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Self-esteem and social support in the occupational stress-subjective health relationship among medical professionals

The starting point for the presented study was the concept by House who construed social support as buffering the impact of work-related stress on health. Self-esteem was taken under consideration as the other potential stress buffer. It was hypothesized that both social support and self-esteem would have a salutogenic effect, since they attenuate the experience of occupational stress and reduce health problems associated with the experienced job stress. Participants in the study were 361 medical professionals representing various specialties. They were examined using the Subjective Job Evaluation Questionnaire by Dudek et al., the Mood and Health State Questionnaire by Rząsa, the Self-Esteem Scale by M. Rosenberg and Significant Other Scale by Power et al. The higher was the respondents' occupational stress, the poorer was their subjective physical health. Such components of occupational stress as responsibility, psychological strain due to job complexity, lack of rewards at work, and a sense of threat were found to be most important in this respect. These four components of occupational stress were interrelated and constituted a feedback loop. The study confirmed a salutogenic role of self-esteem, contributing to subjective health improvement. Satisfaction with social support had also a positive role, since it reduced the amount of experienced job stress, thus exerting a health-promoting effect. There was a direct negative feedback loop between self-esteem and somatic health problems. Irrespective of that, satisfaction with social support was found to interact with perceived occupational stress in a negative feedback loop. However, neither of these two factors, i.e. self-esteem and social support, had an effect of buffering the impact of occupational stress on health. This suggests that the initial model proposed by House as well as the present author's earlier research findings obtained from a smaller sample should be revised.

Keywords: health, occupational stress, physician, self-esteem, social support

Introduction

The impact of occupational stress on employees' health is one of the major research and practical issues shared by health psychology and organizational psychology. Since an overview of numerous publications in this area far exceeds the scope of this article, only the concepts most popular in Poland will be mentioned here. Authors of many empirical studies have been inspired by the Michigan ISR model developed at the Institute for Social Research, University of Michigan, by Kahn (1981), and by its subsequent modification involving a process approach to stress (Kahn, Byosiere, 1992). Another classical approach to occupational stress is the originally two-factor model by Karasek and Theorell that presently includes the following four components: job decision latitude, job demands, job support, and job strain (Karasek, Baker, Marxer, Ahlbom,

Theorell, 1981; Astrand, Hanson, Isacsson, 1989). Also Warr's (1987) vitamin model is frequently quoted. Early psychological research into health-related consequences of occupational stress, enriched by physiological data, is associated with Swedish authors: Gardell (1976) or Frankenhaeuser (1989). Among more recent approaches, widely known especially in Europe, the Effort-Reward Imbalance (ERI) Model developed by Siegrist (1996) should be mentioned. The model is utilized most often in European countries with a high unemployment rate, and in research into emergency service occupations such as nurses, physicians, rescue paramedics, firemen and the police.

The issues of occupational stress in the health context are so popular due to scientific reasons – they are most interesting cognitively, as is usually the case with problems that have a bearing on two disciplines, i.e. health psychology and organizational psychology. Moreover, there are

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humanitarian and health-related reasons: on the one hand, striving to eliminate pathogenic effects of occupational activity, and on the other, seeking a scientific rationale for employees' insurance legislation. Economic reasons seem however to be most important – increasing productivity through the creation of healthy workplace settings and elimination of occupational diseases due to occupational stress. The costs associated with such health problems in the EU are estimated at about EUR 20 billion annually (European Commission, 2000). Therefore implementation of prevention programs to reduce the impact of occupational stress on health is a matter of great importance, both from the social and economic perspective.

The problems of occupational stress have been investigated in Poland since the mid-1970s (Ratajczak, 1977) and have acquired particular importance after the year 1989, i.e. from the beginning of the process of systemic transformation in Poland towards free market economy.

In Poland, just as in other countries, psychological research and scientific theories concerning the occupational stress-health relationship, typically cover three aspects:

1. Definition of occupational stress, distinguishing its components and sources (theories of occupational stress);
2. Investigation of health-related consequences of occupational stress and mechanisms underlying the influence of pathogenic factors on health;
3. Identification of psychological processes and mechanisms that reduce the pathogenic effect of occupational stress on employees' health.

