

TECHNOSTRESS TEST

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Stress at work can be caused by a multitude of stressors including technical ones. Work-related stress is defined as the emotional, cognitive, behavioral and physiological reaction to aversive and noxious aspects of work, work environments and work organizations. It is a state characterized by high levels of arousal and distress and often by feelings of not coping (European Commission, Directorate-General for Employment and Social Affairs, 1999).

There are 11 factors (64 items) included into the Technostress test, namely:

(1) Sources of pressure in your job (11 items); (2) Computer hassles (16 items); Different aspects of techno-stress: (3) Emotional aspects of technostress (5 items); (4) Psychological aspects of technostress (6 items); (5) Behavioral aspects of technostress (4 items); Creators of technostress: (6) Techno-overload (4 items); (7) Techno-invasion (4 items); (8) Techno-complexity (4 items); (9) Techno-insecurity (4 items); (10) Techno-uncertainty (4 items); (11) Productivity (4 items).

Technostress test adopts Likert-type forced choice 6-point scale. For example, from 1-point “Never, very infrequently” to 6-points “Very frequently, always” or from 1-point “Very definitely is not a source of pressure” to 6-points “Very definitely is a source of pressure”. Examples of statements incorporate within the Technostress test: “I am forced by this technology to work much faster” or “I have to sacrifice my vacation and weekend time to keep current on new technologies” or “There are constant changes in computer hardware in our organization” or “Fear of not keeping up – becoming out-of-date”.

THEORETICAL BACKGROUND

Rapid development of information technology (ICT) is responsible for increased levels of stress at work and for blurring divide between work and other aspects of life (Millard, 1999). Computer-based systems, which are designed to reduce task complexity and cognitive workload, actually often impose even greater demands and stresses on the very individuals they are supposed to be helping.

Stress is a cognitive response that individuals experience when they anticipate their inability to respond adequately to the perceived demands of a given situation, accompanied by an anticipation of substantial negative consequences due to inadequate response (Trafadar, Tu, Ragu-Nathan, & Ragu-Nathan, 2007). It is a response to an imbalance between a person and the demands of the environment (Cooper, Dewe, & O'Driscoll, 2001), and is created in situations that are perceived by an individual as presenting requirements that threaten to exceed his or her capabilities and resources (McGrath, 1976) or stress caused by an inability to cope with the demands of organizational computer usage (Ragu-Nathan et al., 2008).

The most cited is technostress creators concept (Tafdar, et al., 2011). By this concept, there could be five creators of technostress at workplace:

Techno-overload describes situations where ICT forces users to work faster and longer.

Techno-invasion describes the invasive effect of ICT in terms of creating situations where users can potentially be reached any time, employees feel the need to be constantly “connected,” and there is a blurring between work-related and personal contexts.

Techno-complexity describes instances where the complexity associated with ICT makes users feel inadequate as far as their skills are concerned and forces them to spend time and effort in learning and understanding various aspects of ICT.

Techno-insecurity is associated with situations in which users feel threatened about losing their jobs either to automation resulting from new ICT or to other people who have a better understanding of the ICT.

Techno-uncertainty refers to contexts where continuing changes and upgrades in ICT unsettle users and create uncertainty for them in that they worry about constantly learning and educating themselves about new ICT.

In theoretical perspective and according the occupational stress theory, we added to Technostress test five especially important factors i.e. sources of pressure in your job; computer hassles; and different aspects of technostress as the emotional aspects, psychological aspects, and behavioral aspects.

VALIDATION

Internal correlations are shown in Table below.

Table. Within Sample Correlations in Technostress Test (N = 623)

	1	2	3	4	5	6	7	8	9	10	11	12
1. Sources of pressure in your job	1											
2. Computer hassles	0.59	1										
3. Emotional aspects of technostress	0.41	0.45	1									
4 Psychological aspects of technostress	0.56	0.58	0.68	1								
5 Behavioral aspects of technostress	0.37	0.38	0.49	0.56	1							
6 Techno-overload	0.53	0.49	0.51	0.63	0.48	1						
7 Techno-invasion	0.40	0.40	0.43	0.46	0.43	0.58	1					
8 Techno-complexity	0.41	0.44	0.48	0.57	0.37	0.56	0.62	1				
9 Techno-insecurity	0.40	0.44	0.52	0.59	0.46	0.62	0.62	0.75	1			
10 Techno-uncertainty	0.37	0.31	0.36	0.44	0.44	0.51	0.43	0.43	0.52	1		
11 Productivity	0.30	0.19	0.28	0.32	0.44	0.42	0.27	0.24	0.29	0.55	1	
12 Total	0.53	0.49	0.56	0.65	0.58	0.80	0.77	0.78	0.82	0.75	0.63	1

All presented correlations are statistically significant ($p < 0.05$)

RELIABILITY

Internal consistency reliability (Cronbach α or coefficient alpha) was 0.97; Generally ranges from 0.89 to 0.97 (see Table below).

