

# THE PERCEPTION OF STRESS, BEHAVIOR IN STRESSFUL SITUATIONS AND MENTAL HEALTH OF BANK EMPLOYEES WITHIN A GERMAN-UKRAINIAN COMPARATIVE STUDY

BEATRICE THIELMANN<sup>1</sup>, IGOR ZAVGORODNII<sup>2</sup>, KSENIIA ZUB<sup>2</sup>, and IRINA BÖCKELMANN<sup>1</sup>

<sup>1</sup> Otto-von-Guericke-University, Magdeburg, Germany

Institute of Occupational Medicine, Medical Faculty

<sup>2</sup> Kharkiv National Medical University, Kharkiv, Ukraine

Department of Hygiene and Ecology No. 2

## Abstract

**Objectives:** The banking sector is a branch of the global labor market that is increasingly facing stress. This can have some negative effects on mental and physical health. The aim of the study was to examine the management of stress and the assessment of mental health in 2 European countries. **Material and Methods:** The sample comprised 90 (52%) German and 83 (48%) Ukrainian bank employees (BA) (N = 173). To achieve the aim of the study, the following questionnaires were used: the *Differential Stress Inventory* (DSI), the *Inventory for Personality Diagnosis in Situations* (IPS) and the 12-item *General Health Questionnaire* (GHQ-12). The participants were examined in regard to nationality. Age, gender, senior position and DSI types were considered as covariates. **Results:** There were some significant national differences. The senior position, gender and age alone had little or no influence on the results. In stress management, the German sample showed unfavorable values of DSI and IPS categories. Significantly more German bank employees (10%) were overstressed (DSI type II) compared to Ukrainian ones (3%). Significant differences in stress trigger, stress manifestation and stress stabilization of DSI, and in almost all IPS categories, were found between the bank employees of both countries. More specifically, 20% of the German sample and only 8.8% of the Ukrainian sample reported impaired mental health. **Conclusions:** Bank employees from Germany and Ukraine differed in their perception of stress and behavior in stressful situations, based on the DSI and IPS results; the Germans were shown to perform worse. This is reflected in the higher level of mental health impairment among the Germans, which is demonstrated by the GHQ-12 results. However, there is a need for workplace health promotion and preventive programs for both samples. *Int J Occup Med Environ Health.* 2022;35(1)

## Key words:

personality, prevention, stress, European, employees, senior position

## INTRODUCTION

The banking sector is a branch of the labor market that exemplifies an increase in stress in the workforce. The sector is experiencing this change in work through changes in work organization, digitization and the global economic crisis [1]. A recent review has shown stress within

the banking sector to be at a critical level, which can have some negative effects on mental and physical health. The review has also confirmed the findings of 20 individual studies that mental health problems increased in the banking sector and were related to stress [1].

Received: October 2, 2020. Accepted: May 24, 2021.

Corresponding author: Beatrice Thielmann, Otto-von-Guericke-University, Institute of Occupational Medicine, Medical Faculty, Leipziger Straße 44 (House 20), 39120 Magdeburg, Germany (e-mail: [beatrice.thielmann@med.ovgu.de](mailto:beatrice.thielmann@med.ovgu.de)).

Mental diseases are of interest for occupational medicine, society, the health care system and health economics. Forecasts show an increase in expenditure on mental diseases worldwide, from USD 2.5 trillion in 2010 to USD 6.0 trillion in 2030 (excluding expenditure on complications of mental diseases such as cardiovascular diseases or diabetes mellitus) [2]. Employers in Germany are legally obligated to evaluate the risk of mental stress in companies [3]. The Occupational Safety and Health Law of Ukraine lacks a risk assessment of mental stress [4]. Based on the findings from the assessment of subjective and objective psychological stress in the context of occupational medicine advisory service, consultation is recommended [5] and appears to be more and more important. Occupational health organizations exist in most European countries [6], underlining the importance of occupational medicine.

