

IDENTIFICATION OF LINKS BETWEEN SOURCES AND CONSEQUENCES OF WORK-RELATED STRESS

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Abstract: Workplace stress affects the quality of work, efficiency and effectiveness, relationships, physical and mental health of employees. The paper presents the results of a research aimed at identifying the links between the sources and the consequences of work-related stress. Data analysis on the sample of 208 respondents confirmed the existence of several statistically significant links between the sources and the consequences of stress. In general, the sources of stress are related to the experiencing of its consequences, such as perceived work overload, lack of concentration, feeling tired, sleep problems, postponing important tasks, loss of interest in work, mood swings, and physiological symptoms. The results support the necessity to eliminate the stress sources in the workplace, or to coach the employees to help them cope with stress, making the organization contribute to higher productivity and motivation.

Keywords: Stress, work-related stress, sources of work-related stress, consequences of work-related stress

1 Introduction

The concept of stress appears and has been given increased attention since the 1940s in connection to the Second World War and the problem of warfare neuroses (Grinker & Spiegel, 1945; Szabo et al., 2017). Stress situations characterized as extreme, critical, and often on the edge of life threatening, were defined by Selye (1936; 1950) at the outset of his research. Later, Selye (1956; 1976) shifted the concept of stress to a wider complex of situations that affect the organism. According to Atkinson et al. (1999), stress events are most often considered individually as being uncontrollable and unpredictable at the limit of human abilities. The stressfulness of the situation is the result of subjective perception. Individual assessments differ in assessing the degree at which a situation is stressful (Lazarus & Folkman, 1985). Work-related stress is a generic term that refers to work stimuli (stressors) that can lead to physical, psychological, or behavioral consequences that affect the health and well-being of an employee (Glazer & Liu, 2017).

2 Sources of work-related stress

Work-related stress is, according to Jain and Barta (2015), a reaction to extreme pressure that an individual is unable to handle for various reasons arising in the working environment. According to Greenberg, Baron (2008), and Cox (1993), work-related stress is such a state in which the employees perceive that the conditions and claims they face exceed the limits of their abilities and persistence to deal with them. According to Cox (1993), stress occurs particularly in situations characterized by low levels of control and support. Kożusznik, Rodriguez and Peiro (2015) add that what also contributes to stress are many aspects such as the organization's environment, policies, procedures and processes, remuneration methods, as well as employees themselves.

Stress situations that may occur in the work environment are characterized by Copper & Marshall (1978) on the basis of six areas of work-related stress, such as internal work environment, organization environment, social environment, career prospects, organizational culture, work and family life. Work-related stress is, according to Bonde (2008), one of the factors contributing to the mental suffering of employees.

Stress in the workplace, according to Michie (2002), is becoming common and its level is constantly changing. Siegrist

(2010) says poor working conditions, bad relationships and emotional sterility in the workplace, criticism and bullying, as well as sedentary work increasingly contribute to cardiovascular diseases. As stated by Dopkeen & DuBois (2014), stress in the workplace has a negative impact not only on individuals but also on the organization in the form of reduced labor productivity.

Bloisi et al. (2007) report the four main sources of work-related stress: working role, insufficient use of staff potential, responsibility for other workers, and inappropriate working conditions, while according to Oksanen & Ståhle (2013), the physical work environment has a great impact on welfare, creativity, attitudes and perceptions, but also interactions of individuals with others. The most common sources of stress are described by Michie (2002) as unclear job assignment, inappropriate working roles, strict and tight deadlines, relationships and conflicts in the workplace, poor organizational culture, the inability of personal development and career growth, and job insecurity. Another source of stress is the critical, demanding managers who do not support or who even bully their subordinates, thereby reducing the positive social dimension of work and good teamwork.

A suitable recommendation for addressing the issue of workplace stress sources is provided by Siegrist (2010), who claims that these findings together justify the need for further recognition and management of harmful stressors in the work environment. Organizations should look for ways to prevent them, or implement the policies and mechanisms to help employees deal with their stressful states.

