

Psychosocial Risks at Work: She is More Stressed Than Him

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ABSTRACT

Indeed, stress has emerged as one of the foremost challenges to maintaining occupational safety and health for organizations worldwide. This article explores the factors that contribute to job stress experienced by employed individuals in Spain, focusing particularly on gender disparities. From the estimation of probit ordered models using data from ECVT (2010) survey, the general result indicates that both sociodemographic and work-related characteristics contribute to explaining the level of stress. Regarding gender, it is confirmed that women report, *ceteris paribus*, higher levels of stress. This extra stress can be explained by women's traditional greater dedication to family work, occupational segregation and differences in personality traits. The findings indicate that governmental initiatives aimed at increasing women's labour participation in the workforce should be complemented by legislation focused on improving women's working conditions, particularly regarding flexible work schedule and a better balance between work and personal life.

Keywords: Psychosocial risks at work; job stress; gender; ordered probit models.

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Riesgos psicosociales en el trabajo: Ella está más estresada que él

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RESUMEN

El estrés se ha convertido en uno de los mayores problemas para preservar la seguridad y salud ocupacional enfrentados por organizaciones en todo el mundo. Este artículo investiga los factores explicativos del estrés laboral experimentado por la población asalariada en España, prestando especial atención a las diferencias de género. A partir de la estimación de modelos probit ordenados, utilizando datos de la encuesta ECVT (2010), se obtiene el resultado general de que tanto las características sociodemográficas como las laborales contribuyen a explicar el nivel de estrés. En cuanto al género, se confirma que las mujeres informan, *ceteris paribus*, niveles más altos de estrés. Este estrés adicional puede explicarse por la tradicional mayor dedicación de las mujeres al trabajo familiar, la segregación ocupacional y las diferencias en rasgos de personalidad. Los resultados sugieren que las políticas gubernamentales destinadas a aumentar las tasas de inserción laboral de las mujeres deberían ir acompañadas de legislación que mejore sus condiciones laborales, principalmente en el ámbito del tiempo de trabajo flexible y el equilibrio entre el trabajo y la vida personal.

Palabras clave: Riesgos psicosociales en el trabajo; estrés laboral, género, modelos probit ordenados.

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1. Introduction

Currently, psychosocial occupational hazards are recognized as one of the primary threats to the health and safety of the global workforce. The establishment of new labour practices in response to increasing business competition makes it more plausible that new health and safety risks will arise or that some of the existing hazards will increase. The magnitude of these changes translates into an increasing impact on workers of emerging psychosocial risks, which are defined as aspects of the design, organisation and management of work, as well as the social and environmental context, which can cause psychological, social or physical harm to workers (EU-OSHA, 2002). Such risks are reflected in an increase in the level of stress experienced by workers, which can lead to a serious deterioration of physical and mental health. The European Commission defines stress at work as the set of emotional, cognitive, physiological and behavioural reactions to certain adverse or harmful aspects of the content, organisation or working environment (EU-OSHA, 2014a).

The significance of studying the social and economic aspects of psychosocial risks becomes apparent in the detrimental effects they can have on the various stakeholders involved. The economic cost of work-related stress is very high (EU-OSHA, 2014b; Hoel et al., 2000; Econtech, 2008; Brun & Lamarche, 2006; González & Gamero-Burón, 2013). For employees, stress links to challenges concerning both physical and mental well-being, diminished earnings, and overall quality of life. Organizations have to face large costs related to absenteeism, presenteeism, reduced productivity, and increased job reassignments, mainly among managers. In addition, continuous exposure to psychosocial factors such as stress can generate conflicts in the different workgroups, affecting the stability and well-being within the company in a generalised way.

The consequences of stress in terms of health and performance of companies end up affecting economies and societies as a whole. Despite this reality, and despite the expanding economic literature on the factors influencing job satisfaction, life satisfaction, and even happiness, there remains a relative dearth of research exploring job stress using the theoretical frameworks and empirical methodologies of that field. An explanatory factor for this scarcity may be the lack of nationally representative sources of information on stress. However, in recent times, the inclusion of self-reported measures of job stress in such surveys is enabling applied research.

This research aims to identify the factors that affect the stress level declared by workers in Spain, with special reference to gender differences. Ultimately, the goal is to determine whether stress is primarily attributed to the nature of one's job or if it is more influenced by the social and/or familial responsibilities associated with one's gender. The jobs performed by men and women differ in terms of working conditions (EU-OSHA, 2014). There is horizontal segregation according to gender so that women face risks which are specific to their jobs. Precariousness is one of them that manifests itself in temporary and part-time contracts. There is also vertical segregation, with few women in positions with high responsibilities, with a high demand for the conciliation between work and family life.

The analysis is focused on Spain. The microdata used for empirical analysis are derived from the Quality of Life at Work Survey (ECVT) for the year 2010. Workers themselves evaluate the level of stress they experience on an ordinal scale from 1 (no stress) to 10 (high stress). The goal is to evaluate how various variables influence the likelihood of reporting a particular stress level. The fact that this scale is ordinal affects the econometric analysis. Specifically, ordered probit models are estimated. Section 3 provides further details on this matter. As the main result of this analysis, there is confirmation that women declare, *ceteris paribus*, higher levels of stress. The additional stress experienced by women can be attributed to their traditionally higher involvement in family responsibilities, occupational segregation, and variations in personality traits.

The rest of the research is structured as follows. The second section review the literature related to the aim of this investigation. The third section presents the econometrics methodology used, the selected data, and the variables finally introduced as explanatory of stress. The fourth section presents the results obtained by the multivariate statistical analysis. Finally, the last section concludes.

2. Literature review

Below is a structured review of the literature on the determinants of job stress, categorizing various studies based on the characteristics of either the worker or the job in which they focus on. As a general conclusion, it is found that both types of characteristics are relevant for explaining stress.

Individual characteristics

This study focuses on the different factors that cause high levels of stress in workers, based on gender differences. Gender constitution is given by various psychosocial and cultural characteristics, based on emotional, affective, and behavioural aspects which society assigns to men and women (Vogl & Baur, 2018). This gender role and the behavioural expectations associated with it cause different factors of job stress. In the case of men, for example, the lack of control over working conditions or career development possibilities is generally a cause of occupational stress, while for women the tension increases when occupying a position of responsibility, and family and work responsibilities have to be reconciled (Cifre et al., 2015). In general, working women manifest different symptoms of stress, are affected by different stressors, and cope with stress differently (Jick & Mitz, 1985; Spielberger & Reheiser, 1994).

Conclusions about how age affects stress are mixed. On the one hand, when a young worker begins to develop their professional career, they may not have the necessary experience to perform tasks fluently yet, which can result in a higher level of tension. Nevertheless, it would also be logical to consider that, as the worker develops work skills, other responsibilities arise in their personal life, which in the same way can be stressful. It would also be appropriate to consider that, as Gamero-Burón (2010) points out, stressful situations occur at older ages, close to retirement, since the results achieved at work largely condition the future in such a period of inactivity.

Another determining characteristic when studying the causes of high stress levels is the educational level. In general, workers will develop different tasks according to their qualifications. For less-skilled workers, the stress generators could be related to psychosocial risks such as physical or hazardous work—with greater monotony of the task—which are related to more precarious jobs. For workers with more training, other factors could cause stress, such as the difficulty in reconciling work and family duties, or the responsibility of their position, even more so if the workers have subordinates under their authority. Aftab & Khatoon (2013) state that less educated employees have trouble understanding organizational policies and job roles, and have difficulty performing certain tasks, which acts as stressors for them.

It is also relevant to analyse if there are differences according to the type of family unit the worker belongs to. As detailed in Judge & Colquitt (2004), research on work-family conflicts has increased in recent decades, as the household now consists—in many cases—of a couple where both members work outside the home, which generates work-family and family-work problems, associated with tension.

