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PREDICTORS OF UNIVERSITY TEACHERS OCCUPATIONAL STRESS

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Abstract: *One phenomenon that generates significant losses in terms of productivity and cost in organizations is occupational stress. Stress is encountered in various occupational groups, but its levels are high when we speak about professions that are in contact with a large number of people as part of their responsibilities, such as teaching. Given the major implications of stress on the individual involved in the work, but also on the organization, the main concern of this research was to identify and understand the risk factors involved. Using the hierarchical regression, we tried to highlight the extent to which certain stress sources in the academic environment influence the level of stress experienced by the teachers, while controlling the influence of other situational factors such as demographics or personality factors.*

Keywords: *academic stress; sources of stress; predictors of stress;*

1. Introduction

Work activity can be an important source of stress with major consequences for both the individual and the organization he works in. Occupational stress is the employees' response when facing work demands and pressures that do not match to their resources, needs, abilities and knowledge, and overcome their ability to manage (Khudaniya & Kaji, 2014). Occupational stress affects employee's physical, emotional and social health, producing states of depression, irritability, substance ingestion, and somatisation (Necșoi, 2011), thus decreasing people's performance, work motivation and professional satisfaction.

Working in the university as a teacher is a mentally challenging occupation, as the university teachers face a lot of responsibilities in their work. Activities of university teachers are characterised with professional competences in various fields, their specialisation and research, teaching and management. All these competences reflect not only theoretical and empirically acquired knowledge, but also the skills, personality features, willingness and desire to pursue constant self-education and to contribute to training and personal development of students (Semradovaa & Hubackova, 2014). There are a lot of reasons why being a university professor is a stressful job. Conducting research, writing research papers to be published in high-quality journals, attracting research funds and grants, preparing activities to ensure student enhancement and excellence in job performance, administrative duties are time consuming activities for university teachers.

On the other hand, there are studies that link personality to the stress process. Individual's personality can affect his stress appraisal and stress-coping mechanisms, but it is also crucial with regard to the selection and shaping of stressful situations (Vollrath, 2001). Modelling the stress process, Conard and Matthews (2008) have suggested that the primary driver of perceived stress is neuroticism. In occupational studies, personality variables, such as neuroticism, extraversion, and conscientiousness, have been identified as predictors of stress in teachers (Grant, Langan, 2007). Kokkinos (2007) found that personality traits are significant predictors of the three burnout dimensions. Thus, high levels of neuroticism and low levels of agreeableness were predictive of emotional exhaustion, for depersonalization,

neuroticism was the most important predictor whereas personal accomplishment was predicted by low levels of neuroticism and high levels of extraversion and conscientiousness.

Social support is the physical and emotional comfort given to an individual by his/ her family, co-workers and others when the person is under pressure. It has been found that social support can buffer the negative effects of stress (Bonfiglio, 2005; Wong & Cheuk, 2005).

2. Research coordinates

2.1. Objectives:

The *objective* of this research is to identify the predictors of occupational stress of university teachers, using hierarchical linear multiple regression analysis. In other words, by hierarchical regression, we will answer the question "does the stress level experienced by the teachers is influenced by the academic environment as we control the influence of other situational factors such as demographics or personality factors?".

The *level of stress* (the criterion variable) has been operationalized in the *level of physiological stress* and *the depression level.* Therefore, we analysed the variation of these variables, according to various factors selected on the basis of the identified significant correlations. We took into consideration possible predictors such as: demographics, professional factors, personality traits, perceived sources of academic stress.

2.2. Participants

Of the total of 70 subjects, 37 come from technical faculties and 33 from humanities. The composition of the two groups is relatively balanced in number, but their distribution according to the gender criterion and age or didactic degrees is less balanced. Male representatives predominate in technical faculties, while women are dominant in the humanities, which corresponds to the natural skills of the two groups: the exact sciences for men as a group, and the areas of relationship and communication for women as a group. The women in the research group are younger, have less experience in university, and have lower positions than their male counterparts. Women are progressing much slower in their career; table 1 shows that women occupy lower positions at the age at which most men find themselves as associate professors or full professors. Women between ages of 36 and 50 are not professors, while 56% of men in this age group already have this title. In this age category, most women (71%) are lecturers and only 14% are associate professors, compared to men (11% lecturers and 33% associate professors). The situation is similar for the 51-64 age category, women teachers are associate professors (60%) or full professors (40%), while for men, the situation is exactly the opposite (31% associate professors and 69% full professors).