3 Consequences of work-related stress

The consequences of work-related stress cannot be clearly separated from the stress sources. Contrarily, the consequences of stress alone can reinforce the effects of stress sources. A lot of stress causes anxiety, depression, aggression and bad mood, reduced immunity and fatigue. After a lot of stress, a certain amount of rest is needed, and that causes absenteeism of employees in the organization. The lack of stimulating stress prevents the development of personality and the activation of adaptation mechanisms (Kilby & Sherman, 2016). Chandola et al. (2010) describe short-term stress reactions such as: behavioral, affective and physiological, which can cause physiological or mental problems. Greenberg & Baron (2007) report three categories of stress consequences: psychological (fears, bad memory, frustration, chaos, panic), physiological (muscle tension, palpitations, vomiting, palm sweating), and behavioral or social (restlessness, sleep disorders, closure). Chandola et al. (2010) and Nieuwenhuijsen et al. (2010) agree on the claim that work-related stress leads to physical illness, psychological suffering and mental illness. Brun & Martel (2005) list the physiological consequences of stress in the workplace: migraines, sleep disorders, high blood pressure, increased cholesterol, cardiovascular diseases, dermatological problems, and gastrointestinal disorders. Psychological consequences are manifested by depression and anxiety, dissatisfaction, pessimism and frustration, aggression and low self-confidence. Behavioral consequences are manifested by absenteeism and lack of interest in work, isolation, conflicts and bad relationships, and frequent mood swings.

4 Research studies on work-related stress

Already in 1984, the Canadian Mental Health Association survey found that 56% of the respondents felt the penetration of work into private life. The respondents perceived the amount of time spent at work and the poor and irregular layout of work changes significantly negatively. These interventions of work in private life affect the whole family, responsibilities for the household and even the upbringing of children. Employees are also at odds with leisure activities and social life (Cox 1993).

In the research by Bhui et al. (2016), the authors focused on identifying the consequences of work-related stress as well as the individual, organizational and personal interventions used by staff to cope with stress. The qualitative research was conducted through interviews with 51 employees from public, private and non-governmental organizations. The employees considered especially unfavorable working conditions and management procedures to be the main and most common sources of stress. Other mentioned stressors were also the practices of managers, for example, unrealistic demands, lack of support and unfair treatment, lack of decision-making space, unfair remuneration for work done, lack of recognition, poorly assigned tasks, lack of transparency and communication. In order to reduce the causes and prevent work-related stress, the authors recommend, in particular, the improvement of management styles, providing sufficient time for performing work tasks, and sufficient physical activity.

In their 1997 research, Tice and Baumeister focused on the consequences of stress, where procrastination among students was examined in two longitudinal studies. The procrastinating students reported lower levels of stress and less illness than the non-procrastinating ones at the beginning of the semester, but they reported higher levels of stress and more illness later on towards the end. Also, they were overall more ill. The procrastinating students also received lower grades on all assignments. Procrastination therefore seems to represent a self-defeating behavior pattern marked by short-term benefits and long-term costs.

Hoboubi et al. (2017) used a sample of employees of an Iranian petrochemical company to conduct a research on the levels of job stress, job satisfaction, and productivity. According to the results, the levels of employees' perceived job stress and job satisfaction were moderate-high and moderate, and their productivity was evaluated as moderate. Although the relationship between job stress and productivity indices was not statistically significant, the positive correlation between job satisfaction and productivity indices was statistically significant. The productivity was significantly associated with shift schedule, role insufficiency, role ambiguity, and supervision.

According to Health and Safety Executive (2017), work-related stress, depression or anxiety continue to represent a significant ill health condition in the workforce of Great Britain. The occupations and industries reporting the highest rates of work-related stress, depression or anxiety remain in the health and public sectors of the economy. Workload, lack of managerial support, and organizational change are cited as the primary causes of stress.

The statistical data of Statistica (2017) describe the reasons for stress at work among employees in North America in 2017. Of the surveyed participants, 39% mentioned workload, 31% issues at work, 19% juggling work and personal life, and 6% mentioned lack of job security as a source of stress, and only 5% marked either none of the above or "not stressed".

The aim of the research by Fan et al. (2015) was to examine the impact of psychosocial stress at work and at home on anxiety and depression. In the sample of medically healthy, employed men and women (aged 30–60), serial regression analyses were used to determine the independent association of psychosocial stress at work and at home with depression symptoms and anxiety symptoms. Serial regression analyses in 129 subjects revealed that job insecurity and home stress were most strongly associated with depression and anxiety symptoms. Work and home stress were associated with anxiety and depression symptoms among both men and women. Based on these results, it could be concluded that both work and home stress should be considered in the studies evaluating anxiety and depression in working populations.

Moaz et al. (2016) examined the impact of job stress on job performance in the education sector, particularly the organizational role factors that cause stress (workload, role

ambiguity and role conflict). The research objective was to determine the impact of these organizational factors on the performance of employees in the education sector in the Sultanate of Oman. The results showed that workload has a statistically positive impact on job performance, while role conflict has a statistically negative impact on job performance. Role ambiguity did not significantly affect the job performance.