Job stability and remuneration

Uncertainty regarding job loss is a factor that can lead to high levels of stress and strain on workers. That is why it is necessary to introduce variables related to the stability of the employment relationship. Gamero-Burón (2007) relates job satisfaction and the type of contract in Spain. It is pointed out that employees are indifferent between a permanent contract in the private sector and another civil servant, and that temporary contracts have a negative effect on the well-being of workers—especially men. These differences by gender are explained by the greater degree of involuntariness in accepting these contract modalities by male workers.¹

¹ Other investigations of the relationship between type of contract and job satisfaction are, for example, Booth et al. (2002), Bardasi & Francesconi (2004), and Green & Tsitsianis (2005).

The relationship between the regional unemployment rate and the level of stress will also be studied. In this sense, two opposing circumstances can occur. High unemployment rates in crisis situations increase the rate of temporary work, which leads to greater job insecurity and uncertainty. Besides, the possibility of occurrence of an event—as is the case of the possible loss of employment—can be more stressful than the loss itself (László et al., 2009). On the other hand, a low unemployment rate can contribute to reducing the stress level of the worker since the environment of security and stability would favour that the worker does not worry about the possibility of losing their job. However, the relationship could be very different. Thus, the unemployment rate could show a negative correlation with the level of stress due to the existence of a comparison effect on subjective well-being. That is, those individuals who have a job value this situation more favourably the higher the unemployment rate in their environment—that is, the more difficult it is to find a job and the more people lack it (Clark & Oswald, 1996; Lange, 2013). Other research such as Fenwick & Tausig (1994) and Pilipiec et al. (2020) indicate that the effect of a high unemployment rate on stress is immediate. They state that macroeconomic changes, such as recessions, can directly affect the stress level of individuals by producing changes in structural work routines.

A positive relationship is to be expected between the remuneration received for the performed work and the level of stress declared by its direct relationship both with the level of responsibilities that the worker must assume and with the complexity of the tasks that must be done. On the other hand, some studies indicate that variable remuneration—based on the amount of work done—induces higher stress levels, both in terms of perceived stress and objectively measurable stress levels (Allan et al., 2020).

Organisation of working time

Some studies indicate that most full-time job categories tend to show more negative health indicators, including stress levels, than part-time ones (see, for example, Benach et al., 2004). These conclusions fall within the logic of work-life balance since it will be more difficult for a full-time worker to overcome personal demands if they have less time to devote to them and it becomes a gender issue due to the double working day (home and paid work) traditionally assumed by women (Keene & Quadagno, 2004).²

Commuting time can also be a determining factor in stress levels (Gottholmseder et al., 2009). To that time, it must be added the increase in the risk of suffering a traffic accident, as well as the stress produced by being in a traffic jam, etc. All these circumstances can also affect sleep hours, contributing to increased fatigue and, again, accident likelihood.

Studies linking worker stress to shift or night shifts focus on physical conditions. This type of unconventional schedule affects sleep, which mainly causes circadian desynchrony that impairs physical performance, resulting in a reduction in work productivity and increased risk of accidents (Kulkarni et al., 2020; Scott et al, 1997; Brown et al., 2020). These consequences also come from the fact that this type of employment undoubtedly affects the social and family environment, given that it is based on an imbalance in the interaction between work and the extra-work activities of the person (Fagan et al., 2012).

Job matching

The Demand/Control theory ultimately predicts that the quality of the lack of fit between the training requirements of the job and the worker skills affects job stress. Some causes of job stress can be attributed to actual work environments. Huffman (2004) and Pain (1982), in their discussion of the

² Moreno et al. (2019) analyses attitudes towards gender roles and preferences for family models in the Spanish population. The results reveal that gender plays an important role in explaining those preferences, with women less likely than men to prefer the model in which man is the sole breadwinner.

organizational factors that lead to stress and burnout, point out that poor job adjustment can result in stress if employees are asked to perform tasks they feel are inappropriate.

The tenure and the training mismatch of the workers with the position they perform can be considered general indicators of the quality of work adjustment. As tenure increases, the job could become more fulfilling and less stressful, with greater job opportunities and responsibilities and, therefore, a better fit with the job desired by the individual. Alternatively, workers may lose interest and declare increased stress if repetition of tasks proves tedious or career flexibility may be compromised or restricted. On the other hand, employees whose qualifications are higher than those of the position held are expected to experience job stress less frequently than those whose skills fit or are inferior to those required in their job.

Also, a lack of conciliation between work and extra-work activities can lead to greater psychological tension and, consequently, higher levels of stress. The long working hours implemented by demands of business competitiveness and the incorporation of women into the labour market generate new organizational and family structures affecting the worker. Work-family conflict is of great interest today. It has been considered as a source of stress in itself, with consequences both at the organizational and family level. At the organizational level, the different conciliation policies related to flexible hours or the possibility of teleworking influence the perception of worker autonomy in the face of their task. This has a positive impact on work-life balance and reduces absenteeism, improving the level of perceived pressure and reducing the development of related trends such as burnout.

Task characteristics and social support

The growing global competitiveness and uncertainty that organizations face have led to the promotion of collaborative work and, with it, the creation of dynamic work teams, which is considered a key point of competitive advantage (Costa et al., 2014). These groups, whenever they are effective, contribute greatly to the success of organizations, since they allow to respond to problems and challenges in a fast, flexible, and innovative way. Therefore, inefficiency in the formation of these working teams can be a cause of tension, due to an ambiguous responsibility or groupthink, in which workers take the most desirable alternative because it is the simplest.

Psychosocial risk factors, such as lack of autonomy in the task, repetition of movements or repetitive tasks, a high level of physical exertion, or the performance of tasks in an unsafe environment can cause adverse health effects. The extension of the former over time and the failure of the mechanisms to face them cause mental illnesses such as stress, depression, anxiety, obsessive disorders, phobias, etc. (Leca & Jain, 2010).

The employed population presents a high mental load—a consequence of the high pace of work and pressure—which is aggravated by the lack of autonomy in tasks development, work planning, and decision making (Dysvik & Kuvaas, 2011). To counter this lack of autonomy, new organizations are trying to adopt less hierarchical management structures. Even so, in Spain, a quarter of workers cannot choose the work method or rhythm, nor modify tasks or choose breaks for rest (Artazcoz et al., 2006).

Also, the monotony of the task in jobs characterised by routine and repetition is closely linked to the physical and mental health of workers. On the other hand, the excessive physical load of work is related to physiological pathologies in the health of workers, producing sleep disorders (Akerstedt et al., 2002), and musculoskeletal symptoms (Hämmig, 2020). To these physical demands of work can be added the performance of tasks in inappropriate spaces or even adverse or dangerous conditions. This aspect will also be decisive for workers, who declare higher levels of stress in these circumstances, while if the task is carried out in a pleasant environment this feeling disappears (Herusasongko et al., 2012). Related to this, there is evidence that social support in the company, in general, and the good quality of interpersonal relationships with bosses and between colleagues, in particular, can reduce the stress experienced by the worker.³

³See, among others, Russell et al. (2018), Mette et al. (2018), Baum (1999), Nappo (2020) and McKenzie et al. (2002).

Ownership of the organization and sector of activity

The ownership of the organization for which the employee works (public or private) can influence their work experiences. The literature review offers the first differences between both types of organizations relative to their objectives. The general purpose of the public organizations is maximising social welfare while private sector firms seek efficiency through the maximization of profits. Presumably, these differences in values, objectives, and organizational contexts may be reflected in different levels of psychological stress for their respective employees. It is also expected that the sector of activity of the company or organization (agriculture, industry, construction, services) will condition the work experiences of its workers, in general, and the levels of stress experienced, in particular, by the fact that production processes and work environments differ greatly.