Table 1. Distribution of male and female subjects by age and professional position

Position	**Teacher assistant %**		**Lecturer %**		**Associate professor %**		**Professor %**	
Age	F	M	F	M	F	M	F	M
Age 24-35	67	49	33	38	-	13	-	-
Age 36-50	14	-	71	11	14	33	-	56
Age 51-64	-	-	-	-	60	31	40	69

2.3. Instruments

Personal information form and six different data collection instruments were used in this study. The Personal Information Form is a questionnaire developed by the researcher to collect demographic data about the participants. Through this questionnaire, it was aimed to collect information on variables such as gender, age, professional experience, the faculty area, academic position, professional responsibilities, number of worked hours per week.

Perceived sources of academic stress questionnaire - is an instrument developed by the researcher, which measures the most important pressure sources perceived by teachers. The tool comprises nine categories of factors that contribute significantly to generating academic stress as follows:

a. Compatibility of personal values with the values of the university system;
b. Professional relationships;
c. Interaction with students;
d. Working conditions;
e. Role clarity;
f. Management and organizational structure;
g. Status / promotion;
h. Job security;
i. Change and managing change

The questionnaire contains 56 items labelled on a six-point Likert scale, ranging from total disagreement to total agreement on the presented affirmations.

The physiological reaction to stress inventory developed by Ebel et al. (1987) consisting of 39 symptoms labelled on a Likert scale from 1 to 5, representing levels caused by stressful agents. The interest in this questionnaire stems from the fact that it gives an internal, physiological image of the manifestations of the stress suffered. The frequency of the physiological reactions captured in this questionnaire determines the probability that the individual will become ill, due to stressful experiences.

The Burns Depression Inventory (David D. Burns, 1980, 1999) is a self-evaluation scale that contains a series of 15 symptoms on a 4-point scale, ranging from (not at all) to 3, depending on the intensity of the feeling. Inventory items are grouped in the following categories: sadness, discouragement, low self-esteem, inferiority, guilt, indecision, irritation, lack of interest in life, loss of motivation, low self-image, changes in appetite, changes in sleep rhythm, loss of sexual appetite, worries for health, suicidal impulses.

Type A Personality Questionnaire. Based on Friedman and Rosenman's *Type A Behaviour and Your Heart*, Greenberg (1995) comprised a scale of 21 items to highlight Type A behaviour. It consists of a complexity of personality traits, including competitive impulses, aggressiveness, impatience and an acute sense of time pressure, to which is added the most distinctive element of the scale and which correlates best with heart disease, namely hostility, accompanied by a deep sense of insecurity.

The Neuroticism scale from Eysenck Personality Inventory (1964). Neuroticism has also been called *emotional instability* and is defined by the interrelationship of traits: anxiety, depression, low self-esteem, and shyness.

Dwight Dean's social support questionnaire, which includes 24 items on a 5-point scale, from powerful agreement to strong disagreement, measuring not only the need for external support and assistance - a major reduction of stress, but also social insensitivity.

3. Results and disscussion

Regarding *physiological responses to stress*, we selected to introduce in hierarchical linear regression model, in the first step, three demographic variables related to the

profession: *gender*, *specialization* and *number of hours worked per week*. In the second step, in addition to these predictors, personality factors as *neuroticism* and *type A personality* were introduced to control their effect on stress levels. In the third step we introduced the variables of interest, *theperceived sources of academic stress - personal values vs. system values*, *professional relationships*, *role clarity*, *management and organizational structure*, *status and promotion*, *job security*, *change management*. Table 2 shows linear regression analyses. The results show that 25% of the evolution of scores dispersion of physiological stress can be explained by the demographic characteristics and professional factors. This percentage increases when we take into account the two factors related to the individual differences, so that 34.2% of the evolution of the physiological stress criterion can be attributed to the common action of the demographic factors, professional factors and the personality factors selected. When model variables are related to sources of academic stress, the proportion of physiological stress variation increases to 46.5%, but this increase is not statistically significant, which means that this third model does not contribute significantly to the explanatory power of the regression, aspect due to the fact that the new variables correlate with the independent variables in the previous models, without providing additional information.