This can be exemplified by a theory of occupational stress developed at the Nofer Institute of Occupational Medicine in Lodz by a research team under the direction of Prof. Bohdan Dudek. The author distinguished the following ten components of occupational stress: psychological strain due to job complexity, lack of rewards at work, uncertainty resulting from poor organization of work, lack of social contacts, a sense of threat, physical discomfort, unpleasant working conditions, lack of control, lack of social support, and responsibility. All these aspects were taken into account in the *Subjective Job Evaluation Questionnaire*. The development of the theory and the instrument construction allowed Dudek and his co-workers to design a program of occupational stress management at the workplace (Dudek, Waszkowska, Merez & Hanke, 1999).

This approach to occupational stress is shared by many Polish researchers. E.g. Ogińska-Bulik found occupational stress to be clearly related to health problems among policemen, ambulance staff and firemen (2003, 2006a), as well as among staff of various social services (2006b). The author proposes a program of burnout prevention and stress management with the aim of reducing negative health-related consequences of occupational stress.

Among other Polish conceptualizations of occupational

stress the model of psychological costs of coping with stress developed by Z. Ratajczak (1996) should be mentioned. The author draws attention to the relationship between the coping strategy utilized and the amount of costs involved in the process. If the strategy is adequate to a given situation, then costs may be reduced.

The occupational group of medical professionals investigated in the present study seems to deserve a special attention in the context of the occupational stress-health relationship, since their responsibilities are particularly stressful. Due to continual tension at the workplace the prevalence of alcohol and drug problems is high in this profession. Moreover, medical doctors are at high risk for suicidal tendencies – the estimated rate in the USA is (depending on the source) 3.5 to 80 times higher than that in the general population (Fengler, 2001). Likewise, suicides in the medical profession have become an alarming phenomenon in Poland. It is most often young people, outstanding specialists, highly regarded by their superiors and colleagues, who attempt to take their own life. Their professional career seems to be most promising, and yet they cannot stand the pressure of their job- and life stress.

Psychologists traditionally - and justifiably - focus on the problems of patients. However, it seems that the time has come also in Poland to pay attention to medical professionals as well, in both research and practice. The aim of the present study was to identify psychological processes and mechanisms that modify the pathogenic effect of occupational stress on medical professionals' health (besides the above mentioned ones, it is the third aspect of the occupational stress-health relationship).

Categories discussed in the literature in this context include sense of coherence (SOC) and social support. Waszkowska & Dudek (2001) in their study investigated sense of coherence in a group of 2.570 employees representing 47 job types. The stronger was the respondents' SOC, the better was their health. Moreover, a strong SOC was found to be associated with a lower risk of mental health problems¹ only in women, and predicted a lower risk of duodenal and gastric ulcer and neurotic disorders only in men.

Social support is considered as a modulator of occupational stress effect on health in the above-mentioned concept by Karasek and Theorell (1994). The authors found that in employees exposed to a strong occupational stress social support at work and in the family acted as a buffer protecting against depression. In a 9-year follow-up study conducted in Sweden on a sample of 7.219 respondents Johnson, Hall and Theorell (1989) found a strong occupational stress (due to a limited intellectual freedom, high demands, and low support) to be the cause of an increased mortality from coronary heart disease and of life span reduction by 7 years on the average.

¹ As diagnosed with the General Health Questionnaire (GHQ-12) by D. Goldberg, used by the authors.

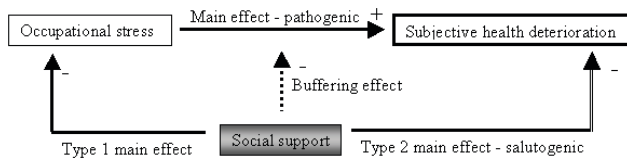
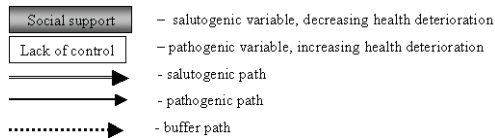


Figure 1. Social support in the occupational stress-subjective health relationship. The model by House (1981).

Note:



Social support is also assumed by House (1981) to be a significant factor buffering the influence of occupational stress on health. According to his concept, social support has a threefold effect on health: firstly, by reducing the direct negative effect of occupational stress on the state of health (a buffering effect). Secondly, social support leads to occupational stress experience attenuation (Type 1 main effect), and thirdly – it has a direct positive effect on health and mood (Type 2 main effect, salutogenic). The model proposed by House is presented in Figure 1.