3. Material and methods

This article uses individual assessments of perceived levels of psychological stress as a measure of job stress. Another way to value it is from its physical or psychological effects (MacFadyen et al., 1996). However, these latest measures are confusing, since many influences other than those related to stress can affect health.

In this study focused on Spain, we will utilize the Quality of Life at Work Survey (ECVT) from the year 2010—the latest year in which the survey was conducted— as our database. This survey operation is nationally representative and is specifically designed to facilitate research on the quality of life at work. It asks respondents to “indicate the level at which they feel in their current job in relation to stress”, being the response scale from 0 (no stress at all) to 10 (a lot of stress). The goal is to assess how certain variables influence the likelihood of reporting a specific level of stress. The ordinal nature of this scale conditions the econometric analysis. Specifically, ordered probit models being estimated. This section provides further details on this topic. ECVT (2010) also collects a wide range of information about individuals’ sociodemographic characteristics and the characteristics of their employment, which is crucial for investigating the factors that explain job stress.

The initially selected work sample is composed of wage-earning workers, both from the public and private sectors, aged under 65 years. Once these filters have been applied, the work sample is composed of 6488 employees. The sample size is reduced to 5820 individuals after accounting for missing values in the dependent and independent variables considered in this study.

Table 1 shows the distribution of stress responses provided by the selected workers, with a gender distinction. Overall, the subjective perception of stress is far from being something anecdotal. The modal level is 8 for all groups while the median stress level is higher for the group of women (7 versus 6 for men). By grouping de scale levels, it is also observed that the percentage of women who reported a high risk of stress (levels 8 to 10) is higher than that of men (35.9% and 31.7%, respectively).

Table 1. Distribution of self-reported job stress in Spain (proportions)¹

Original Scale	Total	Women	Males
0 (not stress at all)	0.097	0.095	0.099
1	0.027	0.026	0.028
2	0.050	0.043	0.056
3	0.045	0.037	0.052
4	0.042	0.040	0.045
5	0.142	0.137	0.147
6	0.112	0.108	0.116
7	0.147	0.155	0.140
8	0.154	0.155	0.154
9	0.083	0.091	0.077
10 (a lot of stress)	0.099	0.114	0.087
Total	1.000	1.000	1.000
Number of observations	5820	2582	3238
Median	6	7	6
Mode	8	8	8
Grouped escale			
0-4	0.263	0.241	0.281
5-7	0.402	0.401	0.402
8-10	0.336	0.359	0.317
Total	1.000	1.000	1.000

¹ ECVT (2010) asks the worker to “indicate the level at which they feel in their current job in relation to stress”, being the response scale from 0 (no stress at all) to 10 (a lot of stress).

Source: Own elaboration from ECVT (2010).

In this context, the answer to the question about stress provided by the individual is interpreted as an ordinal indicator of the true level of stress they endure, which is a continuous latent variable impossible to observe directly. It should be noted that, when the dependent variable is discrete but its values indicate an order, it is not correct to estimate it through multinomial models since including the information provided by the order of alternatives in the model specification allows for better results. The use of OLS estimation is also inappropriate because, by coding the possible alternatives as 0,1,2,...(j+1)....J, it would consider the difference between (J+1) and (j+2) as the one between 1 and 2, which may not be the case, as the numbers used in the coding only represent an order within a classification. Schröder & Yitzhaki (2015) demonstrate that treating ordinal data with methods intended for cardinal data may give an incorrect impression of a robust result.

Ordered probit and logit models take the latent-variable approach to the problem (see Zavoina & McElvey, 1975 and Greene, 2003). If it is assumed that the scale offered to the individuals to declare their degree of stress is composed of $J + 1$ levels, from 0 (no stress) to J (a lot of stress), the relationship between the declared scores ($stress_i$) and the latent variable s_i^* is given by:

$$\begin{aligned}
 stress_i = 0 & \quad \text{if} & \quad -\infty < s_i^* \leq \mu_0 \\
 stress_i = 1 & \quad \text{if} & \quad \mu_0 < s_i^* \leq \mu_1 \\
 \dots & & \dots \\
 stress_i = J & \quad \text{if} & \quad \mu_{J-1} < s_i^* < +\infty
 \end{aligned} \tag{1}$$

where μ 's parameters are the values (thresholds) of the variable s_i^* , which divide its path into intervals associated with the different stress scores. Then, the actual values just carve up the regions of that latent variable. For this latent variable s_i^* , a linear model is specified:

$$s_i^* = \alpha + \beta_0 w_i + \boldsymbol{\theta}_1 \mathbf{x}_{1i} + \xi_i \tag{2}$$

where α is a constant and w_i is a dummy that indicates whether the wage-earner is a woman or not. Vector \mathbf{x}_{1i} collects the control variables distinguishing among sociodemographic, employment, and environmental characteristics. The scalar β_0 is the marginal effect on the latent variable of the sex variable, vectors $\boldsymbol{\theta}_1$ meets the associated parameters of control variables. The term ξ_i it is the disturbance that is assumed normally distributed in the case of ordered probit model, with mean 0 and variance 1. In the ordered logit, ξ_i is distributed according to a logistic distribution. The logistic distribution is similar to the normal distribution, except for its tails (which are heavier in the logistic distribution). In practice, this change in the model formulation does not seem to make any difference in the results (Greene, 2003; Cameron & Trivedi, 2010,). From a theoretical perspective, it is difficult to justify the choice between the probit or logit formulation. In general terms, it can be said that the same results are obtained by choosing one distribution or another. In this research, the probit version of the model has been chosen. Symbolizing the normal distribution function as $\Phi(\cdot)$, the final formulation of the ordered probit model is as follows:

$$\begin{aligned}
 Prob(Y_i = 0) &= \Phi(-\beta \cdot X_i) \\
 Prob(Y_i = 1) &= \Phi(\mu_1 - \beta \cdot X_i) - \Phi(-\beta \cdot X_i) \\
 Prob(Y_i = 2) &= \Phi(\mu_2 - \beta \cdot X_i) - \Phi(\mu_1 - \beta \cdot X_i) \\
 &\dots \\
 Prob(Y_i = (J-1)) &= 1 - \Phi(\mu_{J-2} - \beta \cdot X_i)
 \end{aligned} \tag{3}$$

To identify the model, one of the cut-off parameters (the lowest one, separating the lowest category and the second-lowest) is usually fixed at 0. Coefficients on predictors are scaled in terms of the latent variable and, in general, are difficult to interpret. It is possible to calculate marginal effects from ordered probit/logit results, which report how changes in a predictor are related to people moving from one category to another. The tables presented later compile the model estimates showing these marginal effects.⁴

To study the determinants of subjective stress in detail, the explanatory variables have been classified into six groups: (i) sociodemographic characteristics including sex, (ii) variables related to income and job stability, including regional unemployment rate (iii) factors relating to the organisation of working time (iv) variables indicating the degree of matching with employment, (v) factors indicating characteristics of the task carried out (monotony, dangerousness, or lack of autonomy), and (vi) the sector of activity of the organization for which the employee works is introduced. The complete list of these variables and its statistical description are collected in table 2 and table 2bis. In most cases, the meaning of the variables is clear from their names. Appendix Table A1 gives the definitions of variables that could need further explanation.

⁴ The Stata (Version 14) software was used in all the estimations and marginal effect computations in this paper.

The tables previously mentioned show the sociodemographic profile of the workers, as well as the characteristics of their jobs. In general, figures show that women exhibit a higher level of education. In the case of the type of family, compared to men, working women have a greater presence in households with an occupied partner and a somewhat smaller presence of children than in men's households, which can be explained by the greater difficulties of that group to entering to labour market. Concerning the characteristics of the jobs, the indicators also show significant differences according to gender. Thus, the level of income and the presence of not-fixed salaries are lower for women. They work on average fewer hours a week, with a greater presence of part-time. Seniority in the organization is lower for women while they outnumber men in terms of overtraining. It also highlights the somewhat lower level of satisfaction with work-family balance achieved by the female group compared to that of men. Women have a greater relative presence in the public and service sectors, mainly in education and health.