On the other hand, variance analysis (ANOVA) for each regression model, materialized in the value and statistical significance of the F mark, shows that all three models are effective in prediction, meaning that they estimate significantly more variation in physiological stress than that due to other unforeseen or uncontrolled factors. Table 2 also provides information at the analytical level to identify variables that contribute significantly statistically either to explain the physiological stress level (standardized coefficients β) or to estimate the stress level (non-standardized coefficients, b). It is important to note that gender and specialization variables are dummy variables, these categorical variables being transformed into numerical variables (0 - male; 1 - female; / 0 - socio - human profile; 1 – exact sciences profile). In the first model, all three predictors: gender, specialization and number of hours worked per week have statistically significant values, which means that each of these factors contributes significantly to explaining the evolution of the dependent variable. It can be noticed that especially women of the socio-human profile who work many hours per week are most likely to experience high levels of physiological stress. Of the predictors, it seems that the number of hours worked weekly exerts the greatest influence (β = .273), while the gender affiliation contributes the least (β = .231) to the estimation of the physiological stress level. If we analyse the results of the second regression equation, we can see that the only variable that contributes significantly to the explanation of the physiological stress level (while the influences caused by the demographic and professional variables were eliminated), is the *neuroticism* dimension (b = 1.430). The other indicators do not significantly influence the evolution of the dependent variable. In other words, persons with a high level of neuroticism have the tendency to experience more physiological stress than those who do not have this characteristic, even if we remove (we keep constant) the influence of the demographic factors and those related to the profession on the level of stress. From the final estimation model, we can notice that demographic and personality variables do not influence the level of physiological stress, beta values not being significant. Instead, there is a direct relationship between *status and promotion* (as source of stress) and the stress level (β = .324). This means that those who perceive issues like promotion difficulties, devaluation of the teacher status or low salary compared to the workload as very stressful, are likely to experience higher levels of physiological stress.

Table 2. Results of linear hierarchical regression: predictors of physiological stress

Variables	R^2	R^2 adjusted	ΔR^2	F change	β	B	SE b
Step 1 F (3,66) = 7.352; p<.001	.250**	.216**	.250**	7.352**			
Gender					.231*	9.643	4.939
Specialization					-.239*	-9.956	5.004
No. of hours per week					.273**	.615	.245
Step 2 F (5,64) = 6.639; p<.001	.342**	.290**	.091**	4.424**			
Gender					.104	4.335	5.090
Specialization					-.187	-7.816	4.827
No. of hours per week					.229*	.515	.250
Type A Personality					.053	.283	.640
Neuroticism					.318**	1.430	.537
Step 3 F (12,57) = 4.127; p<.001	.465	.352	.123	1.878			
Gender					-.043	-1.790	5.534
Specialization					-.169	-7.028	5.534
No. of hours per week					.225	.507	.266
Type A Personality					.143	.757	.662
Neuroticism					.191	.858	.587
Personal values vs. system values					.069	.263	.485
Professional relationships					.027	5.762E-02	.297
Role clarity					-.109	-.618	.817
Management					.110	.398	.450
Status and promotion					.324**	2.076	.927
Job security					.047	.224	.704
Change management					.020	.179	1.293

* $p < .05$; ** $p < .01$

In order to explain the variation of the *depressive symptom*, we introduced in the regression model, in the first step, two demographic variables (gender and specialization); in the second step we introduced, besides these variables, the personality factors (personality type A, neuroticism and social support); in the last step we added the variables related to the academic environment (professional relationships, working conditions, job security, status and promotion, role clarity, change management). Table 3 shows linear regression analysis. Some essential information can be extracted from the table. 20% of the evolution of the dispersion results for the depressive symptom can be explained by the demographic characteristics (gender and faculty profile). This percentage increases if we take into account the three personality traits so that 66.9% of the dispersion of the depression criterion in

response to stress can be attributed to the joint action of the demographic factors and the three personality factors. Moreover, the difference between the two values of the multiplication factor ΔR^2 is 46.6%. All this increase in the explanatory power of the predictive model can only be attributed to the influence of the three dimensions of personality on depression. Similar results are also obtained by taking into account the adjusted values of multiple determinations. Also, this explanatory plus brought by the introduction of personality dimensions brings a statistically significant change, F (3,64) = 30,069; p <.000. The initial model based only on demographic factors was a significantly better predictive solution than the one based only on the average study, F (2, 67) = 8.556; p <.000.