The presented findings on stress, its sources and consequences point to the necessity of multidimensional understanding of this issue and the interdisciplinary study of stress, including work-related stress in various contexts.

5 Research methodology

The aim of the research was to identify the links between the identified sources of work-related stress and its consequences.

The data needed for the analysis were obtained by means of an original questionnaire *Zdroje a dôsledky stresu/Stress Sources and Consequences (SS&C)*, which focuses on the study of two areas of work-related stress:

1. *Sources of stress*: Sufficient time to fulfill the work tasks. Friendly work environment. Conflicts in the workplace. Adequate working hours. Sufficiently evaluated work performance. Open communication with the superior. Time pressure. Fear of losing the job. Excessive control by the supervisor. Unambiguous definition of tasks. Tasks corresponding to the employee's abilities. Good working conditions.

2. *Consequences of stress*: Excessive workload. Insufficient concentration. Feeling tired. Symptoms of stress. Problems with sleep. Postponing important tasks. Loss of interest in work. Mood swings.

The research participants were to respond on the scale from 1 to 6 to what extent they agree with the given statement (1 = definitely no, 2 = no, 3 = rather no, 4 = rather yes, 5 = yes, and 6 = definitely yes).

The research sample consisted of 208 respondents, of whom 131 were men (63%) and 77 were women (37%) aged between 18 - 63 years, with an average age of 38.92 years, SD=10.917. By means of random sampling method, we collected data from the employees of three economic areas: Education (73 respondents, 35.1%), Aviation (65 respondents, 31.3%), and Bus transport (70 respondents, 33.7%). 44 managers (21.15%) and 164 employees (78.85%) participated in the research.

The data obtained were processed and interpreted using the Pearson correlation, Spearman correlation, Barlett's Test of Sphericity and Factor analysis of principal components and Varimax rotation with Kaiser normalization. The results were processed by the mathematical-statistical methods in SPSS 20.

6 Research results

Based on the Kaiser-Meyer-Olkin Measure of Sampling Adequacy – .805 and Barlett's Test of Sphericity – 1363; significance .000, Factor analysis of principal components and Varimax rotation with Kaiser normalization was applied to specify the internal factor structure of the methodology. Two factors were extracted to account for 46.8% variance (Table 1). These factors can be specified content-wise as follows:

- *Sources of work-related stress* – respondents who score higher in this factor perceive individual sources of work-related stress more negatively. They assess the insufficient time to fulfill the work tasks, unfriendly work environment, conflicts in the workplace, inadequate working hours, insufficiently evaluated work performance, unopen communication with the superior, time pressure, fear of losing the job, excessive control by the supervisor, ambiguous definition of tasks, tasks not corresponding to

the employee's abilities, and bad working conditions more negatively. Cronbach's alpha: .818.

- *Consequences of work-related stress* – respondents who score higher in this factor perceive individual consequences of work-related stress more negatively. They perceive excessive workload, insufficient concentration, feelings of tiredness, muscle tension, palpitations, palm sweating, sleep problems, postponing important tasks, loss of interest in work, and mood swings. Cronbach's alpha: .822.

Table 1 Factor analysis of principal components of the SS&C methodology

	<i>Factors</i>	
	<i>Consequences of work-related stress</i>	<i>Sources of work-related stress</i>
Insufficient time to fulfill the work tasks		.459
Unfriendly work environment		.745
Inadequate working hours		.611
Insufficiently evaluated work performance		.672
Unopen communication with the superior		.531
Ambiguous definition of tasks		.653
Tasks not corresponding to the employee's abilities		.650
Bad working conditions		.785
Perceived excessive workload	.726	
Insufficient concentration	.646	
Feeling tired	.800	
Muscle tension, palpitations, palm sweating	.700	
Sleep problems	.473	
Postponing important tasks	.629	
Loss of interest in work	.487	
Mood swings	.687	
<i>Eigenvalues</i>	3.821	3.674
<i>Variance explained</i>	23.884	22.961

The Pearson correlation coefficient was calculated based on the Skewness and Kurtosis values, which confirmed the normal distribution of data for these indices, to verify the links between the aggregate index of work-related stress sources and the aggregate index of work-related stress consequences. The aggregate index representing the work-related stress sources statistically positively correlated with the aggregate index which represents the work-related stress consequences. This means that if employees generally perceive the sources of work-related stress negatively, then they also evaluate the work-related stress consequences more negatively (Table 2).