Work-related stress is a reaction to job-related demands in case of the absence of sufficient knowledge, abilities, or skills to cope with workloads. Thus, the knowledge about individual stress experience and behavior of an employee, as well as the ways of coping with it, play an important role for both personal well-being and professional success [7]. Furthermore, the knowledge of personality traits is helpful in coping with workloads [8]. For example, individuals with increased emotionality in the sense of mood lability, and agitation in the sense of irritability, displayed greater influence on a resignation tendency in case of failure at work and the lack of inner peace and balance [8].

Not only sufficient knowledge, abilities or skills about the job, but also the awareness about individual stress experience and behavior, as well as personality traits, are necessary to successfully manage work demands. In comparison to the occupational groups of physicians, teachers and nurses, there are fewer studies on bank employees. In particular, these are rarely international comparisons. However, bank employees are an occupational group

that face mental stress, e.g., through customer contact. Employees in the banking sector around the world are exposed to very high levels of mental stress. This challenges the supervising occupational physicians to identify mental stress in time and to assess the risk of these mental stresses to employees' health.

The causes of the declining health in the banking sector should be investigated in this context. Research should be conducted on the stress situation and mental health of bank employees. An intercultural comparison appears useful as in this way it would be possible to identify mental stress at an earlier stage and hazards to employees' health could be reduced. In all countries in the world, the need for mental disease prevention is very high [9]. There is an imperative need for change in the banking sector in the context of employees' mental health [1].

For the establishment of health promotion and prevention measures in the banking sector, the first step was to examine the influence of individual behavior in stress situations and the approach to the mental health of bank employees in 2 European countries. It was hypothesized that there would be some national differences.

## MATERIAL AND METHODS

Overall, 90 (52%) German and 83 (48%) Ukrainian bank employees were interviewed, resulting in a total sample of 173 respondents. Gender distribution of the total sample was as follows: 77.5% were women ( $N = 134$ ) and 22.5% were men ( $N = 39$ ), this showing no statistical significance ( $p = 0.067$ ). The age of the total sample was  $37.4 \pm 10.0$  years (20–61 years). The German bank employees were significantly older than their Ukrainian colleagues ( $43.2 \pm 9.35$  vs.  $31.1 \pm 6.12$  years,  $p < 0.001$ ). A leading position was obtained by 22.5% ( $N = 39$ ) of the total sample ( $p = 0.239$ ).

The questions were answered on paper in the national language. The survey was conducted in November 2012–

**Table 1.** Characteristics of the *Differential Stress Inventory* (DSI) types [based on 7]

DSI type	Characteristics
I – normal	all variables in the normal range; average stress levels with successful coping
II – overstressed	above-average everyday stress and existential fears, problems with interactions with other people; high incidence of stress triggers; instrumental and problem-related coping available; prominent external enhancements, possibility of stress chronification
III – stress-resistant	reduced exposure to stress triggers such as everyday life, existential fears and interaction with other people, but little recognition of palliative coping
IV – low stress, high coping	under-average exposure to stress triggers, barely any physical or emotional-cognitive complaints, but above-average palliative coping
V – high stress, high coping	above-average stress from work and private interaction, but also above-average palliative coping

June 2014. The following questionnaire inventories were evaluated in order to study the described question:

- the *Differential Stress Inventory* (DSI) [7],
- the *Inventory for Personality Assessment in Situations* (IPS) [10],
- the 12-item *General Health Questionnaire* (GHQ-12) [11,12].

For the DSI and IPS, there are official translations to German and Russian in the standardized test battery of the Vienna Test System (Schuhfried GmbH, Mödling, Austria). There is a validated standardized version of the GHQ-12 in German by Linden et al. [12], and in Russian by Burlachuk et al. [13]. These translations were again critically reviewed by native speakers of German and Russian from the corresponding institutes. All the participants spoke Russian, which is an official language next to Ukrainian.

An intercultural comparison between bank employees from Ukraine and Germany was performed.

### ***Differential Stress Inventory***

The DSI according to Lefèvre and Kubinger [7] includes statements on 4 stress-related topics (stress triggers, stress manifestation, coping and stress stabilization) taking into account the last 2–3 months. It distinguishes physiological, cognitive and emotional levels of manifes-

tation. Stress triggers include existential worries, problems arising from interactions with other people and stressful everyday situations. A differentiation is made between problem-related (instrumental) and emotional (palliative) coping. High values are preferable as they imply that the coping strategy is chosen properly. Stress stabilization means conditions that maintain or promote stress. Stress stabilization can be prominent internally (e.g., rumination) and/or externally (e.g., secondary sickness benefit). These can lead to stress chronification. The following DSI types are defined (Table 1):  $\geq 50\%$  of a type corresponds to one type and  $\leq 35\%$  corresponds to another type.

