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MEDIA USE AND TECHNOSTRESS

R. Berger¹, M. Romeo¹, G. Gidion², L. Poyato¹

¹ *University of Barcelona (SPAIN)*

² *Karlsruhe Institute of Technology (GERMANY)*

Abstract

Technology is reaching all areas of our lives. The fact that technology is already part of our daily routine causes that people have to adapt to these changes quickly, and to keep up with these fast advances of the ICT's, people have to update their knowledge and skills, and it can produce technostress. Studies have found that technostress has a negative impact on both the health of people and their productivity. The present work aims to identify the emergence of technostress among administrative staff. 294 administrative employees from the University of Barcelona answered the standardized Media Use questionnaire that measures usage frequency, media skills, technostress, socio-demographic factors and feelings on media usage. The socio-demographic variables age, gender, and skills were analyzed to find out whether these variables, as some previous literature had suggested, had some influence on the technostress perception. The results in our case showed that there is no significant difference in perceiving technostress between men and women. At the same time, we found that older people perceive more technostress than young people and that with increasing level of IT skills the participants perceived less technostress. The results are an important piece of information for the human resources departments. They indicate possible ways to fight technostress such as to invest into courses or trainings for the employees, to the older ones in the first place.

Keywords: New media, technostress, age, gender, skills.

1 INTRODUCTION

Information and communication technologies (ICT) are now part of our private and public life, they provide many benefits to the society, but it is also true that ICT's have their negative side. The move to the information age, with its changes and need for adaptation to technology, has been rapid and stressful for many people. While many people have increased their usage of technology and are comfortable with it, many others are not comfortable using it when they must do so [1]. Those who are not willing to change, or find it difficult to adapt, can develop various responses. One type of response is technostress: a specific type of stress related to the use of ICT, mostly resulting from the high speed at which technological change takes place [2]. The exposure of workers to ICT is increasing [3]. Fast progress of technologies can bring problems to users such as technology quickly becoming obsolete, necessity to frequently update, system failures or information overload. Also, the users have to deal with consequences of mistakes they make while using ICT. The aforementioned results in negative consequences for both, people and the organizations, therefore the term "technostress" appeared to name the struggle of the users. Despite the fact that literature about technostress has expanded in the recent years, the road ahead is still long and the knowledge about the topic is limited. A better theoretical understanding of the phenomenon is needed. The present paper aims to contribute to closing this research gap. It is necessary to study the influence and consequences that technostress could have to make it possible to prevent them. Until now most studies have used quantitative approaches with questionnaires to assess perceived stress levels, causes of technostress and symptoms, or interviews to analyse it and explain it (e.g. [1], [2], [4]–[6]). This paper attempts to analyse the way the administrative staff uses the ICT's and explore the relationships of it with the appearance of technostress. There is a lack of literature regarding the relationship between media use and technostress. This paper aims to find out more about this relationship and discover which kinds of media cause more technostress. Additionally, it will analyse if there are certain sociodemographic characteristics, such as gender or age, or skills that could be linked with greater perception of technostress. Moreover, the role of this paper is to know if there are people among the administrative staff of University of Barcelona that suffer technostress. Therefore it is important to find out if they are suffering symptoms of stress because it could influence their health and their performance at work. Finally, we point out that the main purpose of this paper is to give an overview of the phenomenon of technostress and to review the literature to find out if there are some kinds of media that produce more

technostress than others and to know which variables such as age, gender or skills have a moderator effect in the technostress perception.

2 CONCEPTUAL DELIMITATION

The term technostress is used for the first time by Craig Brod [7]. In his article Brod defined technostress vaguely as “failure of employees to adapt to the modern office technology”. Brod’s term later appeared in other publications, and in 1984 changed the definition to “a modern disease of adaptation caused by an inability to cope with the new computer technologies in a healthy manner” [8] and then the term began to acquire importance. Due to the spread of technology in all areas of our life, the number of people who suffer technostress increases and therefore the interest in understanding this phenomenon as well. This is reflected by the fact that from 2008 a greater number of publications concerning technostress began to appear. The definitions have been growing in numbers, extent and precision. The vast majority of publications about technostress come from United States, but other countries such as China, Canada and Sweden have also focused their effort on it. In further research wider definitions including affect, attitudes, thoughts and behavior have appeared. Technostress was defined “as any negative effect on human attitudes, thoughts, behavior, and psychology that directly or indirectly results from the use of computer-based ICTs” [4]. A more specific definition describes technostress as “a negative psychological state associated with ICT use or threat of use in the future. Such state is conditioned by the perception of a mismatch between demands and resources related to the use of ICT, and it can lead to a high level of unpleasant psychophysiological activation and the development of negative attitudes towards ICT” [3, p. 239], in this definition technostress includes specific types of technostress dimensions- such as technostrain and techno-addiction [9].