The House concept was an inspiration for the study to be presented in the paper. **The problem** outlined in the Introduction seems to be pretty obvious: medical professionals pay for the stressful working conditions with their health deterioration. This social problem has led to a crystallization of the **objective** of the study: namely, to seek such psychological processes and mechanisms that might reduce the pathogenic effect of occupational stress. Besides social support suggested by House, self-esteem was taken into consideration. The following **research question** determining the course of the study was posed: Is the experiencing of this type of occupational stress modified by satisfaction with received social support² and by self-esteem, and do these factors act as buffers protecting medical professionals' health against such stress? Both social support and self-esteem were **hypothesized** to serve a salutogenic function, since they reduce health problems correlated with occupational stress exposure, and attenuate the experience of occupational stress.

Method

Participants in the study were 361 medical professionals, 175 men and 186 women aged 24-74 years (mean age 41.02, $SD = 9.3$). The group included cardiologists, hemodynamical physicians, neurosurgeons, gynecologists-obstetricians, prosthetic dentists, dental surgeons, psychiatrists, oncologists, family doctors, and pediatricians. The research was conducted in the years 2004-2007 in the

² The concept of satisfaction with social support was introduced by M. J. Power, L.A. Champion & S. J. Aris, the authors of the Significant Other Scale used in this study.

Upper Silesia and Małopolska hospitals, mostly in Cracow and in the East Pomerania and Kielce provinces.

The sample selection was targeted at medical professionals of various specialties. Having obtained the Hospital Department Head consent to collaborate, usually all the medical professionals employed there participated in the study. Their participation was unpaid and anonymous, but many participants signed answer sheets with their full name and surname.

In the analyses presented below the research question was addressed to medical professionals at large, irrespective of their specialty. The respondents' medical specialty will be separately analyzed as an independent variable elsewhere.

A number of questionnaire instruments and a semi-structured interview were used in the study. The interview concerned the respondents' professional career, working conditions, as well as basic data about their family and dwelling place.

The *Subjective Job Evaluation Questionnaire* developed by Dudek, Waszkowska, Merecz and Hanke (1999) was used to assess the amount of occupational stress experienced by the respondent. The tool construction was based on a study carried out on a group of 2.707 employees. The 10 components of occupational stress distinguished by the authors were listed in the Introduction where the concept of job stress proposed by Dudek was described. The questionnaire consists of 55 items. Reliability of particular subscales in terms of Cronbach's alpha ranges from 0.23 to 0.83, while the alpha coefficient for the whole questionnaire is 0.87.

The presence of health problems was investigated both in the mental and physical dimension. Physical health was diagnosed using the *Mood and Health Questionnaire* by Rzaśa (2005). The author based the tool on the WHO definition of health of 1948: "Health is a state of complete physical, mental and social well-being and not merely the absence of a disease or infirmity"³. The definition is of systemic character. "To be healthy" means: to maintain a state of dynamic equilibrium between particular systems of the organism, as well as between the individual's subsystems and his/her environment. Disease denotes a breakdown of equilibrium manifesting itself in physical and mental disorders, and in problems of social and existential nature. In the 28-item one-factor questionnaire the emphasis was laid on the physical sphere, i.e. on somatic symptoms and complaints concerning particular organs, sleep disturbances, disease-related problems with daily life functioning, psychophysical strain and exhaustion, as well as on a general quality of life and health assessment. The Cronbach alpha coefficient is 0.87, and construct validity of the instrument is 0.64 (coefficient of correlation with the *My Health* questionnaire developed by Ostrowski, 2006).

³ Preamble to the Constitution of the World Health Organization, 1948, p. 100.

The *Self-Esteem Scale* by Rosenberg (1989) in the Polish adaptation by Juczyński (1999) was used to measure the respondent's sense of self-worth. Internal consistency of the tool ranged from 0.74 to 0.78, and the test-retest stability coefficients were 0.82 – 0.85.

Satisfaction with the received emotional and practical support was assessed using the *Significant Other Scale* developed by Power, Champion and Aris (1988) in the Polish adaptation by Juczyński (2004). The Cronbach alpha for the instrument was 0.95, and the test-retest stability coefficients over a 6-month interval were 0.73 - 0.83.