### ***Inventory for Personality Assessment in Situations***

This questionnaire according to Schaarschmidt and Fischer is based on self-assessments and is used as a personality diagnostic method that records experience and behavior in 15 situations [10]. There are 80 items in total with 4 possible answer levels: “definitely true,” “fairly true,” “not really true” and “not true at all.” These expressions are classified according to the characteristics of personality profiles in particular life areas (A, B and C). Profile 1 is the optimum profile; profile 2 is normal with medium expressions on all scales; from profile 3 onwards, there is a need for intervention while profiles 5 and 6 are

**Table 2.** Definition and profiles of the domains of life in the *Inventory for Personality Diagnosis in Situations* (IPS) questionnaire [based on 10]

Profile	Characteristics
Area of social and communicative behavior	social interaction is associated with the experience of social support and covers all areas of life
A1	active, powerful, stable, respectful
A2	inconspicuous
A3	expansive
A4	communicative, but slightly offensive
A5	inactive
A6	unstable and strained
Area of performance behavior	presentation of internal resources for successful coping with external demands (e.g., expectation of self-efficacy, hardiness, sense of coherence) the demands refer to everyday and extraordinary tasks as well as to stressful demands (e.g., hectic or concurrence)
B1	engaged, stable, success-oriented and optimistic
B2	inconspicuous
B3	little engaged, but self-confident and success-oriented
B4	less career- and risk-orientated
B5	less stable and self-unsure
B6	little engaged, unstable, self-confident and not success-oriented
Area of health and recreational behavior	reflects the individual's quality of life and any tendency to be susceptible to stress
C1	relaxing, recreational and preventative
C2	inconspicuous
C3	relaxing and recreational, but little preventative
C4	less able to relax, but in need of recreation
C5	little ability to relax, little need for recreation and little preventative care

the most problematic. The characteristics of the profiles are shown in Table 2.

### **General Health Questionnaire**

Goldberg's questionnaire [11] depicts short-term changes in the state of health. Symptoms such as anxiety, sleep disorders or physical discomfort in the last 14 days are evaluated according to 12 items [12]. Table 3 shows the expression of the items in the context of normal or impaired mental health. The evaluation and classification of the total score of GHQ-12 is based on Goldberg and Williams [14]:

- the GHQ-12 total score of  $\leq 4.0$  corresponds to normal mental health (averaged),
- the GHQ-12 total score of  $\geq 5.0$  corresponds to impaired mental health (impaired).

### **Ethics**

A positive vote of the Ethics Committee of the Medical Faculty of Otto von Guericke University Magdeburg for the study was available (No. 63/13 of May 15, 2013). The survey was voluntary and anonymous. At the time of the survey, the study was based on current guidelines of the Declaration of Helsinki.

**Table 3.** Expression of the 12-item *General Health Questionnaire* (GHQ-12) in context of normal or impaired mental health [based on 11,12]

GHQ-12 item	Expression of the item	
	normal mental health	impaired mental health
Lost sleep over worry	slept well	slept worse because of worries
Constantly under strain	was not under pressure	had the feeling of being under pressure all the time
Able to concentrate	can concentrate well	cannot concentrate well
Play useful part in things	was present	was not present
Face up problems	felt like they were dealing with their problems	cannot deal with problems
Capable of making decisions	no problems with making decisions	had difficulties in making decisions
Could not overcome difficulties	no problems with coping with difficulties	the impression that they have not been able to cope with the difficulties
Reasonable happy	felt satisfied	did not feel satisfied
Enjoy day-to-day activities	everyday activities were pursued with pleasure	everyday activities were neglected
Feeling unhappy and depressed	felt pleased	felt unhappy and depressed
Losing confidence in self	self-confident	felt a lack of self-confidence
Thinking of self as worthless	felt useful	felt worthless

### Statistical methods

The SPSS Statistics v. 26 software was used for the statistical analyses. It was tested for normal distribution by the Kolmogorov-Smirnov test. Gender and seniority were considered using Fisher's exact test. Age was determined by means of the Mann-Whitney U test. The Mann-Whitney U test was also used to compare the DSI categories between countries, while Fisher's exact test was used for IPS profiles and mental health assessments. Furthermore, the general linear model, i.e., a test for intermediate subjects (the corrected model), was used taking into account gender, the leading position and age followed by the calculation of the effect size [15].