Table. Reliability Statistics for Technostress Test (N = 623)

Factors	Number of items	Reliability Statistics* Cronbach α
1. Sources of pressure in your job	11	0.92
2. Computer hassles	16	0.93
3. Emotional aspects of technostress	5	0.89
4. Psychological aspects of technostress	6	0.90
5. Behavioral aspects of technostress	4	0.81
6. Techno-overload	5	0.94
7. Techno-invasion	4	0.90
8. Techno-complexity	4	0.92
9. Techno-insecurity	4	0.97
10. Techno-uncertainty	4	0.96
11. Productivity	4	0.94
Number of valid cases (N=623)		

* Widely is accepted .70 coefficient alpha as a standard (Nunnally, 1978)

ESTONIAN NORMS

Estonian Norms for Technostress test (see Table). Estonian norms are based on 402 people from 2 samples (one general sample, N=281, and one occupational (nurses' sample, N=121).

Table. Descriptive statistics of Technostress test in Estonia. Scales: From 1-point "Never, very infrequently" to 6-points "Very frequently, always" or from 1-point "Very definitely is not a source of pressure" to 6-points "Very definitely is a source of pressure".

Technostress test Factors	NURSES (N=121)		EST (N=281)	
	M	SD	M	SD
1. Sources of pressure in your job	2.85***	0.98	3.23	0.89
2. Computer hassles	2.76*	0.82	3.01	0.89
3. Emotional aspects of technostress	1.92	0.84	1.90	0.89
4. Psychological aspects of technostress	1.95***	0.77	2.45	0.94
5. Behavioral aspects of technostress	1.71***	0.72	2.23	0.90
6. Techno-overload	2.32***	0.98	2.69	1.09
7. Techno-invasion	2.06***	1.18	2.60	1.23
8. Techno-complexity	1.69***	1.24	2.33	1.20
9. Techno-insecurity	1.78	1.00	1.98	1.03
10. Techno-uncertainty	2.62	1.09	2.70	1.25
11. Productivity	2.31***	1.24	3.13	1.57

Occupational sample is significantly different from the EST sample: * $p < 0.05$;

** $p < 0.01$; *** $p < 0.001$

POLISH NORMS

Polish Norms for Technostress test (see Table). Polish norms are based on 186 people from one general sample.

Table. Descriptive statistics of Technostress test in Poland. Scales: From 1-point “Never, very infrequently” to 6-points “Very frequently, always” or from 1-point “Very definitely is not a source of pressure” to 6-points “Very definitely is a source of pressure”.

Technostress test Factors	M	SD
1. Sources of pressure in your job	3.59	1.00
2. Computer hassles	3.32	1.02
3 Emotional aspects of technostress	2.51	1.10
4. Psychological aspects of technostress	3.01	1.16
5. Behavioral aspects of technostress	3.19	1.09
6. Techno-overload	3.31	1.20
7. Techno-invasion	3.20	1.22
8. Techno-complexity	2.88	1.46
9. Techno-insecurity	2.98	1.22
10. Techno-uncertainty	3.15	1.23
11. Productivity	3.74	1.31

CORRELATION BETWEEN TECHNOSTRESS AND PERCEIVED PERFORMANCE

Reliability (Cronbach α or coefficient alpha) between Technostress test and Perceived Performance Scale (PPS) was 0.94.

Table. Correlations between employee technostress (measured by Technostress test) and perceived performance (measured by Perceived Performance Scale) (N =623)

Technostress test	Perceived performance
1. Sources of pressure in your job	-0.15
2. Computer hassles	-0.19*
3. Emotional aspects of technostress	-0.23*
4. Psychological aspects of technostress	-0.25*
5. Behavioral aspects of technostress	-0.15
6. Techno-overload	-0.04
7. Techno-invasion	-0.29*
8. Techno-complexity	-0.16
9. Techno-insecurity	-0.10
10. Techno-uncertainty	-0.15
11. Productivity	-0.23*

* Correlations are statistically significant ($p < 0.05$)

PUBLICATIONS and/or CONFERENCES

(Bibliography of Studies Using the Technostress test)

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