Table 2. Statistical description of the sample (means)

Sociodemographic characteristics¹

Variables	All	Woman	Man
i. Sociodemographics characteristics			
Woman	0.444	1.000	0.000
Age:			
Less than 26 (ref.)	0.057	0.054	0.059
26-35	0.238	0.264	0.217
36-45	0.327	0.316	0.335
46-55	0.266	0.267	0.265
56-60	0.085	0.074	0.093
More than 60	0.028	0.025	0.031
Level of education:			
Primary education or less (ref.)	0.141	0.108	0.166
Secondary	0.201	0.170	0.225
Vocational education I	0.119	0.113	0.124
Vocational education II	0.117	0.111	0.122
Bachelor's degree	0.132	0.141	0.125
Undergraduate degree	0.128	0.172	0.093
Graduate degree	0.162	0.184	0.144
Laboral situation of the couple			
No partner (ref.)	0.323	0.391	0.269
Working partner	0.349	0.410	0.301
Non-working partner	0.327	0.199	0.430
With children under 14 years all	0.357	0.338	0.373
Dependent persons at home	0.068	0.070	0.067
Immigrant person	0.091	0.082	0.098
Daily hours dedicated to household chores	1.7	2.2	1.3

¹ The term "ref" indicates the reference category in the econometric estimations.

Source: Own elaboration form ECVT (2010).

Table 2bis. Statistical description of the sample (means)

Job characteristics¹

Variables	All	Woman	Man
Job stability and remuneration			
Type of contract			
Permanent (ref.)	0.789	0.784	0.793
Voluntary temporary contract	0.012	0.011	0.013
Involuntary temporary contract	0.199	0.204	0.194
Probability of job retention			
Highly unlikely/Unlikely (ref.)	0.133	0.123	0.141
Quite likely	0.215	0.204	0.225
Very likely	0.652	0.673	0.635
Regional unemployment rate	18.7	18.7	18.8
Monthly wage (10 ² euros)	13.6	11.9	15.0
Non-fixed wage	0.140	0.110	0.163
Organisation of working time			
Hours of work per week	38.8	36.1	41.0
Extension of the working day without remuneration			
Never or almost never (ref.)	0.788	0.804	0.776
Often	0.094	0.090	0.096
Always	0.118	0.105	0.128
Participation in organization formation	0.432	0.425	0.438
Split shift	0.408	0.325	0.475
Eating at home	0.666	0.722	0.621
Working at home	0.009	0.009	0.009
Working on weekends	0.491	0.462	0.513
Shift work	0.205	0.211	0.201
Night work	0.141	0.107	0.167
Commute time (more than 1 hour)	0.021	0.021	0.021
Availability for changing residence	0.129	0.095	0.157
Travel availability	0.381	0.285	0.458
Job matching			
Tenure (years)	11.1	10.3	11.6
Moonlighting	0.029	0.028	0.029
Training mismatch:			
No mismatch (ref.)	0.784	0.756	0.807
Overtraining	0.180	0.210	0.157
Different training	0.020	0.020	0.020
Undertraining	0.015	0.014	0.016
Satisfaction with the work-family balance ²			
Unsatisfied (ref.)	0.086	0.089	0.083
Satisfied	0.492	0.506	0.480
Very satisfied	0.423	0.405	0.437
Task characteristics and social support			
Supervisor	0.229	0.156	0.288
Teamwork	0.832	0.837	0.828
Very satisfied with autonomy ²	0.559	0.564	0.555
My work is very monotonous ²	0.254	0.254	0.254
My job is very dangerous ²	0.158	0.103	0.201
My work is very physical ²	0.232	0.220	0.242
Very good relations with bosses ²	0.509	0.516	0.503
Very good relationships with colleagues ²	0.668	0.669	0.667

Ownership of the organization and activity sector

Public sector employees	0.254	0.315	0.206
Firm size: less than 11 employees	0.329	0.338	0.321
Sector of activity:			
Industry (ref.)	0.178	0.103	0.238
Agriculture	0.027	0.012	0.039
Construction	0.088	0.017	0.145
Education	0.086	0.139	0.044
Health	0.083	0.137	0.040
Commerce	0.126	0.143	0.113
Other services	0.412	0.448	0.382
Size of city (residents)			
Less than 10000 (ref.)	0.207	0.189	0.221
10001 to 50000	0.278	0.266	0.288
50001 to 100000	0.120	0.122	0.119
100001 to 1000000	0.312	0.323	0.303
More than 1000000	0.083	0.100	0.070
Number of observations	5820	2582	3238

¹ The term "ref" indicates the reference category in the econometric estimations.

² Refer to Appendix Table 1 for the definition of these variables.

Source: Own elaboration from ECVT (2010).

4. Results

This section provides, first, the ordered probit estimates corresponding to the entire salaried sample and then presents those corresponding to the analysis separated by gender.

4.1. Results for all wage-earning workers

First column of tables 3 and 3bis present the estimated marginal effects for the probability of declaring the highest level of stress (level 10) for entire sample finally selected. As indicated above, in this research, the probit version of the ordered model has been chosen.⁵ The general statistics at the bottom of table 3bis indicate that the model is significant as a whole, although a substantial degree of variation remains unexplained. Table 3 shows the marginal effects for sociodemographic characteristics, followed, in table 3bis, by labour characteristics grouped according to the labour facet of which they report (stability and income, organization of working time, job matching, task characteristics and social support, and ownership of the organization and activity sector).⁶

⁵ Appendix table A.2 shows the estimated marginal effects from both ordered probit, ordered logit and linear regression (OLS). Notably, there are minimal disparities between ordered models, both in the magnitude of the marginal effects and their statistical significance. That does not happen for OLS estimates.

⁶ After running the regression, the "stat vif" command in Stata has been employed to assess multicollinearity. The "vif" command calculates the *variance inflation factor*, with a general guideline suggesting that a VIF value exceeding 10 may warrant further investigation, indicating potential linear dependency among regressor. In our analysis, the VIF values for the entire sample is consistently around 1.75, never surpassing 5.5 for any variable. For woman and men separately, these data are 1.86 (5.66) and 1.74 (5.58) respectively. Additionally, we utilized the "linktest" command in Stata to identify potential misspecification issues. The model for the entire sample as well as for both women and men passed the test at 5% of significance level (p-values of 0.064, 0.235 and 0.140, respectively). Regarding heteroskedasticity, all models were estimated with robust standard errors using the option "vce(robust)." This approach corrects variances and results in wider intervals for parameters compared to those without correction.

Table 3. Ordered probit estimate for the probability of declaring the maximum level of job stress (marginal effects). Sociodemographic characteristics¹

Variables	All	Woman	Man
Sociodemographic characteristics			
Woman	0.031***		
Age (years) [ref.: Less than 26]			
26-35	0.014+	0.011	0.012
36-45	0.014+	0.015	0.010
46-55	0.011	0.019	0.000
56-60	-0.001	0.004	-0.009
More than 60	-0.040***	-0.047**	-0.039**
Level of education [ref.: Primary education or less]			
Primary education or less (ref.)	-0.008	-0.004	-0.010
Secondary	0.009	0.016	0.003
Vocational education I	0.030***	0.032*	0.028***
Vocational education II	0.012+	0.018	0.009
Bachelor's degree	0.035***	0.053***	0.017+
Undergraduate degree	0.033***	0.040**	0.030**
Laboral situation of the couple [ref.: Without couple]			
Occupied couple	0.005	-0.000	0.014*
Unoccupied couple	0.009+	0.001	0.016**
With children under the age of 14	-0.003	-0.005	-0.003
Dependent persons at home	0.013+	0.034**	-0.005
Immigrant person	-0.026***	-0.019+	-0.027***
Daily hours dedicated to household chores	0.002	0.001	0.002

¹ This table shows the estimated marginal effects for the variable "woman" on the probability that the stress level is equal to 10 in ordered *probit* models. These effects have been calculated according to Greene (2003). (***) indicates statistical significance at 1%, (**) at 5%, (*) at 10% and (+) at 20%. The term "ref." indicates the reference category in the econometric estimations.