Table 3. Results of linear hierarchical regression: predictors of the depressive symptom

Variables	**R^2**	**R^2 adjust.**	**ΔR^2**	**F change**	**β**	**B**	**SE b**
Step 1 F (2,67) = 8.55; p<.001	.203**	.180**	.203**	8.556**			
Gender					.422**	4.789	1.369
Specialization					-.061	-.689	1.369
Step 2 F (5,64) = 25.919; p<.001	.669**	.644**	.466**	30.069**			
Gender					.147	1.675	.965
Specialization					.073	.832	.921
Type A personality					.126	.183	.116
Neuroticism					.719**	.880	.116
Social support					.019	9.744E-03	.044
Step 3 F (11,58) = 12.809; p<.001	.708	.653	.039	1.293			
Gender					.066	.753	1.045
Specialization					.074	.836	1.060
Type A personality					.157	.227	.122
Neuroticism					.742**	.908	.126
Social support					.051	2.566E-0	.045
Professional relationships					.044	2.515E-0	.055
Working conditions					.208*	.120	.061
Role clarity					.024	3.688E-02	.173
Status and promotion					.202*	.352	.173
Job security					.013	1.752E-02	.138
Change management					-.003	-6.663E-03	.255

* p < .05; ** p < .01

Thus, although demographic factors contribute significantly to predicting the level of depression as a reaction to stress, controlling the influence of these factors, personality dimensions provide an explanatory addition to the level of depression. Although effective in estimating the variation in the level of depression ($F(11,58) = 12,809$; $p < .001$), the third model does not bring significant differences in the increase of the explanatory power of the model by introducing the dimensions related to perceived sources of academic stress, the growth being only of 3.9%.

Analytically, we can notice that, in the first phase, gender is a positive predictor of depression ($\beta = .422$, $p < .001$), but associated with personality factors, gender has no longer this characteristic, prevalent in relation to depression being neuroticism ($\beta = .719$, $p < .001$). From the final estimation model, it is observed that subjects with a high level of neuroticism get high scores for depression, the same thing being in the case of subjects who perceive the working conditions as stressful ($\beta = .208$, $p < .05$) or status and promotion ($\beta = .202$, $p < .05$) as very stressful. It seems that the demands of this profession and the difficulties related to promotion and retributions are directly associated with depression level.

Table 4. Correlation coefficients

Dependent variables **Independent variables**	**Physiological stress**	**Depression**
Gender	327**	448**
Age	-	-
Specialization	-382**	-241**
No. of hours worked per week	306**	-
Type A personality	331**	445**
Neuroticism	466**	797**
Social support	-	-428**
Personal values vs. system values	262*	-
Professional relationships	348**	399**
Interaction with students	-	-
Working conditions	457**	302*
Role clarity	335**	363**
Management	300*	-
Status and promotion conditions	512**	444**
Job security	277*	353**
Change management	308**	255*

Table 4 shows the correlation coefficients of the variables included in the study that entered the regression models, either as predictor variables or as criterion variables.

4. Conclusions

Based on the analysis of the results, the study concluded that the teacher's demographics and personality traits, like neuroticism and Type A personality were the variables that had the most influence on stress response, compared to the perceived sources of academic stress.

The various "work situations" and different "sources of stress" are not equivalent. The first element is only a potential source of stress; it becomes a stressor as a result of how it will be perceived, interpreted and recognized as such by the person. The same situation can be assessed differently, the assessment depending on the person's optics, life conception, or experience. If the emphasis is on danger, risk and inability to defeat it, the emotion will be fear; if the focus is on ways and means of coping with difficulties, looking for the possibilities to overcome them, the feeling will be trust, courage and dare. Between the situation and the answers comes the meaning that the individual gives to the pressures exerted on him, the way he perceives, interprets, evaluates and lives the situation. The subjective factors of personality are those that give the measure of the correct or disproportionate appreciation of the threat of a situation.

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