## RESULTS

### Country comparison of the expression of the DSI categories of bank employees

The national analysis of the DSI categories resulted in less favorable values for the German sample compared to the Ukrainian sample. The gathered results were significantly different ( $p < 0.001$ ): the main DSI variable stress

trigger (German  $90.8 \pm 14.9$  vs. Ukrainian  $80.3 \pm 16.5$ ) and the secondary variables stress trigger by everyday events (German  $43.3 \pm 8.4$  vs. Ukrainian  $34.9 \pm 7.7$ ) and by interactions (German  $30.9 \pm 6.7$  vs. Ukrainian  $27.9 \pm 5.8$ ). Moderate to high effects were found for all 3 covariates together ( $\eta^2 = 0.127-0.154$ ), but one by one there was a moderate effect for the stress trigger by everyday events ( $\eta^2 = 0.064$ ). The other 2 covariates had no influence. Furthermore, the most significant ( $p < 0.001$ ) differences were found regarding the main variable of stress manifestation and the secondary variables of physical stress manifestation (German  $21.3 \pm 8.7$  vs. Ukrainian  $15.2 \pm 4.6$ ), and significant differences ( $p < 0.01$ ) for emotional-cognitive stress manifestation. Moderate to high effects were also found for all 3 covariates together ( $\eta^2 = 0.128-0.180$ ). The secondary variables of external stress stabilization (German  $15.9 \pm 6.7$  vs. Ukrainian  $12.5 \pm 3.8$ ) and internal stress stabilization (German  $24.0 \pm 5.9$  vs. Ukrainian  $27.0 \pm 4.5$ ) were also significantly different between the 2 groups ( $p < 0.001$ ). The effect sizes were moderate to high for all covariates together ( $\eta^2 = 0.077-0.189$ ).

**Table 4.** The *Differential Stress Inventory* (DSI) categories of the German and Ukrainian bank employees in comparison of the 2 countries, taking into account age, gender and senior position in the survey period of November 2012–June 2014 at the locations Magdeburg (Germany) and Kharkiv (Ukraine)

DSI category	Raw value (M±SD)		p <sup>a</sup>	General linear model – test of inter-subject effects								
	Germany	Ukraine		corrected model		age		senior position		gender		
				R <sup>2</sup>	p	η <sup>2</sup>	p	η <sup>2</sup>	p	η <sup>2</sup>	p	η <sup>2</sup>
Stress trigger	90.8±14.9	80.3±16.5	<0.001	0.100	0.001	0.127	0.047	0.030	0.984	0.000	0.667	0.001
through everyday events	43.3±8.4	34.9±7.8	<0.001	0.128	<0.001	0.154	0.003	0.064	0.231	0.011	0.377	0.006
through interaction	30.9±6.7	27.9±5.8	<0.001	0.105	0.001	0.132	0.074	0.024	0.146	0.016	0.549	0.003
through fear of existence	18.0±5.2	17.5±4.4	0.850	0.040	0.053	0.069	0.507	0.003	0.569	0.003	0.521	0.003
Stress manifestation	39.8±10.0	32.0±8.7	<0.001	0.134	<0.001	0.160	0.147	0.016	0.147	0.016	0.014	0.046
physical	21.3±8.7	15.2±4.6	<0.001	0.154	<0.001	0.180	0.003	0.064	0.195	0.013	0.095	0.021
emotional-cognitive	19.3±7.5	16.8±4.5	0.001	0.102	0.001	0.128	0.553	0.003	0.166	0.015	0.003	0.066
Coping	66.4±10.8	68.1±10.0	0.205	0.128	<0.001	0.154	0.693	0.001	0.120	0.018	0.134	0.017
palliative	42.3±7.9	44.1±7.7	0.114	0.187	<0.001	0.211	0.405	0.005	0.018	0.042	0.204	0.012
instrumental	25.0±5.7	24.0±4.3	0.181	0.002	0.440	0.028	0.618	0.002	0.660	0.001	0.184	0.014
Stress stabilization	39.0±6.7	39.5±6.8	0.624	0.002	0.382	0.031	0.398	0.006	0.634	0.002	0.268	0.009
external	15.9±6.7	12.5±3.8	<0.001	0.048	0.034	0.077	0.249	0.010	0.688	0.001	0.641	0.002
internal	24.0±5.9	27.0±4.5	<0.001	0.164	<0.001	0.189	0.010	0.050	0.635	0.002	0.124	0.018