Path analysis was used as the method of statistical simulation of a causal relationship between occupational stress components and subjective health. The goodness of fit of models to data was estimated using a number of tests, first and foremost the χ^2 test. If the test is insignificant (the significance level $p = 0.05$ was assumed), it means that the difference between information inherent in the model and that in the data is not statistically significant. Variables and paths plotted in diagrams were divided into salutogenic and pathogenic. The differentiation does not result from path analysis, but is secondary information of interpretative character. Path analysis was performed using the Lisrel 7 program.

Results

The correlation between occupational stress and physical health impairments was statistically significant [$r(359) = 0.39; p < 0.0001$].

Out of the 10 occupational stress components distinguished in the *Subjective Job Evaluation Questionnaire* by Dudek et al. (see Introduction), 8 components that significantly correlated with subjective physical health were selected for path analysis. These components are shown in Fig. 2. The following four of them turned out to be of particular importance: responsibility, psychological strain due to job complexity, lack of rewards at work, and a sense of threat. These components are interrelated and constitute a feedback loop. Two components of stress, i.e. responsibility and psychological strain, directly determine the presence of physical health impairments. A similar relationship was found between the number of years in the medical profession and subjective health: the longer employment, the more numerous are health problems. This relationship is associated with the respondents' age. All these variables jointly explain 19% of variance in subjective health. A diagram of semi-causal relationships between occupational stress components and physical health deterioration, without potential salutogenic factors, is presented in Fig. 2.

The introduction into the model of variables hypothesized to buffer the pathogenic effect of occupational stress did

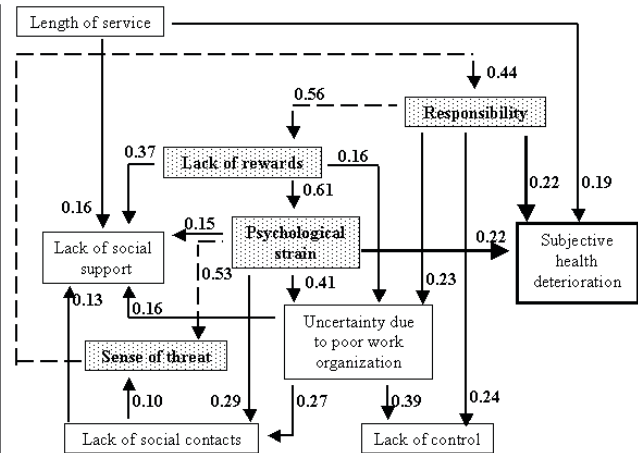


Figure 2. Components of occupational stress as predictors of subjective health deterioration. The model explains 19% of variance in subjective health deterioration, $\chi^2(25) = 31.94; p = 0.16; GFI = 0.98; AGFI = 0.96; RMSR = 0.03; n = 361$.

Note:

- Responsibility - pathogenic variable in a feedback loop
- pathogenic path in a feedback loop

In the diagrams (Figs. 2 and 3) only the paths assessed as significant using Student's t -test ($p < 0.05$) are shown. The remaining explanations are given in the note to Fig. 1.

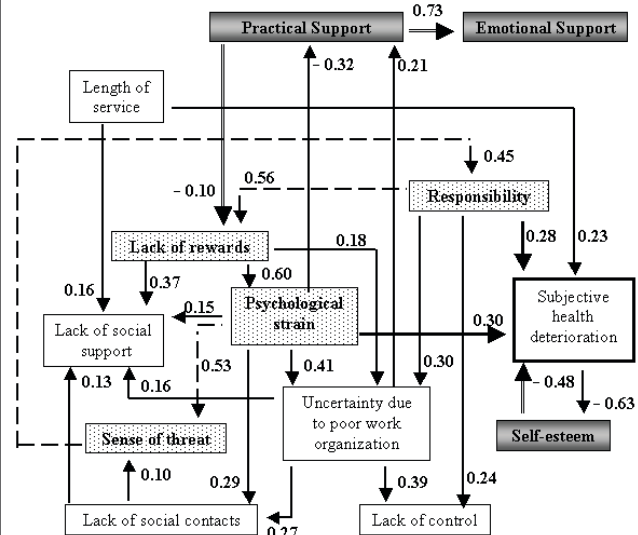


Figure 3. Components of occupational stress, social support and self-esteem as predictors of subjective health deterioration. In the model 12% of variance in physical health deterioration is explained, $\chi^2(52) = 60.27; p = 0.20; GFI = 0.98; AGFI = 0.96; RMSR = 0.03; n = 361$. See notes to Figs. 1 and 2.

not change the relationship between stress components and subjective health. A diagram of semi-causal relationships between occupational stress components and physical health deterioration, including the role of social support and self-esteem, is presented in Fig. 3.