Source: Own elaboration from ECVT (2010).

Table 3bis. Ordered probit estimate for the probability of declaring the maximum level of job stress (marginal effects)¹

Job characteristics¹

Variables	All	Woman	Man
Stability in employment and remuneration			
Type of contract [ref. Permanent]			
Voluntary temporary contract	0.009	0.073*	-0.025
Involuntary temporary contract	-0.016**	-0.017*	-0.017**
Probability of job retention [ref.: Highly unlikely/unlikely]			
Quite likely	-0.005	-0.017	0.001
Very likely	-0.013*	-0.004	-0.019**
Regional unemployment rate	0.001**	0.001+	0.001+
Monthly wage (10 ² euros)	0.001+	0.000	0.001+
Non-fixed wage	0.008	0.010	0.006
Organisation of working time			
Weekly working hours	0.002***	0.002***	0.002***
Extension of the working day without remuneration [ref.: Never or almost never]			
Often	0.037***	0.043***	0.032***
Always	0.030***	0.034***	0.025***
Participation in organization formation	0.005	0.017**	-0.003
Split shift	0.000	0.010	-0.005
Eating at home	-0.011**	-0.008	-0.013**
Working at home	0.059***	0.076**	0.046+
Working on weekends	0.007+	0.016*	0.002
Shift work	0.003	-0.012	0.014*
Night work	-0.006	-0.008	-0.009
Commute time (more than 1 hour)	0.031*	0.047*	0.022
Availability for changing residence	0.008	-0.002	0.012+
Travel availability	0.017***	0.020**	0.014**
Job matching			
Tenure (years)	0.001***	0.001*	0.001***
Moonlighting	-0.011	-0.020	-0.007
Training mismatch [ref.: No mismatch]			
Overtraining	-0.012*	-0.009	-0.015**
Different training	0.003	0.000	0.006
Undertraining	0.059***	0.048+	0.066***
Satisfaction with the work-family balance ²			
Satisfied	-0.040***	-0.040***	-0.039***
Very satisfied	-0.071***	-0.071***	-0.068***
Task characteristics and social support			
Supervisor	0.035***	0.039***	0.032***
Teamwork	0.026***	0.027***	0.026***
Very satisfied with autonomy ²	-0.008*	-0.024***	0.002
My work is very monotonous ²	0.050***	0.054***	0.046***
My job is very dangerous ²	0.022***	0.025*	0.022***
My work is very physical ²	0.071***	0.100***	0.049***
Very good relations with bosses ¹	-0.021***	-0.023***	-0.021***
Very good relationships with colleagues ²			
	-0.003	0.006	-0.009+
Ownership of the organization and activity sector			

Public sector employee	-0.016***	-0.014+	-0.016**
Firm size: less than 11 employees	-0.006	-0.017**	0.003
Sector of activity [ref.: Industry]			
Agriculture	-0.055***	-0.050	-0.048***
Construction	-0.026***	-0.043	-0.017*
Education	0.031***	0.025+	0.018
Health	0.021**	0.005	0.036**
Commerce	0.023***	0.001	0.040***
Other services	0.018***	0.012	0.017**
Size of city (number of residents) [ref.: Less than 10000]			
10001 to 50000	-0.007	-0.013	-0.002
50001 to 100000	0.001	-0.003	0.005
100001 to 1000000	0.007	-0.001	0.013*
More than 1000000	0.002	-0.002	0.010
Number of observations	5,820	2,582	3,238
Log pseudolikelihood	-12684.273	-5559.082	-7076.381
Wald test	1063.820***	545.340***	605.780***
Pseudo R ²	0.043	0.047	0.045
Correct prediction (%)	20.213	21.301	20.910
Correct prediction with grouped scale (%) ³	50.2	50.5	49.9

¹ This table shows the estimated marginal effects for the variable "woman" on the probability that the stress level is equal to 10 in ordered *probit* models. These effects have been calculated according to Greene (2003). (***) indicates statistical significance at 1%, (**) at 5%, (*) at 10% and (+) at 20%. The term "ref." indicates the reference category in the econometric estimations.

² Refer to Appendix table 1 for the definition of these variables.

³ Correct prediction in a model of three categories in stress variable: 0, 1 and 2 if stress in [0,4], [5,7] and [8-10] intervals, respectively.

Source: Own elaboration from ECVT (2010).

Going into the detailed commentary of the estimated coefficients and, in particular, those associated with individual characteristics (table 3), an inverted U-shaped profile is observed between age and the probability of declaring a high level of stress. Thus, in intermediate ages higher levels of stress are reached, being the maximum of such concave relationship in the interval [26-45] years. This result points to the highest levels of labour demand typical of the jobs performed in maturity, a stage in which professional trajectories are defined. University workers show higher levels of stress. These results contrast with the theory of authors such as Sauter et al. (2001) who state that tension is indeed more common in low-level jobs in which psychosocial dimensions determine a panorama of risk of tension, and would be closer to the conclusions of Gamero-Burón (2010), where it is explained that the level of stress is significant and increasing in relation to the educational level because it is related to job responsibilities.⁷ On the other hand, immigrant status is associated with a lower probability of declaring high levels of stress, may be for cultural reasons.

As shown in table 3bis, the temporary nature of the employment contract is associated with lower levels of stress when the worker has not voluntarily accepted that contract. Probably, this type of labour relations generates lower levels of mental tension in the worker because they are considered transient by them. As could be thought, the fact that it was very likely to retain the job diminishing the mental tension. As for the variable indicator of labour market conditions, the unemployment rate at the regional level, there is a positive relationship with the probability of being very stressed. As indicated above, the existence of a high unemployment rate can be associated with a high probability of job loss, which can lead to increased levels of psychological stress if one's own employment does

⁷ Microeconomically speaking, education is interpreted as an investment made at early ages. Its benefits expand throughout all the life cycle, and its returns are measured in monetary terms by estimating wage equations. The detected positive relationship between education and job stress would indicate that the benefits of increasing schooling in terms of higher level of income may be more than offset by losses of well-being at work.

not offer a sufficient level of job stability. On the other hand, salary has a positive impact on stress, probably due to its positive relationship with the level of responsibilities that the worker must assume.

Regarding the characteristics related to working time, it is observed that a high number of working hours, prolonging the working day without remuneration, working at home or on weekend, investing a high amount of time in commuting, and the availability to travel for labour requirements are situations associated with high levels of stress. Workers to whom these circumstances hold positions with more continuous working hours in which the lack of rest causes drowsiness, fatigue, cognitive impairment, and sleep disturbance (Gamero-Burón, 2010; Yoon et al., 2018). The contrary occurs when worker could eat at home.

Concerning the variables that indicate the quality of job matching, tenure exhibit a positive impact on the level of stress, probably because of its direct relationship with the level of responsibilities of the worker. In addition—and as expected—undertrained (overtrained) workers report higher (lower) levels of stress than those who have the appropriate formation for the job they perform. The negative relationship between job stress and the level of satisfaction with the work-family balance is also evident.

The characteristics of the tasks performed are relevant to the explanation of job stress levels. Being supervisor of the tasks of others employees and teamwork are associated with high levels of stress. This may be explained by the erroneous construction of working groups. It is not easy to make a group of professionals with different goals row in the same direction. In addition, teamwork requires a good design and a clear specification of the functions since they are sometimes used to perform complex tasks, where the limits of each position are blurred, requiring different competencies on the part of employees, and creating an environment of tension (Kalleberg et al., 2009).