<sup>a</sup> Mann-Whitney U test.  
 η<sup>2</sup> < 0.06 (mild effect), η<sup>2</sup> = 0.06–0.14 (moderate effect), η<sup>2</sup> > 0.14 (high effect).

**Table 5.** Distribution of the *Differential Stress Inventory* (DSI) types taking into account nationality in 69 German and 66 Ukrainian employees in the survey period of November 2012–June 2014 at the locations Magdeburg (Germany) and Kharkiv (Ukraine)

DSI type	Prevalence <sup>a</sup> [n (%)]	
	Germany	Ukraine
I – normal	35 (50.7)	16 (24.2)
II – overstressed	7 (10.1)	2 (3.0)
III – stress resistant	10 (14.5)	20 (30.3)
IV – low stress, high coping	11 (15.9)	22 (33.3)
V – high stress, high coping	6 (8.7)	6 (9.1)

<sup>a</sup> Fisher’s exact test p-value 0.002.

No group differences were reported for the DSI category of coping and its secondary variables. The DSI main and secondary variables are shown in Table 4. In summary, in the leading position alone, no differences were found.

Considering the gender differences, only mild effects were found for the emotional-cognitive stress manifestation (η<sup>2</sup> = 0.066). With regard to age, there were also only mild effects for stress stabilization through everyday events and physical stress manifestation (η<sup>2</sup> = 0.064). Thus, the group differences in the DSI categories relate to nationality.

**Distribution of DSI types in Germany and Ukraine**

The distribution of DSI types was significantly different in the 2 countries (Table 5). No mixed types were considered as they were not provided for in the DSI manual. Half of the German bank employees and almost a quarter of the Ukrainian colleagues had a normal DSI type. Another 16% of the German and a third of the Ukrainian bank employees were referred to DSI type IV (low stress, high coping), and about 9%



of both samples belonged to DSI type V (high stress, successful coping). Nearly 10% of the German sample and only 3% of the Ukrainian sample were amongst DSI type II (overstressed).

### **Expression of the IPS categories in Germany and Ukraine**

The national analysis of the IPS categories also revealed highly significant differences in almost all categories (without confrontational tendencies in social conflict situations and health care in alert). The Ukrainian bank employees showed a more favorable attitude here. The results with the correction of the General Linear Model are shown in Table 6. High effects were found in the IPS categories of self-assertion in communication requirements, performance in a leadership role, stability in stressful situations, self-confidence in exam requirements, and career and risk taking in professional situations ( $\eta^2 = 0.144\text{--}0.207$ ). The covariate age alone showed the highest effects in the IPS category of activity in a familiar communicative situation ( $\eta^2 = 0.233$ ). With regard to the senior position, there were medium effects on career and risk tolerance in the case of professional demands ( $\eta^2 = 0.115$ ). The DSI type has no relevant influence (a mild influence on self-confidence for exam requirements with  $\eta^2 = 0.066$ ). Gender had no influence on IPS categories.