As hypothesized, a high self-esteem improved subjective physical health, while satisfaction with social support decreased the experienced occupational stress resulting from lack of rewards at work. Self-esteem was interrelated with subjective health, since the higher was reported physical health, the higher was the respondents' self-esteem. The two variables were elements of a negative feedback loop. A similar mutual relationship was found between

social support and occupational stress, with a differentiated effect of stress on satisfaction with support. Namely, the higher was uncertainty due to poor organization of work, the higher was satisfaction with practical support. On the other hand, the higher was psychological strain, the lower was satisfaction. Thus, a salutogenic role of social support and self-esteem was confirmed, but the two variables were not found to act as buffers interfering between occupational stress and subjective health. Even though a new predictor (self-esteem) was introduced, this model explained 12% of variance in subjective health, which is less than had been explained by the former model. The amount of explained variance was smaller, since subjective health was involved in a negative feedback loop with this predictor.

Discussion and Conclusions

The obtained results suggest that the most pathogenic components of occupational stress are: responsibility, psychological strain due to job complexity, lack of rewards at work, and a sense of threat.

Responsibility at work has been long recognized in health psychology as a pathogenic factor. In a study by Wardwell, Hyman, & Bahnsen (1964) responsibility for other people, a typical feature in the medical profession, was found to contribute to coronary heart disease more than does material responsibility. Likewise, French & Caplan (1970) evidenced that responsibility for others was correlated with cigarette smoking, higher diastolic blood pressure, and higher blood cholesterol levels.

Lack of rewards at work is one of key categories in the earlier mentioned *Effort-Reward Imbalance* model developed by Siegrist (1996) and his co-workers. A need for keeping balance between broadly defined reward and work effort is emphasized there. If such balance is maintained, the contract between the employer and employee is *honest*. If the job effort considerably exceeds reward, a situation of *contract dishonesty* arises. In the presented study lack of rewards was found to act as one of major pathogenic factors in the work of medical professionals, in concordance with the logic of the Siegrist model. Moreover, this factor is embedded in a feedback relationship with responsibility, psychological strain, and a sense of threat at work, which implies that these pathogens synergically enhance each other.

They are counterbalanced by two psychological cognitive-emotional mechanisms, such as self-esteem and satisfaction with social support. Their complex relationship with subjective health was outlined in the section on results. It should be noted that the initial hypothesis was partially confirmed. The two mechanisms were hypothesized to play at least a double role: as buffers against occupational stress, and as direct inhibitors of physical health deterioration.

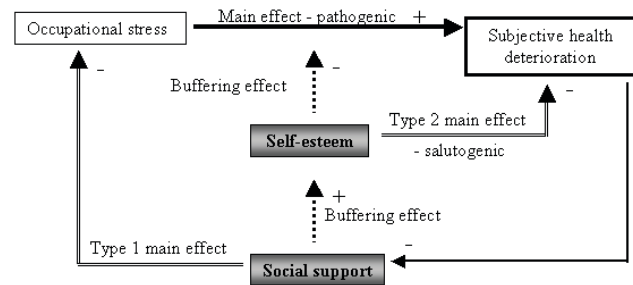


Figure 4. Self-esteem and social support in the initial model of relationships between medical professionals' occupational stress and subjective physical health, based on data from 121 respondents. See notes to Figs. 1 and 2.

Only the second mechanism was corroborated in this study, even though the hypothesis had been based on the author's earlier research findings (Ostrowski, 2007). In the latter study participants were 121 medical professionals with the following specialties: cardiologists, hemodynamical physicians, neurosurgeons, gynecologists-obstetricians, prosthetic dentists, and dental surgeons. A considerable modification of the House model proposed then on the grounds of the obtained data is shown in Fig. 4.