In relation to the characteristics of the task and, in particular, to the level of psychosocial risks to which the worker is exposed, it is observed that monotony, dangerousness, and the physical load of the tasks are factors positively associated with the level of stress. It occurs the opposite with autonomy, supporting the conclusions of several studies showing that, generally, work environments characterised by low control in the tasks and autonomy of the worker tend to create psychological tension (Leontaridi & Ward, 2002). On the other hand, the quality of personal relationships at work is relevant so as to explain the stress level. In particular, maintaining good relations with superiors reduces it.

The results support the intuition that the lowest levels of stress correspond to the group of employees in the public sector. It is also observed that the activity sector of the organization has an impact on the level of stress. In general, and taking as a reference the industrial sector, lower levels of stress are observed in the agricultural sector and in construction, while higher in the service sector, in general.

4.2. Results of the gender analysis

Multiple studies support the existence of negative discrimination against women in the labour market, which translates into occupational segregation, lower promotions opportunities and remuneration, higher dismissal rates, harassing behaviours at work, etc. Is this worse situation with respect to these standards of comparison also reflected in higher levels of job stress?

Returning to the estimates presented first column of table 3 shown above, it is notable that the gender indicator variable is highly significant with a positive associated effect, indicating that, all else being equal, women are more likely to report high levels of stress compared to their male counterparts. This is observed even after controlling for a comprehensive set of sociodemographic and work characteristics.

They are several explanations for this finding. It's possible that aspects related to assuming family responsibilities are not adequately accounted for. Often, "gender asymmetries" occurs, where gender plays a significant role. Men and women tend to have different roles in the family which conditions their work experiences. For instance, a child's illness is more likely to affect a woman at

work because mothers typically shoulder a disproportionate burden of childcare responsibilities. This could explain why men experience fewer stressful circumstances and consequently perceive less stress. However, another perspective suggest that women encounter these stressful circumstances more frequently or they assess threatening situations as more stressful (Matud, 2004).⁸ Gender differences in job stress could be determined by differences in the perceived severity of specific stressors and in the frequency with which such stressors are experienced by men and women (Spielberg & Reheiser, 2007).⁹

Table 4 shows the marginal effect obtained for the gender indicator variable (woman) when estimating different specifications of the explanatory model of job stress. Specification (0) indicates that the gender variable is statistically very significant when it is included as the only regressor, which means that the unconditioned distributions of job stress are not homogeneous by gender. Each of the following specifications adds, alternatively, the blocks of variables related to individual and work characteristics [(1) to (6)]. It is observed that the gender variable only loses part of its high significance when the variables related to ownership and the sector of activity are added. Although this model is poorly specified, the signs of the coefficients associated with these new variables coincide with those shown in the final specification in tables 3 and 3bis, which makes it possible to interpret the marginal effect. The result provides some evidence that horizontal segregation may explain—at least in part—the differences in stress between genders.

Table 4. Ordered probit estimation of the marginal effects associated with the female variable. Different econometric specifications (marginal effects).

Econometric specification	Marginal effect ¹	Pseudo-R ²
(0) = Woman only	0.020***	0.007
(1) = (0) + Sociodemographic characteristics	0.017***	0.0063
(2) = (0) + Job Stability and remuneration	0.034***	0.0072
(3) = (0) + Organization of working time	0.041***	0.014
(4) = (0) + Job Matching	0.021***	0.0097
(5) = (0) + Task characteristics and social support	0.033***	0.0202
(6) = (0) + Ownership of the of organization and activity sector	0.012**	0.0037

¹ The table shows the estimated marginal effects for the variable “woman” on the probability that the stress level is equal to 10 in ordered *probit* models. These effects come from regressions on the same sample ($N=5820$) and have been calculated according to Greene (2003). (***) indicates statistical significance at 1%, (**) at 5%, (*) at 10% and (+) at 20%.

Source: Own elaboration from ECVT (2010).

To verify to what extent the family situation can be another explanatory factor of the excess of stress declared by female workers, the specified ordered probit model shown in table 3 and 3bis has been estimated only for the group of those who do not have a partner or children ($N = 1719$). Interestingly, the gender variable is statistically significant ($p\text{-value}=0.000$) which suggests that the difference in family responsibilities does not contribute to explain the worse situation of women in terms of stress. The ECVT (2010) also provides information on the extent to which the worker finds it difficult to achieve flexibility for family reasons in certain aspects related to working time. Within the group of those who live as a couple and have children, women report facing greater difficulties than men to request days without employment and salary (19.50% compared to 22.84%), leave (21.1%

⁸ With data obtained from the ECVT (2010), 43.1% of women who live in a couple and have children are very satisfied with the time they dedicate to the care of their children while among men that figure drops to 33.7%. In addition, 33.1% of women and 69.3% of men who live as a couple and have children are very satisfied with the time their partner spends on household chores.

⁹In Lippa (2010) it is concluded that women appear with personalities more oriented towards people while men, to things. This difference could lead to a disparate interpretation of the response scale offered for the assessment of the level of stress.

compared to 26.3%), working hours reduction (22.90% compared to 30.3%) and absences to solve sporadic personal affairs (18.3% compared to 20.7%).¹⁰

Women and men could give different value to the work activity and its different facets, which could explain at least part of the gender differential in the declared stress. The ECVT (2010) collects only indirect information on this. Table 5 shows the proportions of workers who give high importance to different characteristics of employment as motivators of on-the-job search.¹¹ The data do not offer significant differences between men and women apart from the reason of environment (0.508 for woman and 0.404 for man) and stability (0.496 for woman and 0.439 form men) among on-the-job searchers.

Table 5. Reasons for on-the-job search (proportions)

Reason	On-the-job seekers		Non-seekers	
	Woman	Man	Woman	Man
Salary	0.729	0.754	0.514	0.510
Work schedule	0.583	0.549	0.421	0.391
Environment	0.508	0.404	0.280	0.274
Stability	0.496	0.439	0.262	0.272
Change in activity	0.756	0.733	0.370	0.390
Number of observations	266	337	2316	2901

Source: Own elaboration from ECVT (2010).

The analysis of variables related to job stress in the subsamples resulting from the reasons for on-the-job appears to be interesting. Table 6 presents the marginal effects on the female variable, considering potential intersections. As observed, there is a consistent positive difference in favour of women in all cases except for searchers motivated by salary and schedule reasons. Workers who highly value those two factors of the job are, *ceteris paribus*, equally stressed at work. This suggests the absence of differences for women and men with an "extrinsic" personality rather than "intrinsic".

Table 6. Marginal effects for "woman" variable. Some subsamples¹

Reasons for job searching	On-the-job seekers			Non-Seekers		
	Marginal Effect	N	Pseudo-R ²	Marginal Effect	N	Pseudo-R ²
Salary	0.030	448	0.104	0.032***	2,669	0.039
Work schedule	0.041+	340	0.114	0.038***	2,108	0.039
Environment	0.068**	271	0.141	0.026**	1,443	0.040
Stability	0.093***	280	0.126	0.032**	1395	0.046
Change in activity	0.044*	448	0.102	0.035***	1980	0.041

¹ In various subgroups, this table illustrates the estimated marginal effects of the "woman" variable on the likelihood of the stress level reaching 10 in ordered probit models, incorporating all explanatory variables listed in tables 2 and 2bis. These effects have been calculated according to Greene (2003). (***) indicates statistical significance at 1%, (**) at 5%, (*) at 10% and (+) at 20%.
Source: Own elaboration from ECVT (2010).

¹⁰ Percentages of those who answer 8 to 10 on a difficulty scale of 0 to 10.

