemic provoked vertiginous changes in organizations to avoid a cessation of their operations and forced developing countries such as Mexico to face an accelerated incorporation of telework. For educational organizations, the challenge has been great, so it is useful to reflect on the experience of education workers in the following: what has been learned from the new work model in educational organizations? Will it be viable to continue telework post-pandemic for teachers? How could the conditions of remote education be improved from a gender perspective?

Almost a year after the implementation of the pandemic strategy to work in a place different from the location of the organization, a reform to the Mexican Federal Labor Law on telework (Chapter XII BIS) was presented, in which the rights and obligations of workers still deserve to be analyzed to improve the working conditions that this option implies. However, based on some statements made by the Secretary of Education, it is now known that the distance learning model is here to stay, which is designed for a hybrid model in which some classes are carried out in person and others online (Centro de Producción de Programas Informativos y Especiales, 2020), meaning that teacher hiring practices could be modified in the new context.

Although the employers' obligations included legislation to provide technological resources and proportional payment for the use of telecommunications and electricity in the employee's home, the teachers participating in this research reported that they had carried out their activities with their own resources. Creating mechanisms to implement this regulation will take time and require the disbursement of considerable economic resources. Accordingly, and considering that teachers are generally taxed under the wages and salaries regime, a proposal to achieve direct support is to increase the deductions authorized under this regime for telephone and internet services and the acquisition of computer equipment and furniture, which are essential for the telework. Expanding the options for providing the necessary resources makes it possible to adequately fulfill the teaching task since, unfortunately, not all professors have the equipment to offer their classes to distance. In addition, the workload has tripled with the planning of the course, the preparation of presentation material, and the extra work for student evaluation, not to mention the demands of management. Having adequate resources will allow a better organization and separation of housework versus academic work; receiving furniture and technological resources directly or as a tax deduction will motivate the organization of a space at home where one can truly work with concentration and in comfort.

At the same time, the Reform envisages the determination of means of contact and working hours. In this category, teachers mentioned from their experience that their working hours exceeded their working day through having to attend to students, parents and directors at any time through their mobile devices, which makes it necessary for educational organizations to think about restructuring their internal work regulations so that teachers really enjoy their right to disconnect once their working hours are over, which can reduce the effects of fatigue derived from technostress.

Regarding the training offered by educational organizations at all academic levels, it was identified that courses were offered for the improvement of technological skills; however, if the distance education model is to be maintained at the end of the lockdown, it is advisable to include the evaluation of technical competencies in the teacher selection process to facilitate the development of teaching telework and reduce the technostress that many of the teachers reported when they did not have a

command of the available tools and platforms. Similarly, but considering only basic education teachers, who are those who receive direct training in education, training strategies could emerge from teacher-training schools to prepare their students with a focus on hybrid work, which would allow an effective and efficient response to adverse circumstances such as those experienced in the pandemic.

Overall, the research shows a palpable incidence of teacher technostress during this first experience of telework. As a consequence of the lockdown, recreational and/or sports activities, intended to eliminate part of the work stress, were canceled. In this regard, the fatigue, anxiety, and inefficacy reported by teachers caused their quality of life to deteriorate. It can have consequences not only on work performance but also affect physical and mental health, so educational organizations must generate action plans for the containment of collateral damage to their employees by promoting activities of this nature through remote learning or even consider calling on specialists to help them cope emotionally in the new work context.

Finally, from the differentiated analysis based on the gender of the teaching staff, it was found that women are 6% more technostressed than men when teaching from home. The findings are relevant and align with the results from research analyzing learned gender roles in men and women. It remains a future area of research to delve into issues about the macho culture in the home, as well as the inequality in the fatigue that domestic work has caused in women teachers who work from home. Unequal double or triple workloads are imposed by gender roles on women, resulting in physical and mental fatigue that adds to the de facto technological stress of telework. In this regard, the Ministry of Labor and Social Welfare implemented an awareness campaign at the beginning of the lockdown. However, the result indicates that efforts to adjust family roles still have a long way to go. Although this work uses a gender differentiation of the technostress generated by telework, it is limited to presenting the impact and does not delve into the causes of this differentiated effect. For future lines of research, it is proposed to delve further, from a critical perspective of gender social roles, into the social ideologies regarding women teachers that systematize the unequal burden in their physical and emotional fatigue.

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