Technostrain “is a combination of high levels of anxiety, fatigue, skepticism and inefficacy related to the use of ICT” [10], anxiety and fatigue being the most common affective experiences. Anxiety being the experience of high levels of physiological activation and feelings of tension and discomfort with respect to ICT. Computer anxiety is one of the most widely studied technostrain experiences and it has been used as a term to describe the fear, apprehension, and agitation that individuals experience when interacting with, or thinking about, computers [11]. People can also experience other negative psychological experiences such as fatigue and exhaustion due to the use of technologies, it is characterized by lower levels of psychological activation. The second component of technostrain is fatigue. Lewis [12] coined the information fatigue syndrome (IFS) as a specific type of fatigue resulting from the use of ICT (Internet, email, smartphones, tablets, social networks) that derives from the current requirements of the Information Society and from dealing with information overload which could lead to poor decision making, difficulty in memorizing and remembering, and a reduced attention span [12]. The third component in the technostrain experience is skeptical and distant attitude toward the use of ICT. In the technostrain experience, “skepticism” is defined as the display of indifferent, detached, and distant attitudes toward the use of ICT [13]. This is a feeling of cognitive distancing that consists of developing indifference or a cynical attitude when users are exhausted and discouraged due to the use of ICT. The fourth cognitive component of technostrain is feeling of inefficacy when using ICT [13]. That means when ICT users have to cope with chronic, overwhelming demands that contribute to anxiety, fatigue and skepticism, their sense of efficacy is likely to be reduced.

Techno-addiction is “a specific technostress experience due to an uncontrollable compulsion to use technology ‘everywhere and anytime’, and to use them for long periods of time” [10, p. 2]. The techno addicts are those who want to keep abreast of the latest technological advances and end up being “dependent” on technology [10]. Other study revealed that technology dependence has a direct relationship with technostress [14]. Some studies showed that with more techno-addiction there is, less psychosocial wellbeing (i.e., the more anxiety and fatigue) [15]. Technoaddicts use ICT’s because they feel the compulsion to use it and they feel anxious when they are not using it. The aim of this study is not to elaborate on various subtypes of technostress but to describe it in its general sense i.e. and to establish a relationship between the use of ICT’s and their relationship with the appearance of technostress, and the influence of the variables age, gender and skills as possible moderators or regulators of this effect.

Technostress antecedents and consequences

The ‘transaction theory’ of stress [16] seems to be the most used for theoretical conceptualization of the phenomenon of technostress in the Information System (IS) literature. This model describes the phenomenon of stress as a combination of a demand condition that causes the stress (stress creator) and the individual’s response to it (adverse outcomes referred to as ‘strain’). Research on workplace

stress has focused on several aspects that involve the stress phenomenon, among these stress creators we find for example role overload and role conflict [17] or disruptive behaviors such as dissatisfaction at work, lack of job involvement and poor job performance [18]. Ragu-Nathan et al. [19] refer to the factors that produce technostress as “technostress creators. These are the circumstances or factors that have the potential to create stress outcomes among employees in an organization such as frequent software and hardware updates, continuous information overload and expectations of constant connectivity [6]. On the other hand, there are technostress inhibitors which are expected to decrease strain [20]. Workers who experience and attempt to cope with technostress creators are likely to have negative appraisals of their jobs. Tarafdar et al., [6] state that users experience technostress due to information overload, ICT invasion to personal life, inability to deal with uncertainty and complexity of ICT, and a sense of insecurity due to rapid advances in ICT. Transaction theory of stress is a part of a cognitive paradigm where stress emerges through a phenomenological process reflected in the relationship between the individual and the demands placed by the environment [21]. Adapting the model to the use of ICT, this means that stress arises when the ICT competence requirements exceed the user’s actual competence level, thereby threatening his/her well-being. This overall transactional process, where demands placed by the environment exceed individual resources, is referred to as stress [21]. Transaction theory consists of four major components [22]: stressors, situational factors, strain and outcomes. Stressors are, in general, all of the conditions, events, demands or stimuli in an environment with a potential to create stress. Some examples of stressors in connection with an employee’s use of ICT would be: frequent changes in work habits and a feeling of one’s personal life being invaded by job email, job SMS, information overload and business-oriented social networking sites. Situational factors are organizational mechanisms that can buffer or reduce the impact of stressors. Related with ICT usage, such factors might typically be user participation in change processes and computer training. Strain refers to psychological and behavioral responses to stressors that are observed in employees that use ICT in work environments. Such responses can typically constitute a combination of high levels of discomfort, exhaustion and a distant attitude towards ICT use [23]. Technostress creators refer to ICT circumstances or factors that have the potential to create ICT and job-related strain outcomes among employees in an organization. Tarafdar et al. [6] conceptualized technostress creators as consisting of five following categories or components. Techno-overload which refers to ICT’s potential to drive an employee to work faster. Techno-invasion that is the ICT’s potential to invade an employee’s personal. Techno-complexity that refers to an inherent quality of ICT that makes employees feel incompetent. Techno-insecurity which refers to the premise that ICT’s nature is to change regularly, and that this may threaten employee job security. Lastly, Techno-uncertainty refers to the constant changes and upgrades of software and hardware that may impose stress on employees.

