

# Validation of the Greek Version of the "Job Stress Measure"

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## Abstract

The aim of the present study is the validation of the "Job Stress Measure" in the Greek population. "Job Stress Measure" along with ASSET scale was finally distributed to 238 individuals, working in public and private organizations. The Cronbach's alpha coefficient of the "Job Stress Measure scale" was found to be 0.868. Three main circumstantial factors explain the 55% of the variance of the phenomenon: a) characteristics of work, b) clarity of objectives and c) without specific concept. The study showed positive correlation between stress and workload, job insecurity and difficulties in working relationships, physical and mental condition, communication and beliefs about work. Conclusively the "Job Stress Measure" can be used as a reliable validated tool for measuring job stress in the Greek population.

## **Keywords**

Job Stress Measure, Validation, Job Stress, Psychometric Tool, Employees, Work Pressure

## 1. Introduction

The most accepted and popular definition of stress is determineds as: "a state in which homeostasis is actually threatened or perceived to be so; homeostasis is re-established by a complex repertoire of behavioral and physio-

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logical adaptive responses of the organism." (Chrousos, 2009). Working environment is considered as a major source of stress. Specifically, work-related stress is experienced mainly when the demands of the work environment exceed the workers' ability to cope with (European Agency for Safety and Health at Work, 2002). It is a condition that is frequently experienced by the individual employee as a result of increased working demands. This condition can cause many health effects on the workers (Doherty & Tyson, 1998), or even may cause disturbances on working behaviour and in general lifestyle (Wheatley, 2000).

A large number of individual self-report scales (**Table 1**) are available, in order to assess both work-related stress and various job stressors. Such psychometric tools when used appropriately are useful, practical and irreplaceable. The most known tools are the following (**Table 1**).

The aim of this study is, "Job Stress Measure" (Judge et al., 1994) validation, a measuring tool of work-related stress and evaluation of its psychometric properties, on a population based survey (Greece).

Greek studies attempting to address either construction or validation of job stress measures are limited. Therefore, it is important to have available, reliable and valid assessment instruments. "Job Stress Measure" is our choice as an abridged, short and effective tool of measuring job stress, as it is more practical to use and time saving, particularly in busy working environments.

## 2. Materials and Methods

#### 2.1. Subjects

The sample consisted of 238 participants (Table 2).

#### 2.2. Measures

The "Job Stress Measure" consists of sixteen self-report items rated on a Likert scale from 1 - 5, depending on the extent of the work related stress produced by each of the items. On this scale, "1" indicates that the item produces no stress, "2" produces little stress, "3" produces some stress, "4" produces quite a bit of stress and "5" produces a great deal of stress.

A double translation of the English questionnaire to Greek was made by 2 bilingual psychologists, followed by translation to English.

The construct validity of the Job Stress Measure was evaluated by examining its divergent and convergent validity with the ASSET scale. The ASSET scale is used to measure job stress and is divided into four subscales. The first subscale refers to the causes of job stress "Perceptions of your work", the other two refer to the effects of stress ("Attitudes towards your organization" and "Your Health") and the last one includes additional information (social-demographic characteristics). We used two subscales of the ASSET scale ("Perceptions of your work" and "Your Health"). Based on the bibliography, this measurement tool has reliability a = 0.74 to a = 0.91 (Cartwright & Cooper, 2002; Nikolaou & Tsaousis, 2002).

#### 2.3. Data Collection

The study took place in Athens from September 2013 to April 2014. Participants were approached by the authors in their workplace. After informed consent has been obtained, questionnaires were distributed to the participants.

There were no ambiguities and questions about the items. The average time of filling out the questionnaires was 25 minutes.

250 questionnaires were distributed, and eventually 238 questionnaires were returned. Our final sample consisted of 230 individuals, since we excluded those individuals that did not answer all of the 16 items on the scale, in order to have more reliable results.

Data collected were introduced and processed by statistical software SPSS (Statistical Package for the Social Sciences), Version 21 (SPSS, Inc., Chicago, IL, USA).

## 3. Results

#### **3.1. Scores**

The mean and standard deviation of each of the items in the "Job Stress Measure" are shown in **Table 3**. According to **Table 3**, all items have sufficient dispersion. Exception to this, is the third, fourth and sixteenth

Table 1. Self-report scales.							
Self-Report Scales	Authors						
Caplan's job stress questionnaire	Caplan et al., 1975						
Brief symptom inventory	Derogatis & Melisaratos, 1983						
Occupational stress inventory	Osipow & Spokane, 1987						
Occupational stress indicator	Cooper et al., 1988						
The generic job stress questionnaire	Hurrell & McLaney, 1988						
Source of occupational stress scale	Wynne et al., 1993						
Job stress measure	Judge et al., 1994						
Job stress survey	Spielberger & Vagg, 1999						
ASSET: An organisational stress screening tool	Cartwright & Cooper, 2002						