Consequently, the links between the aggregate index representing the sources of work-related stress and the individual consequences of this stress were analyzed (Table 3). Based on the Skewness and Kurtosis values for individual work-related stress consequences, which did not confirm the normal distribution of data, the given links were analyzed by Spearman's correlation coefficient. Even within this analysis it means that if the employees generally perceive the sources of work-related stress more negatively, they also assess the individual consequences of this stress more negatively.

Table 2 Links between the aggregate index of work-related stress sources and the aggregate index of work-related stress consequences

	<i>Aggregate index of work-related stress consequences</i>
<i>Aggregate index of work-related stress sources</i>	.509
<i>p</i>	.000

Table 3 Links between the aggregate index of work-related stress sources and the individual consequences of stress

<i>Aggregate index of stress sources</i>	<i>Consequences of work-related stress</i>							
	<i>D1</i>	<i>D2</i>	<i>D3</i>	<i>D4</i>	<i>D5</i>	<i>D6</i>	<i>D7</i>	<i>D8</i>
	.534	.414	.408	.379	.352	.299	.475	.314
<i>p</i>	.000	.000	.000	.000	.000	.000	.000	.000

D1: Perceived excessive workload.

D2: Insufficient concentration.

D3: Feeling tired.

D4: Muscle tension, palpitations, palm sweating.

D5: Sleep problems.

D6: Postponing important tasks.

D7: Loss of interest in work.

D8: Mood swings.

The aggregate index representing work-related stress sources correlated statistically positively with all the studied consequences of this stress. This means that the more negatively the employees perceive the individual sources of stress, the more negatively they also evaluate the consequences of stress (Table 3). Negatively evaluated were the feelings of excessive workload, concentration problems, feeling tired, more frequent palpitations, sweating, sleep problems, more procrastination, decreased interest in work, and mood swings.

This analysis of the links between the aggregate index of work-related stress sources and the studied consequences of this stress was subsequently supplemented by an analysis of the links between the evaluation of the specific sources of work-related stress and the perceived consequences of work-related stress (Table 4). The performed correlation analysis confirmed, with some exceptions, statistically significant positive correlations between the evaluation of the individual sources of work-related stress and the perceived consequences of this stress.

Table 4 Links between the sources of work-related stress and the consequences of work-related stress

<i>Consequences</i>	<i>D1</i>	<i>D2</i>	<i>D3</i>	<i>D4</i>	<i>D5</i>	<i>D6</i>	<i>D7</i>	<i>D8</i>
<i>Sources</i>								
Insufficient time to fulfill the work tasks	.432	.228	.296	.397	.181	.274	.223	.116
<i>p</i>	.000	.001	.000	.000	.009	.000	.001	.096
Unfriendly work environment	.420	.242	.310	.259	.251	.356	.432	.368
<i>p</i>	.000	.000	.000	.000	.000	.000	.000	.000
Inadequate working hours	.445	.284	.256	.265	.053	.197	.220	.032
<i>p</i>	.000	.000	.000	.000	.450	.004	.001	.642
Insufficiently evaluated work performance	.430	.325	.321	.273	.279	.215	.305	.263
<i>p</i>	.000	.000	.000	.000	.000	.002	.000	.000
Unopen communication with the superior	.421	.287	.307	.268	.372	.249	.400	.366
<i>p</i>	.000	.000	.000	.000	.000	.000	.000	.000
Ambiguous definition of tasks	.278	.161	.211	.230	.140	.037	.250	.047
<i>p</i>	.000	.020	.002	.001	.043	.598	.000	.500
Tasks not corresponding to the employee's	.188	.398	.161	.180	.236	.290	.458	.258

abilities								
<i>p</i>	.006	.000	.020	.009	.001	.000	.000	.000
Bad working conditions	.312	.334	.287	.246	.242	.172	.414	.278
<i>p</i>	.000	.000	.000	.000	.000	.013	.000	.000

In the absence of time to perform work tasks, employees experience greater workload, fatigue, and do not sufficiently concentrate on their job. Insufficient time to fulfill tasks is also associated with feeling the stress symptoms such as muscle tension, palpitations, or palm sweating, as well as mood swings. An aspect of time is also related to the postponement of important tasks or procrastination. If an organization does not provide sufficient time for its managers and employees, they lose interest in their work.

The unfriendly work environment is associated with feeling overloaded with work, fatigue and lack of concentration. Among the individuals, who do not feel the sense of belonging and friendship, tendencies towards the feeling of stress symptoms, mood swings, sleep problems, as well as postponing important tasks, and loss of interest in work have been observed.