As for **Technostress inhibitors** those refer to mechanisms that have the potential to reduce employee levels of ICT and job-related strain outcomes. Examples of such mechanisms are end user training, technical support and user participation in the planning and implementation of new ICT solutions. Ragu-Nathan et al. [19] conceptualized technostress inhibitors as consisting of three main categories or components. First being the Technical support provision in the sense of institutionalized support (e.g. providing a help-desk). Then Literacy facilitation which are mechanisms that increase employee levels of ICT literacy (e.g. establishment of a close relationship with the IS department and encouragement of ICT knowledge sharing among co-workers). Lastly it is the Involvement facilitation in the form of mechanisms that strengthen employee engagement in new technology (e.g. incentive systems connected to usage and participation in process changes).

Literature shows that technostress has negative effects on the individual’s health and organizational productivity. The main effects of the ICT’s in the area of health at work are such as muscle problems, headaches, mental and physical fatigue, anxiety, fear or boredom [3]. Organizational level studies have found technostress has significant negative impact on employee productivity and effects in role overload, role conflict, exhaustion, burnout and decreased job satisfaction and commitment [6]. Regarding to job satisfactions, it refers to the attitudes and feelings people have about their work. Positive and favorable attitudes towards the job indicate job satisfaction. Negative and unfavorable attitudes towards the job indicate job dissatisfaction [24] and therefore it has a direct relation on the productivity. Technostress may significantly reduce job satisfaction, commitment, innovation, and productivity and increased turnover, absenteeism and poor task performance [25]. Regarding the commitment, several studies show that employees with commitment are advantageous to the organization as they are less likely to resign or to be absent, and are more willing to share and make sacrifices for the sake of their organizations [26]. In addition, individuals who exhibited higher

commitment to their organizations have higher loyalty and lower work stress [27], higher performance [28], and were much more willing to accept organizational change [29].

3 RESEARCH MODEL AND HYPOTHESIS

As it was mentioned in the previous sections, individuals experience technostress as a result of their use of ICT in organizations [4]. It is a current disorder that affects workers who have to deal with ICT's in their works, but it seems that this phenomenon does not affect everyone equally and some variables could play an important role in this perception. According to the literature these variables that have a moderator effect are gender, age and skills with ICT's and the aim of this survey is to find out if these variables have the importance that the literature suggests.

3.1 Technostress and gender

Existing research has shown that gender, age and educational levels are related to technostress (e.g. [30], [31]).

Women seem to have more aversion to ICT than men do. Women experience higher levels of anxiety and exhaustion than men in the use of ITC's [32].

Liaw's study [33] had also indicated that males had more positive perceptions towards computers and Web technologies than females. In more recent survey Broos [34] revealed that males have less computer anxiety than females and they use the computer for longer periods of time and with a higher self-perception of experience, also they show less computer anxiety.

H1: Women suffer more technostress than men.

3.2 Technostress and age

Age also seems to be another important variable concerning the perception of technostress. Older people have more negative attitudes towards the use of new technologies and feel less competent [32].

Morris and Venkatesh [35] suggest that there are clear differences with age in the importance of various factors in technology adoption and usage in the workplace.

Coklar and Sahin found that in their case the users of age 20 and below had relatively low levels of technostress, and users of age 31 and above had relatively high levels of technostress while those between 21 and 30 had moderate levels of technostress. The important finding being that technostress levels rise with age [36].

H2: Older employees suffer more technostress than younger employees do.