#### Table 2. Demographic information of the sample.

Variable	Categories	N (%)
Condon	Male	45.4
Gender	Female	54.6
	Under 21 years old	9.7
A ag anoun	21 - 36 years old	48.3
Age group	37 - 55 years old	39.1
	Over 58 years old	2.9
	Married	48.7
Marital Status	Single	42.9
	Divorced	5.9
	In relationship	2.5
	Administrators/clerks	71.4
	Sales and marketing	14.7
Durfreiten	Managerial-supervisory positions	10.1
Profession	Call center operators or shop assistants	2.9
	Technical position	0.4
	Other	0.4
	Good enough	31.5
1114h	Simply good	40.3
rieatui	Moderate	27.7
	Bad	0.4
	Always	16.4
	Usually	58.8
Optimism	Sometimes	18.9
	Not usually	4.2
	Never	1.7

question. This can be explained by changes in the quality of jobs (civil servants, official rank, few meetings, and small requirement for a business trip).

## 3.2. Reliability

The internal consistency of the "Job Stress Measure" was examined by Cronbach's coefficient alpha (Cronbach, 1951), and the item-total correlations (**Table 4**). The Cronbach's alpha of the scale was found to be 0.868. Moreover we performed item analysis to ascertain the possibility of further enhancing Cronbach's coefficient alpha by deleting unnecessary questions (**Table 5**) with negative results, keeping intact the initial structure of the questionnaire.

	N	Minimum	Maximum	М	SD	Variance
The number of projects and/or assignments I have	236	1	5	2.49	0.873	0.762
The amount of time I spend at work	238	1	5	2.17	0.790	0.624
The amount of time I spend in meetings	236	1	5	1.42	0.824	0.679
The number of phone calls and office visits I have during the day	238	1	5	1.86	1.048	1.099
The degree to which politics rather than performance affects organizational decisions	238	1	5	3.32	1.018	1.037
The inability to clearly understand what is expected of me on the job	238	1	5	2.68	0.830	0.689
The volume of work that must be accomplished in the allotted time	236	1	5	2.81	0.964	0.929
The extent to which my position presents me with conflicting demands	236	1	5	2.65	0.787	0.619
The amount of red tape I need to go through to get my job done	238	1	5	3.48	0.894	0.799
The time pressures I experience	238	1	5	2.77	0.963	0.927
The lack of job security I have	238	1	5	3.52	1.086	1.179
The amount of responsibility	237	1	5	2.84	0.939	0.881
The scope of responsibilities my position entails	237	1	5	2.45	0.889	0.791
The degree to which my career seems "stalled"	238	1	5	2.31	0.760	0.578
The opportunities for career development I have had	238	1	5	2.43	1.028	1.056
The amount of traveling I must do	238	1	5	1.23	0.711	0.505
Job Stress Measure Total	230	16.00	64.00	40.6522	8.40310	70.612
Volid N	230					

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 Table 4. Correlations of the items to the total score of the questionnaire.

	Job Stress Measure Total
	Pearson Correlation
Job stress measure total	1
The number of projects and/or assignments I have	$0.841^{**}$
The amount of time I spend at work	$0.680^{**}$
The amount of time I spend in meetings	$0.560^{**}$
The number of phone calls and office visits I have during the day	$0.401^{**}$
The degree to which politics rather than performance affects organizational decisions	$0.298^{**}$
The inability to clearly understand what is expected of me on the job	$0.296^{**}$
The volume of work that must be accomplished in the allotted time	$0.684^{**}$
The extent to which my position presents me with conflicting demands	$0.476^{**}$
The amount of red tape I need to go through to get my job done	0.519**
The time pressures I experience	$0.720^{**}$
The lack of job security	0.571**
The amount of responsibility I have	$0.725^{**}$
The scope of responsibilities my position entails	0.721**
The degree to which my career seems "stalled"	$0.610^{**}$
The opportunities for career development I have had	0.715**
The amount of traveling I must do	0.519**

 $\ast\ast$  Correlation is significant at the 0.01 level (2-tailed).