¹¹ See Appendix table 1 for a more detailed definition of these variables. In the case of those who do not search employment, the search is hypothetical, let say, a mental experience.

To further explore the explanation of gender differences in job stress, explanatory models have been estimated for various subsamples. Table 7 displays the results. The only non-significant marginal effect of the "woman" variable is observed for the groups of entrepreneurs, both with and without employees.¹² It is found that women entrepreneurs do not differ in terms of the level of stress from their male counterparts. Numerous articles highlight the high demands for work that characterise self-employment in relation to those that are developed as an employee, related to the dedication that employers give to their work, in which they assume greater personal responsibility for the success and survival of their companies (Grant & Ferris, 2012). The greater stress declared by employers is explained by the way they perceive their work. In general, an entrepreneur marks their life by and for work, without there being clear boundaries in terms of family or social life. On numerous occasions, this causes fatigue, irritability, and stress (Grant & Ferris, 2012). One reason why there is no difference in stress between male and female entrepreneurs could lie in the fact that women who decide to start business may have personality traits and life environments like those of their male counterparts, which would lead to observing, in general, similar levels of stress. It could also be that they have greater doses of motivation towards entrepreneurial activity, which could act as an antidote to greater psychological tension. An alternative explanation would be the greater ability of women entrepreneurs to start activities adjusted to their profiles and in relatively uncompetitive sectors.

Table 7. Marginal effects for "woman" variable. Several subsamples.

Subgroups	Marginal effect	N	Pseudo-R ²
Without couple and children	0.030***	1,719	0.050
Wage earner in public sector	0.031***	1,480	0.0450
Wage earner in private sector	0.029***	4,340	0.046
Entrepreneurship with wage-earners	0.042	386	0.068
Entrepreneurship without wage-earners	0.018	989	0.067
University level (Bachelor's degree)	0.060***	745	0.055
University level (Undergraduate degree)	0.035***	942	0.053
Supervisor	0.054***	1,335	0.044
Organization activity: Services	0.029***	4,113	0.044
High satisfaction with work-family balance (8 to 10)	0.029***	2,460	0.038
High job satisfaction (8 to 10)	0.027***	3,199	0.046

¹ In various subgroups, this table illustrates the estimated marginal effects of the "woman" variable on the likelihood of the stress level reaching 10 in ordered probit models, incorporating all explanatory variables listed in tables 2 and 2bis. These effects have been calculated according to Greene (2003). (***) indicates statistical significance at 1%, (**) at 5%, (*) at 10% and (+) at 20%. Source: Own elaboration from ECVT (2010).

In the last two columns of tables 3 and 3bis shown above, the results of the estimates of ordered probit models are presented, with the sample divided by gender. The objective is to identify differences in the factors related to the reported stress in each of these groups. Regarding age, workers at the end of their careers report lower stress levels. Men who have a partner—whether occupied or not—report a higher level of stress, whereas this factor does not significantly affect women. The impact of education level on stress is more pronounced for women. Additionally, the presence of dependents at home increases the stress level among women but has no effect on men.

Variables related to the organization of working time generally have a more significant impact on the likelihood of women reporting high levels of stress. Specifically, working on weekends increases

¹² All variables included in tables 3 and 3bis have been introduced as regressors, apart from the indicators of type of contract, availability for changing residence or travel, being supervisor, the quality of interpersonal relationships and ownership of the organization. Estimation results are available to the reader who requires them.

only the stress level among women. The lack of an effect from split shifts could be attributed to the increasing prevalence of organizational policies promoting work-life balance, such as schedule flexibility. Concerning weekend schedules, it appears to be the only infrequent schedule type that affects women, potentially due to the heightened work-family conflicts associated with balancing family responsibilities during weekends.

For both men and women, satisfaction with the balance between work and family is negatively correlated with stress levels. Notably, satisfaction with autonomy at work is linked to lower stress levels exclusively among women. Additionally, while working in the public sector is associated with reduced stress levels for men, this correlation is not observed among women. In terms of industry sector, men in the service sector experience higher stress levels, likely due to the elevated psychological demands inherent in these roles. As suggested by Gardiner & Tiggermann (2010), when men dominate a particular sector, women in that sector often face increased pressure to adapt their leadership style, which can have detrimental effects on their mental well-being. Consequently, women in the workforce report experiencing more job-related pressure than men, potentially as a result of discrimination.

5. Discussion and conclusions

It is widely recognised that the existence of stressful work environments has negative consequences for businesses and institutions, as well as for the physical and mental health of their employees. Companies and governments are increasingly perceiving the high costs that stress causes on firms and on the economy in general, through the illness of employees, the increase in levels of absenteeism, the reduction in productivity, job rotation of the workforce, and occupational accidents.

This research has sought to shed light on the factors that affect the job stress level experienced by employees in Spain, with special reference to the existing differences between genders. As a general result, both the sociodemographic characteristics of the worker and the characteristics of their job contribute to explain the stress level. The fact that some job characteristics can be classified as stressful for most workers allows to increase the emphasis on the design of labour policies aimed at improving working conditions and on the redesign of work, in general, to carry out a primary intervention against stress.

The analysis carried out supports numerous actions aimed at achieving the ultimate goal of improving the mental health of salaried workers. Some of them are to increase the content of tasks, not to prolong weekly working time excessively, to improve the environment in which work is carried out, to pay special attention to workers with non-formal schedules (night or shifts), to promote the quality of interpersonal relationships in the workplace, and to promote the achievement of conciliation between the work and family spheres.

About tension-generating processes, the attention of the organizations becomes fundamental. Establishing controls to know how your workers are doing can make them not suffer burnout syndrome, which brings with it cognitive impairment and the appearance of negative attitudes and behaviours towards colleagues or people with whom you work. In this sense, it would also be important for the organization to establish closed work schedules and avoid long hours—with excesses of tasks and demands above the possibilities—since all this acts as a stress source for the employee.

Teamwork and psychosocial risks are also a widespread problem for all workers. In this sense, the main measures to be taken would be given by each organization. The workplace must choose the best way to reach the desired objectives, establishing measures so that the workspace is the most suitable possible in every way. The company must ensure that teamwork is equitable and the environment is safe for workers both physically and psychologically.

Multiple studies support the existence of different forms of discrimination against women in the labour market. This fact could lead women to report a higher level of stress. At this respect and as the main result of the present study, it has been found that there are significant differences between men and women in the probability of declaring a high level of job stress, with greater probability for women.

Gender differences in stress could be determined by differences in the perceived severity of specific stressors and in the frequency with which such stressors are experienced by men and women. A more detailed study leads to the conclusion that sociodemographic and labour variables do not contribute to explain the stress gap and that family situation, the occupational segregation, and certain personality traits manifested in a business occupation have explanatory power of that differential.

The measures to be adopted to improve the perceived stress of the workers should focus on raising awareness about the distribution of family tasks, with social policies that are aimed at improving conciliation. These measures must go hand in hand with increased public spending for family policies and services. In this way, a more equitable society would be achieved in which the “double working day”—that is, the paid and unpaid work that women generally do—is balanced among the members of the family unit. This would lead to develop an effective co-responsibility system. Of this type of policies, the following would stand out: flexibilization and reduction of the working day, prioritization of teleworking, extended and adaptable sick leave for parents, balanced conciliation plans at the national level, improvement of coverage of public educational centres, as well as centres for dependent people and labour adaptation measures for self-employed workers.