3.3 Technostress and Skills

Another important variable seem to be computer skills. A study by Shepherd [1], on the relationship between computer skills and technostress among employees at a university in the United States, showed that the level of technostress decreased as the level of computer skills increased. Tu, Wang and Shu [37] indicate in their research that individuals with high computer skills suffer low technostress, while individuals with low computer skills suffer great technostress in their research. Shepherd [38] concluded that computer skills influenced technostress levels.

Similarly, a study by Tarafdar et al. [6] indicates that users with high levels of computer knowledge avoid technostress to a larger degree, and they experience new technology as easier to learn, than do people with less computer knowledge.

As such, it can be said that high internet and computer skills levels in users prevent high technostress levels. Specific subjects which cause high levels of technostress are social pressure regarding the use of technology, remembering many user names and passwords, data loss, frequent reshaping of professional life due to technology, and the use of new technology for the first time

Thus, according to the literature, men and women with high computer skills will experience lower levels of technostress, meanwhile, people with low computer skills will experience higher levels of technostress.

H3: People with higher computer skills suffer less technostress than people with lower computer skills.

3.4 Kind of media and technostress

Finally, the last goal of this survey is to find out if there are certain types of media which would cause more technostress than others, in the absence or lack of literature about this topic, and take into account the several media available and used in the questionnaire, the objective is conduct an analysis in order to know if there are these more sensitive to elicit technostress and which are these media. The only evidence found comes from the study of Ayyagari et al. [21] that shows that the technology which is used by an individual determines whether technostressors are perceived. This means that technological characteristics determine whether users perceive technostress.

Question: Are there some kinds of media that cause more technostress than others?

4 METHOD

4.1 Participants

In this study the participants are 294 administrative staff of the University of Barcelona. The University of Barcelona employs 2412 members of administrative and service staff, the questionnaire was sent to all the administrative staff, and was answered by 294 of them.

The sample consisted of 67 males (22.5%) and 221 females (74.2%), and the mean age was 46 years (SD=7.90), ranging from 24 to 64 which 272 were Spanish (91.3%) and 17 from others countries (5.7%). Regarding their Academic Level, 19.5% were Bachelor Graduates, 7% Doctorates, 37.6% graduates, 8.4% had a Master degree and 22.5% had others qualifications.

4.2 Procedure

After informing the committee, the Human Resources, the administrative director and the technology managers of the organization and obtaining their consent, a link to the online questionnaire was published on the organization's intranet. The administrative staff could answer the questionnaire online during a 3 weeks period.

4.3 Instrument

This study used the questionnaire Media usage and attitudes to media [39].

This questionnaire is currently available in 7 languages in print and online forms, and evaluates:

- Usage **frequency** (*very high usage - no usage + I don't know*) and **satisfaction** (*very satisfied - very unsatisfied + I don't know*) of **49 services** (98 questions): print, online, web 2.0, library services, university internal services, e-learning-services, e-books, IT-hardware, the several media are classified in Ubiquitous Media, Social Media, Text Media, E-Learning Media, Attendant Media and University Media.
- **Media skills** (7 questions). The variable uses a 6 point scale (from *I don't have skills* to *very good skills + I don't know*).
- **Educational biography** (5 questions) and **Sociodemographic variables** (4 questions): age, gender, nationality or language.
- **Questionnaire on techno-stress**: "Diferencial semántico del ASH (Auditoria del Sistema Humano)". This questionnaire is composed of 14 opposite adjectives like Tense-Relaxed, Nervous-Quiet or Irritated-Calm and a scale from 1 to 5 and depending how the subjects feels with the ICT's use they are located on one side or the other. The Cronbach's alpha of the questionnaire is 0.96, therefore, the questionnaire has a good reliability.

4.4 Data Analysis

In order to fulfil the objectives of this survey the data analysis accomplished was conducted based on the working hypotheses, the first step was the descriptive analysis of media services (frequency, from very often to never, and I don't know) and media type comparing the means of use of several media.

The second step was the correlation analysis in order to see the relation between media type and technostress, the division into the groups was based on the factorial analysis realized by Gidion, Capretz, Grosch, & Meadows [40] in their study about media usage.

The data was analysed with T-tests and ANOVAs in order to reject or confirm the formulated hypotheses. The first hypothesis was that women suffer more technostress than men (as the literature indicates). The groups were compared in order to find out if there were significant differences between them.

The same procedure was used with the other two hypotheses. The second hypothesis was that elder employees suffer more technostress than younger. The third hypothesis, was that people who have higher skills with the use of ICT's are less affected by technostress.