Table 5. Item anal	vsis of the	"Job Stress	Measure"
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	Scale Mean If Item Deleted	Scale Variance If Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
The number of projects and/or assignments I have	38.15	59.012	0.806	0.847
The amount of time I spend at work	38.47	62.154	0.624	0.856
The amount of time I spend in meetings	39.22	63.481	0.486	0.861
The number of phone calls and office visits I have during the day	38.77	64.632	0.288	0.872
The degree to which politics rather than performance affects organizational decisions	37.34	66.523	0.181	0.877
The inability to clearly understand what is expected of me on the job	37.96	67.173	0.203	0.873
The volume of work that must be accomplished in the allotted time	37.82	60.549	0.617	0.855
The extent to which my position presents me with conflicting demands	37.97	65.039	0.400	0.865
The amount of red tape I need to go through to get my job done	37.16	63.705	0.436	0.863
The time pressures I experience	37.86	59.937	0.658	0.853
The lack of job security I have	37.12	61.449	0.474	0.862
The amount of responsibility I have	37.80	60.062	0.665	0.853
The scope of responsibilities my position entails	38.20	60.525	0.663	0.853
The degree to which my career seems "stalled"	38.33	63.339	0.548	0.859
The opportunities for career development I have had	38.20	59.293	0.646	0.853
The amount of traveling I must do	39.42	64.848	0.452	0.863

According to **Table 4**, we found statistically significant, positive correlation between correlations of the items to the total score of the questionnaire ( $r = 0.296^{**} - 0.841^{**}$ ). This indicates that questions refer to a central meaning (stress).

#### 3.3. Construct Validity

The construct validity of the "Job Stress Measure" was evaluated by examining its divergent and convergent validity with the ASSET scale (Table 6 and Table 7). We found statistically significant, positive correlation with the following subscales:

Workrel (Work relationships  $r = 0.413^{**}$ ) Wlbalanc (Work-life balance  $r = 0.456^{**}$ ) Overload (Overload  $r = 0.646^{**}$ ) Jobsecur (Job security  $r = 0.362^{*}$ ) Control (Control  $r = 0.347^{**}$ ) Rescom (Resources and communication  $r = 0.261^{**}$ ) Yourjob (Your job  $r = 0.329^{**}$ ) Physheal (Physical health  $r = 0.306^{**}$ ) Psycheal (Psychological well-being  $r = 0.141^{*}$ ) Jobperc (Perceptions of your job  $r = 0.697^{**}$ )

#### **3.4. Factor Analysis**

Finally we performed factor analysis of the "Job Stress Measure" (Table 8). The results showed 3 major components with eigenvalues over 1.

Further factor loadings of the "Job Stress Measure" items (**Table 9**) revealed that questions belonging to the first component (indicative of characteristics of work) are the following:

able 6. Convergent Validity.								
		Job Stress Measure Total	Workrel	Wlbalanc	Overload	Jobsecur		
Job stress measure total	Pearson correlation	1	0.413**	0.456**	0.646**	0.362**		
Workrel	Pearson correlation	0.413**	1	0.243**	0.349**	0.099		
Wlbalanc	Pearson correlation	0.456**	0.243**	1	0.581**	0.022		
Overload	Pearson correlation	0.646**	0.349**	0.581**	1	$0.220^{**}$		
Jobsecur	Pearson correlation	0.362**	0.099	0.022	0.220**	1		

#### Table 6. Convergent Validity.

\*\*Correlation is significant at the 0.01 level (2-tailed).

## Table 7. Convergent Validity.

		Job Stress Measure Total	Control	Rescom	Yourjob	Physheal	Psycheal	Jobperc
Job stress measure total	Pearson correlation	1	0.347**	0.261**	0.329**	0.306**	$0.141^{*}$	0.697**
Control	Pearson correlation	0.347**	1	0.307**	0.103	0.098	-0.032	$0.500^{**}$
Rescom	Pearson correlation	0.261**	0.307**	1	0.259**	0.096	0.049	$0.578^{**}$
Yourjob	Pearson correlation	0.329**	0.103	0.259**	1	0.111	0.095	0.555**
Physheal	Pearson correlation	0.306**	0.098	0.096	0.111	1	0.314**	$0.200^{**}$
Psycheal	Pearson correlation	$0.141^{*}$	-0.032	0.049	0.095	0.314**	1	0.014
Jobperc	Pearson correlation	$0.697^{**}$	$0.500^{**}$	$0.578^{**}$	0.555**	$0.200^{**}$	0.014	1

\*\*Correlation is significant at the 0.01 level (2-tailed). \*Correlation is significant at the 0.05 level (2-tailed).

## Table 8. Factor analysis.

Initial Eigenvalues		Extract	ion Sums of Squ	ared Loadings	Rotation Sums of Squared Loadings				
Component -	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.930	37.063	37.063	5.930	37.063	37.063	4.712	29.447	29.447
2	1.577	9.857	46.920	1.577	9.857	46.920	2.147	13.419	42.867
3	1.293	8.081	55.001	1.293	8.081	55.001	1.942	12.134	55.001
4	0.979	6.119	61.121						
5	0.926	5.790	66.911						
6	0.832	5.200	72.110						
7	0.710	4.437	76.547						
8	0.648	4.048	80.596						
9	0.615	3.844	84.439						
10	0.520	3.252	87.691						
11	0.471	2.941	90.632						
12	0.411	2.567	93.200						
13	0.372	2.328	95.528						
14	0.296	1.852	97.380						
15	0.236	1.473	98.853						
16	0.184	1.147	100.000						

Note: Extraction method: Principal component analysis.