These preliminary research results indicated that the most severe components of occupational stress included: responsibility, lack of rewards, sense of threat and psychological strain. Social support was found to weaken the pathogenic impact of occupational stress with a two-way action: firstly, as buffer decreased health deterioration, through enhancing self-esteem. Secondly, it directly reduced perceived occupational stress (Type 1 main effect). The third possibility distinguished by House, i.e. a direct influence of social support on subjective health (Type 2 main effect), was not corroborated. However, in that study self-esteem turned out to be a salutogenic factor much more important than social support. A high self-esteem, probably as an intrapsychic counterbalance for a lack of external rewards, to a large extent eliminated correlation between occupational stress and the presence of health problems (buffering effect). Irrespective of that, a high self-esteem directly influenced subjective health, which was reflected in a lower number of the reported physical complaints (Type 2 main effect, salutogenic).

The research was continued by inclusion of other four medical specialties: psychiatrists, oncologists, pediatricians, and family doctors. Thus, data analyzed in the present study were obtained from a total of 361 respondents. The results of the whole sample corroborated the salutogenic role of self-esteem, invariably contributing to health improvement (Type 2 main effect), as well as the role of satisfaction with social support (Fig. 5). The higher was the satisfaction with social support, the less harmful was the experienced occupational stress (Type 1 main effect).

However, in the sample of 361 medical professionals no buffering effects of either self-esteem or satisfaction with social support were replicated. Moreover, in the models shown in Fig. 5, self-esteem and satisfaction with social

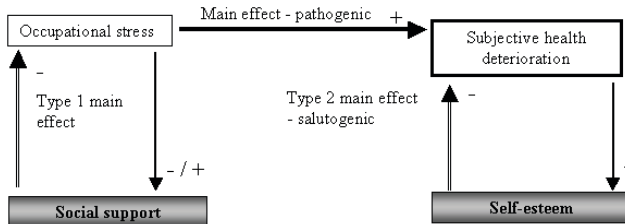


Figure 5. Self-esteem and social support in the new model of relationships between medical professionals' occupational stress and subjective physical health, based on data from 361 respondents. See notes to Figs. 1 and 2.

support seem to be mutually independent variables, since the enhancing effect of social support on self-esteem was not confirmed. Novel aspects that emerged in the sample of 361 medical professionals as compared to the initial group ($n = 121$) consisted in feedback relationships between health and the explanatory variables under study. Firstly, there was a mutual relationship between self-esteem and subjective health. On the one hand, the higher was self-esteem, the better subjective health, but on the other hand, the poorer was self-reported health, the lower was the respondent's self-esteem. This may imply that medical professionals' self-esteem is based to a large extent on the physical aspect of their Self structure. A similar two-way relationship was found between social support and occupational stress components. On the one hand, due to satisfaction with practical support, lack of rewards was experienced as less distressing. On the other hand, the higher was uncertainty resulting from poor organization of work, the higher value was ascribed to the support received. Besides, the higher was medical professionals' job strain, the less satisfied they were with the received support.

The results of the present study ($n = 361$) suggest that the earlier theoretical model should be revised. The model, shown in Fig. 4, was built as a conclusion of the study conducted on a part of the present sample ($n = 121$). The buffering effect has disappeared from the new model, but main effects of type 1 and 2 remained. This model, sparser than the former one, but true in the light of the current research findings, is presented in Figure 5.

It only remains for the researcher to reflect that the empirical reality cannot be changed, and to keep trying to understand it. Analyzing the data in this vein it seems worthwhile to consider why in a sample of 121 medical professionals with certain specialties the buffering effect of self-esteem and indirectly of social support had been evident, but disappeared in the sample enlarged by 240 representatives of other four specialties. Two comments seem relevant here. Firstly, research results are sensitive to sample selection, which has been a long-known fact. Secondly, a more detailed analysis should be conducted, not on the level of medical profession, but on that of medical specialty. In other words, relationships should be sought between medical specialty and functions of the explored health-promoting variables. Such an analysis will be the subject of a separate paper.

The following conclusions can be drawn from the presented research:

1. A pathogenic role of occupational stress was confirmed in the study. Such components of occupational stress as responsibility, psychological strain due to job complexity, lack of rewards at work, and a sense of threat, involved in a feedback relationship, turned out to be of major significance in this respect.
2. The research findings corroborated the salutogenic role of high self-esteem, contributing to a better subjective health. On the other hand, satisfaction with social support reduced the perceived occupational stress, thus exerting a health-promoting effect.
3. The results of analysis of the obtained data justify a modification of the theoretical model proposed by House.

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