5 RESULTS

The different types of media were divided into 3 groups (See Tables 1, 2 and 3) according to their category. This was due to the large number of items and to reduce the complexity of subsequent analysis to see what sorts of media produce more technostress.

The resulting three groups were text media, non-specific e-learning and e-learning services. In the table we can see as well the mean of use of each media and therefore what type of media are the most used. We can see that the media used most often in the first group are dictionaries online (M=2.40) and materials online (M= 3.28). Then in the second group University Web (M=3.57), Intranet Online Services (M=3.47), Search Engines as Google or Yahoo (M=3.62), and University Email Account (M=3.82). In the third group the most used are Word Processing (M=3.58) and Software to calculate as Excel or SPSS (M=2.84).

Table 1. Means of text media.

Text media	Mean
Online dictionaries	2.40
Dictionaries on computer	1.29
Amazon	0.35
Print version books	1.94
E-book Device	0.46
E-books	1.28
Print version journals	1.51
E-version journal	1.36
Online materials (PPT,PDF)	3.28
Online material other institutions	1.56

Table 2. Means of non-specific e-learning media.

Non E-learning services	Mean
University Web	3.57
Intranet online services (PAS)	3.47
E-mail distribution lists	2.35
Online services university (PAS)	3.08
Online services other institutions	1.69
Wikipedia	1.71
University E-mail account	3.82
Search Engines (Google, Yahoo)	3.62
Other Google services	2.46
Social Bookmarking	0.33
Video Platforms (Youtube)	1.05
Podcasts/Videocasts	0.55
Social Networks	1.04
Instant Meesenger	1.10
Weblogs	0.61

Table 3. Means of e-learning services.

E-learning Services	Mean
Meetings and virtual training in real time	0.68
Virtual training not real time	0.64
Virtual Platforms	0.95
News group/Internet forums	1.12
Interactive Learning Programs	0.81
Wikis active participation	0.53
Campus Wi-fi	1.24
Recorded conferences, events	0.62
SAP	1.48
Online Database	1.85
Literature Management Software	0.55
Word processing	3.58
Presentation Software	1.92
Calculation Software	2.84
Audio, video, multimedia Software	1.23

5.1 Technostress in gender, age and skills

The first hypothesis of the survey indicates that women suffer more technostress than men. However, analyzing the results through ANOVA's, we can observe that there are no significant differences between men and women in relation to technostress ($F=0.09$; $p=.76$). Despite the average being higher in women ($M=2.02$) than in men ($M=1.99$), the difference is not significant, hence, we can affirm that we haven't found differences between men and women in how they perceive technostress.

Hypothesis 2 corresponds to age, and the hypothesis says that older people suffer more technostress than the young. The participants were divided into two age groups. Using the statistical T-test it was found that older staff members suffered higher levels of technostress ($M=2.12$) than the younger administrative staff ($M=1.92$). The variances of the groups were equal ($F=.29$; $p=.58$) and the result of the t-test is that the difference between older and younger employees is significant ($t=-2.2$; $p=.02$).

Regarding the third hypothesis, skills and technostress, the hypothesis says that employees with higher skills suffer less technostress than employees with lower skills. Using T-test to compare both groups, first we see that the mean of people with higher skills ($M=1.72$) is lower than the mean of people with lower skills ($M=2.21$). The variances of the groups were not equal ($F=4.41$; $p=.03$). The result is that the difference between high skills employees and low skills employees is significant ($t=-5.72$; $p<.001$), therefore, the administrative staff with lower computer skills suffer more technostress than people with higher skills.

The last aim of the survey was to find out if certain types of media produced more technostress than others, the media were divided into three groups as described above. The statistical test used was Pearson correlations, it goes beyond a simple covariance and allows knowing if there is a correlation because its values lie between -1 and +1. The results show that there are negative correlations between types of media and technostress which means that the group with the least used media is the group which causes the most technostress, on the contrary the group with the most used media causes less technostress. For the three groups significant differences were found; for Text Media ($r=-.20$; $p=.002$), for Non E-learning Services ($r=-0.19$; $p=.004$) and for E-learning Services ($r=-0.23$; $p=.001$), despite that the correlations are not very high and taking into consideration that the scale of technostress is composed by opposite adjectives, and positive are in one side and negative are in the other side, we could conclude that the bigger relation and therefore the media that would produce more technostress would be the E-learning services which are the type of media less used, which means that there is a negative correlation between the use of media and emergence of technostress, when the media are used less, they produce more technostress.