	Component		
	1	2	3
The number of projects and/or assignments I have	0.813		
The amount of time I spend at work	0.508		
The amount of time I spend in meetings		0.847	
The number of phone calls and office visits I have during the day	0.412		
The degree to which politics rather than performance affects organizational decisions			0.791
The inability to clearly understand what is expected of me on the job			0.658
The volume of work that must be accomplished in the allotted time	0.756		
The extent to which my position presents me with conflicting demands			0.514
The amount of red tape I need to go through to get my job done			0.577
The time pressures I experience	0.790		
The lack of job security I have	0.551		
The amount of responsibility I have	0.579		
The scope of responsibilities my position entails	0.682		
The degree to which my career seems "stalled"	0.736		
The opportunities for career development I have had	0.736		
The amount of traveling I must do		0.823	

Table 9. Factor analysis based on orthogonalrotation.

Note: Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser normalization.

The number of projects and/or assignments I have; The amount of time I spend at work; The number of phone calls and office visits I have during the day; The volume of work that must be accomplished in the allotted time; The time pressures I experience; The lack of job security I have; The amount of responsibility I have; The scope of responsibilities my position entails; The degree to which my career seems "stalled"; The opportunities for career development I have had; Questions belonging to the second component (nonspecific) are the following: The amount of time I spend in meetings; The amount of traveling I must do; Finally, questions belonging to the third component (indicative of the clarity of objectives) are the following: The degree to which politics rather than performance affects organizational decisions; The inability to clearly understand what is expected of me on the job; The extent to which my position presents me with conflicting demands;

The amount of red tape I need to go through to get my job done.

## 4. Discussion

Factor analysis revealed that the first circumstantial factor refers to the characteristics of work, and the third circumstantial factor refers to the clarity of objectives. As far as the second circumstantial factor is concerned, the configuration may be more a co product of different subgroups of the main sample (public/private) where those 2 items (travel, meetings) are occurring at specific levels and job roles. However, we decided to maintain this second factor in case of workers who either make business trips or participate in long meetings. Those 2 professional items seem to exacerbate stress caused by job characteristics and unclear objectives.

It has been shown that work-related stress has severe emotional and physical health effects (Ferracci et al.,

2003; Smith et al., 2005; Robin & Leslie, 2006; Yu et al., 2006; Brent, 2008; Schneider & Irastorza, 2010).

The positive correlation between stress and 1) job insecurity 2) beliefs about work, has been confirmed byseveral studies, that agree with the fact that threats of career development, including threats against dismissal and promotion prospects with fuzzy criteria, produce stress to workers (Nelson & Burke, 2000; Burchell, 2002; Sverke et al., 2002; Hirsch & De Soucey, 2006). The economic pressure leads companies and organizations to undergo restructures, mergers and acquisitions (Hirsch & De Soucey, 2006). The result of this policy is the reduction of the workforce and a more flexible labor management (e.g. part-time job). An important factor that contributes to the poor physical health is the job insecurity (Burchell, 2002). The positive correlation between stress and 1) workload 2) employees' physical and mental health status, has been confirmed by several studies (Nishitani & Sakakibara, 2010; Burchell, 2002). A recent study suggests that a heavy workload increases stress levels (Nishitani & Sakakibara, 2010).

Finally, regarding health issues, the majority of the participants did not have a serious health problem in the last 6 months. Personality characteristics of the individuals, may explain this phenomenon, as the majority of the participants were more or less optimistic. There have been only a small number of studies investigating the influence of optimism on work-related stress. Researches showed that optimistic individuals used more problem-focused coping strategies outperforming pessimistic individuals in the work environment (Strutton & Lumpkin, 1992). Optimism could be a powerful ally and a very positive source of force in the workplace.

As we previously mentioned, work-related stress affects not only the health of employees, but also the productivity of organisations (Leka & Griffiths, 2003).

Limitations: 1) One limitation is that the survey was conducted exclusively in urban population; 2) Another limitation refers to the age group. Specifically, the majority of the participants (87.4%) were 21 to 55 years old; 3) The last limitation refers to the type of job. The majority of the participants (71.4%) said that they were working as administrators/clerks.

## **5.** Conclusion

Job stress arises not only from situations people encounter on a daily basis, but also from people's own perceptions regarding their perceived ability to deal with such situations. The "Job Stress Measure" can be used as a tool of measuring job stress in the Greek population. The occupational stress has many implications on the individual's health and proves to be detrimental to the economy of the country. Therefore, future researches in Greece should focus on locating and assessing risk stressors in the workplace, through work-related stress psychometric tools and interviews.

#### **Conflict of Interest**

The authors have no conflict of interest to declare.

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