An aspect that involves inadequate working time is associated with the feelings of excessive workload, then feeling tired and stressful. If employees have an inappropriate working time, their concentration and focus on work decrease. Postponing of tasks and losing the interest in work appear again if the individuals do not have an adequate working time.

Individuals who consider work performance to be inadequate have been associated with a feeling of excessive workload, lack of concentration, and fatigue at work. Insufficient evaluation of work is associated with the symptoms of stress and mood swings. If they feel underestimated, they also increase the postponement of their obligations, lose interest in their work, and have trouble sleeping.

The aspect of unopen communication with superiors is related to the feelings of excessive workload, lack of concentration, mood swings, or muscle tension. If there is an inefficient communication in the organization, employees experience fatigue and sleep problems, which ultimately lead to lower performance, efficiency and workplace attention. By inadequate communication, employees lose interest in their work and often postpone important tasks.

If the supervisor does not provide a clear job definition for his or her staff, then the employees feel overworked, do not concentrate enough on their job, are more tired, have trouble sleeping, and feel physiological symptoms of stress. The issue of an ambiguous definition of a job role is related to the loss of job interest, which suggests that if employees do not get a clear and comprehensible job assignment, their interest in work declines. If work tasks do not match employees' abilities, they experience excessive workload, feel tired, have problems with sleep and experience mood swings. Another consequence of this source of stress is an inadequate concentration on the given job, and the subsequent loss of interest and procrastination.

Poor working conditions make a significant contribution to the inconvenience of employees at work. In this case, a connection has been demonstrated between the inappropriate working conditions in the workplace and the feelings of excessive workload, lack of concentration, feeling tired and sleeping problems. In a bad working environment, employees suffer from mood swings, lose interest in their work, procrastinate, and physiological symptoms of stress develop.

7 Discussion and conclusion

The results obtained confirm the existence of statistically significant links between the identified sources and consequences of work-related stress. Based on the research

conducted, we can state that the following findings that emerged from the analysis confirm the fulfillment of the stated goal.

Under time pressure, employees experience greater workload and fatigue, consequently they fail to concentrate sufficiently in their work and their motivation and interest are declining. Insufficient time is also associated with the feeling of physiological symptoms of stress and contributes to mood swings. This aspect of lack of time is related to the procrastination at the workplace, which was dealt with by Tice and Baumeister (1997) in their longitudinal study. Similarly, in the case of inadequate working hours or inappropriate distribution of labor changes, there is a negative effect in the form of increased stress, fatigue and feeling of stress symptoms. Another consequence is lack of concentration, focus and interest in work. Postponement of the tasks appears here as well, while procrastination was also the focus of a 1984 Canadian Mental Health Association research, the results of which showed that the respondents perceived the amount of time at work and poor working time layout negatively.

Insufficient evaluation of employees is also pointed out by Bhui et al. (2016), whose research corresponds to our findings. If an organization fails to evaluate employees, then there is a presumption that they will experience greater workload, and their concentration, motivation, and interest in work will decline. They may have problems sleeping, causing them to be tired and disinterested at work. This aspect also involves the symptoms of stress and mood swings. If they feel unappreciated, postponing obligations also increases.

Poor working conditions of employees may result in feelings of excessive workload, inadequate concentration, tiredness, and sleep problems. In a job where employees do not have the ideal conditions to perform their work, they experience mood swings, they lose interest in their work, and the procrastination begins to appear.

An interesting finding is that if employees do not have clearly defined tasks, or vice versa, if work tasks do not match their abilities, they experience a feeling of excessive workload and physiological symptoms of stress may appear. They are tired at work because of lack of sleep. Another consequence of these sources of stress is the lack of concentration on the job, the subsequent loss of interest and procrastination.

In an environment where there is no friendly atmosphere, employees can experience excessive workload and symptoms of stress. Their sleep is not sufficient, which is due to fatigue and lack of concentration and interest in work, and also to the intensification of important tasks. This source of stress also affects employees in the form of changes in their mood. Similarly, if there is an insufficiently developed and infiltrated open communication between managers and employees, their workload perceptions increases, and concentration, motivation, and interest in work decrease. Staff moods often change and they feel fatigue in this environment, probably as a result of insufficient sleep.

All of the abovementioned sources of stress contribute to consequences that have various negative impacts on the health, well-being, performance, concentration and motivation of employees. To help eliminate stress in the workplace, the organization can try to develop appropriate working conditions, open communication, and fair and equal approach. The organization should provide employees with sufficient time to perform tasks, and eliminate stereotypical tasks through a friendly and supportive work environment.

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Primary Paper Section: A**Secondary Paper Section: AE**