Table 4. Correlations media group and technostress.

Dimensions	Technostress	Text Media	Non-E-Learning Services	E-Learning services
Technostress	1	-.020	-.19	-.23

6 DISCUSSION

Results showed that the group of media that are used less, E-learning services, are the group which produced more technostress perception. On the contrary the most used type of media which are Non e-learning services is the group that produces less technostress. These results indicate that the lack of resources to deal with stress such as knowledge or experience with certain type of media is related to an increased perception of technostress. Then users with more resources perceive less technostress.

After analyzing the results two of the three hypotheses were supported and one was rejected.

The first hypothesis was if gender is an important variable when people perceive technostress, which was not confirmed in this survey, despite the fact that, women had a higher mean of level of technostress than men, the difference was not significant, these results do not support the results of Cifre et al. [32]. In their survey about differences in gender or age regarding technostress, where they found a significant difference in gender. Maybe it would be convenient to carry out another study with a bigger sample to see if the results remain or if the fact that the sample is composed mostly of women (74.2%) might have some impact on the results.

The second hypothesis about age was confirmed, and the results turned out as expected according to previous research of Cifre et al. [32] where they show that there is a difference in age regarding technostress, this hypothesis was confirmed, and hence to say that old people suffer more the effects of technology than young.

The third hypothesis was also confirmed, as Tu, Wang and Shu [37] or Shepherd [38] indicate in their research that people with high computer skills suffer less technostress than people with low computer skills, this hypothesis was confirmed in the survey which shows difference between both groups, and therefore confirms that skills are an important variable on technostress effects. High skills would help to reduce the emergence of technostress as well as to mitigate the several effects that it might trigger.

Finally, the research question based on the analysis of the type of media to see which ones cause more technostress, showed that there is a direct correlation between the use of media and the attitudes toward the media, the media used more provoke less negative attitudes than the media used less. These results suggest that people tend to feel more comfortable with the media which they use normally and have more reluctance towards the media that they don't know or rarely use.

Technology provides countless benefits for the humans, organizations and society in general, improving and optimizing the time required to do tasks and the communications worldwide. Technology is making our job easier and also saving time and costs but otherwise this fast spread of technology is causing that many people begin to feel stress related to technology - technostress.

The world is changing and not everybody adapts to these changes, further the technology changes constantly and every time it is more sophisticated, this fact might trigger stress in people who are not habituated or those that feel they don't have the capacity to adapt to it.

Technostress is a relatively new topic since the spread of technology is relatively new, and therefore the literature about this is not very extensive, for this reason the future researchers have the obligation to find out more about this issue, because it could become a serious problem in the coming years as the technology is every time, more indispensable in our life, in order to avoid the negative effects that this problem can cause on both, personal and organizational level. To find and propose measures became essential, and researchers have to focus their efforts not only in gaining the knowledge about their effects but also in how we can prevent it, programs of training, increased technical support or relaxation techniques could be some of the prevention techniques

7 LIMITATIONS AND FUTURE RESEARCH

Regarding limitations, one weakness of this study is the scale to evaluate technostress, which only reflects the feelings of users when they use media. In future research it would be necessary to

approach the technostress more deeply. For instance evaluate the technostress with another scale where more dimensions of it would be included such as skepticism, fatigue, anxiety or inefficiency. It would also allow to find out more about the causes of technostress by inquiring more into the possible creators and inhibitors of the technostress. It seems clear that stress at work arises when demands exceed the resources of the individuals to face those demands. Researchers should investigate more about the causes and the events that cause technostress. Events such as loss of data, information overload, technology development, system failures or technology adaptation are factors sensitive to produce technostress. In order to avoid technostress, we should be able to provide workers with coping strategies which would allow to mitigate the effects, either in the form of control techniques which allow controlling the stress or as trainings that improve the workers' knowledge and efficacy

Also it would be important in the future research to assess physical and psychological damage that technostress causes as well as the repercussion and its relation to job satisfaction or job commitment.

In future research we should also take into consideration the topics such as self-efficacy or social support as inhibitors of technostress, because it seems that self-efficacy would play a role as a moderator of technostress, and social support would be included as job resources and would help to reduce or mitigate the effects of technostress

Another important point to deal with is the fact that most studies focus on the personal level and in a way neglect the organizational level.

There is still a lot to be found about technostress. Especially it is necessary to find out how to avoid both: the negative effects that it produces on the individual level and the productivity losses that the organizations can suffer.

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