Admittedly, this empirical study has its limitations, with two being particularly evident. Firstly, the data utilized are from 2010, quite outdated for the present context. However, the ECVT (2010) survey is nationally representative and specifically crafted to gather ample information on the quality of work life. It generates control variables that help isolate the effect of gender. The absence of other posterior nationally representative survey collecting the necessary information to conduct the analysis done explains its election. Secondly, the data analysed are cross-sectional—in other words, we have only a single temporal observation for each employee. This implies some risk by interpreting the estimated associations as causal relationships because it is not possible to control for the unobservable heterogeneity. Working with panel data would help reducing this problem.¹³ Despite these two limitations, we believe that the results presented—and our discussion of them—are a good basis for further research on the relationship between the gender of the workers and the level of stress they declare. Job stress is a global problem as costly to organizations and society at large as it is destructive to the physical and mental well-being of workers. This fact widely justifies further research efforts on its causes and consequences.

¹³ See Hsiao (2007) for an excellent discussion on the advantages of panel data in the estimation of causal models.

Appendix

Table A1. Definition of some variables

Job stress (dependent variable)	This pertains to the perceived level of job stress experienced by the individual, measured on an ordinal scale with 11 levels ranging from 0 (indicating no stress) to 10 (indicating a lot of stress).
Satisfied with the work-family balance	Value 1 if levels 5 to 7 in 0 (null) to 10 (very high) Likert satisfaction scale; 0 otherwise.
Very satisfied with the work-family balance	Value 1 if levels 8 to 10 in 0 (null) to 10 (very high) Likert satisfaction scale; 0 otherwise.
Very satisfied with autonomy	Value 1 if levels 8 to 10 in 0 (null) to 10 (very high) Likert satisfaction scale; 0 otherwise.
My work is very monotonous	Value 1 if levels 8 to 10 in 0 (null) to 10 (very high) Likert satisfaction scale; 0 otherwise.
My job is very dangerous	Value 1 if levels 8 to 10 in 0 (null) to 10 (very high) Likert agreement scale; 0 otherwise.
My work is very physical	Value 1 if levels 8 to 10 in 0 (null) to 10 (very high) Likert agreement scale; 0 otherwise.
Very good relations with bosses	Value 1 if levels 8 to 10 in 0 (very bad) to 10 (very good) Likert agreement scale; 0 otherwise.
Very good relationships with colleagues	Value 1 if levels 8 to 10 in 0 (very bad) to 10 (very good) Likert agreement scale; 0 otherwise.
To what extent would the following reasons influence your decision to change your current job for another one?	
<ul style="list-style-type: none"> - Salary improvement - Work schedule improvement - Environment improvement - Increase of stability - Change in activity 	For each of the five reasons, a value of 1 is assigned if the levels range from 8 to 10 on a Likert agreement scale from 0 (no influence) to 10 (a lot of influence); otherwise, a value of 0 is assigned.
For those who are not seeking alternative employment, the decision to change is hypothetical.	

Source: Own elaboration from ECVT (2010) questionnaire.

Table A2. Several models estimated for job stress. Entire sample.¹

Variables	Ordered probit model	Logit Ordered model	OLS
i. Characteristics of the worker			
Woman	0.031***	0.028***	0.464***
Age (years) [ref.: Less than 26]			
26-35	0.014+	0.016*	0.235+
36-45	0.014+	0.015*	0.223
46-55	0.011	0.011	0.157
56-60	-0.001	0.003	-0.084
More than 60	-0.040***	-0.033***	-0.940***
Level of education [ref.: Primary education or less]			
Primary education or less (ref.)	-0.008	-0.007	-0.153
Secondary	0.009	0.010	0.185
Vocational education I	0.030***	0.031***	0.555***
Vocational education II	0.012+	0.014+	0.251*
Undergraduate degree	0.035***	0.033***	0.676***
Bachelor' degree	0.033***	0.031***	0.661***
Laboral situation of the couple [ref.: Without couple]			
Occupied couple	0.005	0.004	0.113
Unoccupied couple	0.009+	0.008+	0.162+
With children under the age of 14	-0.003	-0.004	-0.046
Dependent persons at home	0.013+	0.012+	0.180
Immigrant person	-0.026***	-0.025***	-0.466***
Daily hours dedicated to household chores	0.002	0.003+	0.034
ii. Stability in employment and remuneration			
Type of contract [ref. Permanent]			
Voluntary temporary contract	0.009	0.013	0.146
Involuntary temporary contract	-0.016**	-0.015**	-0.309***
Probability of job retention [ref.: Highly unlikely/unlikely]			
Quite likely	-0.005	-0.004	0.037
Very likely	-0.013*	-0.012*	-0.140
Regional unemployment rate	0.001**	0.001*	0.016**
Monthly wage (102 euros)	0.001+	0.001**	0.009+
Non-fixed wage	0.008	0.007	0.116
iii. Organisation of working time			
Weekly working hours	0.002***	0.002***	0.029***
Extension of the working day [ref.: Never or almost never]			
Often	0.037***	0.035***	0.601***
Always	0.030***	0.030***	0.407***
Participation in firm formation	0.005	0.006+	0.073
Split shift	0.000	-0.000	0.003
Eating at home	-0.011**	-0.009*	-0.205**
Working at home	0.059***	0.054**	0.886**
Working on weekends	0.007+	0.007*	0.128+
Shift work	0.003	0.004	0.038
Night work	-0.006	-0.006	-0.101

Commute time (more than 1 hour)	0.031*	0.024+	0.444*
Availability for changing residence	0.008	0.009+	0.134
Travel availability	0.017***	0.014***	0.300***
iv. Job matching			
Tenure (years)	0.001***	0.001***	0.022***
Moonlighting	-0.011	-0.011	-0.337+
Training mismatch [ref.: No mismatch]			
Overtraining	-0.012*	-0.010*	-0.226**
Different training	0.003	0.000	0.001
Undertraining	0.059***	0.053***	0.881***
Satisfaction with the work-family balance ²			
Satisfied	-0.040***	-0.037***	-0.527***
Very satisfied	-0.071***	-0.066***	-1.098***
v. Task characteristics and social support			
Supervisor	0.035***	0.034***	0.557***
Teamwork	0.026***	0.024***	0.456***
Very satisfied with autonomy ²	-0.008*	-0.006+	-0.204***
My work is very monotonous ²	0.050***	0.050***	0.746***
My job is very dangerous ²	0.022***	0.022***	0.279***
My work is very physical ²¹	0.071***	0.066***	1.109***
Very good relations with bosses ²	-0.021***	-0.019***	-0.433***
Very good relationships with colleagues ²	-0.003	-0.002	-0.052
v.6 Ownership of the organization and activity sector			
Public sector employee	-0.016***	-0.013**	-0.268***
Firm size: less than 11 employees	-0.006	-0.006+	-0.101
Sector of activity [ref.: Industry]			
Agriculture	-0.055***	-0.053***	-0.969***
Construction	-0.026***	-0.026***	-0.420***
Education	0.031***	0.026***	0.529***
Health	0.021**	0.017*	0.413**
Commerce	0.023***	0.018**	0.394***
Other services	0.018***	0.016**	0.303***
Size of city (number of residents) [ref.: Less than 10000]			
10001 to 50000	-0.007	-0.005	-0.119
50001 to 100000	0.001	-0.000	0.022
100001 to 1000000	0.007	0.006	0.087
More than 1000000	0.002	0.003	0.036
Constant			3.268***
Number of observations	5,820	5,820	5,820
Log pseudolikelihood/Root MSE(OLS)	-12685.273	-12684.273	2.7051
Pseudo-R ² / R ² Adjusted (OLS)	0.0432	0.0490	0.1655
Correct predictions (%)			

¹ Two first columns of this table collect the marginal effects in ordered probit and logit models when the level of stress equals 10 and the entire sample is considered (N=5820). These effects have been calculated according to Greene (2003). Also, third column shows OLS estimates considering the level of job stress as a cardinal variable. (***) indicates statistical significance at 1%, (**) at 5%, (*) at 10% and (+) at 20%. The term "ref" indicates the reference category in the econometric estimations.

² Refer to Appendix Table 1 for the definition of these variables.

Source: Own elaboration from ECVT (2010).

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