### **Distribution of IPS profiles in Germany and Ukraine**

Table 7 shows the distribution of the IPS profiles in the 2 countries under comparison. Mixed types were not considered. There were significant to highly significant differences in the respective areas. In the area of social and communicative behavior, more German (23.3%) than Ukrainian (2.4%) bank employees were significantly inactive. What is more, 13.3% of the German and only 7.2% of the Ukrainian bank employees were unstable

and burdened. More than half of the Ukrainian sample showed inconspicuous profiles A1 and A2, compared to only 37.8% of the German sample. In terms of performance behavior, 23.3% of the German and only 7.2% of the Ukrainian bank employees were less willing to take risks and less career-oriented. In addition, 32.5% of the Ukrainian sample was less engaged, but more self-confident and success-oriented than their German counterparts (5.6%). In the area of health and recreational behavior, one-third of the German bank employees were less able to relax, and less able to take preventive measures, than their Ukrainian colleagues (8.4%).

### **Mental health of bank employees in Germany and Ukraine**

Overall, 20% (N = 18) of the German sample and only 8.8% (N = 7) of the Ukrainian sample reported impaired mental health (Figure 1).

### **Mental health of bank employees taking into account DSI types and IPS profiles**

Among the participants with impaired mental health, 16 German and 4 Ukrainian bank employees could be assigned to DSI types. The German sample was divided as follows: 56.3% (N = 9) represented DSI type I (normal type), 25.5% (N = 4) DSI type II (overstressed), and 18.8% (N = 3) DSI type III (stress resistant). The distribution of the Ukrainian sample was similar: 50.0% (N = 2) represented DSI type I (normal type), and 25.0% (N = 1) DSI type II (overstressed) and DSI type V (high stress, high coping). This result was due to the smaller sample taken up by the authors in the discussion.

Bank employees with impaired mental health could be assigned to the following IPS profiles: without intervention needs (IPS profile A/B/C 1+2) for 16.4% of the German and 33.3% of the Ukrainian bank employees for the area of social and communicative behavior, 16.4% of the German and 60.0% of the Ukrainian bank employees for

**Table 6.** The Inventory for Personality Diagnosis in Situations (IPS) categories in comparison of the 2 countries under consideration of the general linear model

IPS category	Stamine (M±SD)		General linear model – test of inter-subject effects												
	Germany	Ukraine	p <sup>a</sup>		corrected model		age		senior position		DSI type		gender		
			R <sup>2</sup>	p	η <sup>2</sup>	p	η <sup>2</sup>	p	η <sup>2</sup>	p	η <sup>2</sup>	p	η <sup>2</sup>	p	η <sup>2</sup>
<b>A. Area of social and communicative behavior</b>															
A1. Activity in a familiar communicative situation	4.4±2.0	5.8±1.9	<0.001	0.045	0.040	0.074	0.021	0.233	0.755	0.001	0.270	0.012	0.262	0.018	
A2. Self-assertion in case of communication requirements	4.5±1.8	5.7±1.9	<0.001	0.118	<0.001	0.144	0.131	0.017	0.002	0.069	0.043	0.031	0.868	0.000	
A3. Confrontation tendency in social conflict situations	5.1±1.8	4.5±1.8	0.500	0.003	0.457	0.027	0.264	0.010	0.455	0.004	0.435	0.005	0.987	0.000	
A4. Performance in a leadership role	4.7±2.3	6.1±2.1	<0.001	0.183	<0.001	0.207	0.115	0.019	0.005	0.059	<0.001	0.093	0.605	0.002	
A5. Respect for social responsibility	5.2±2.1	5.2±2.0	<0.001	0.016	0.193	0.045	0.703	0.001	0.935	0.001	0.065	0.026	0.200	0.013	
A6. Sensitivity to social frustration	5.3±1.9	4.8±2.0	<0.001	0.094	0.002	0.121	0.072	0.025	0.046	0.030	0.003	0.066	0.083	0.023	
<b>B. Area of performance behavior</b>															
B1. Engagement with high performance requirements	5.6±1.9	4.7±1.9	<0.001	0.067	0.011	0.094	0.759	0.001	<0.001	0.092	0.812	0.001	0.735	0.001	
B2. Tendency to persist in case of conversion requirement	5.0±1.9	3.6±2.0	<0.001	0.094	0.002	0.121	0.523	0.003	0.013	0.046	0.029	0.036	0.236	0.011	
B3. Stability under stressful conditions	5.2±1.8	5.9±1.7	<0.001	0.120	<0.001	0.146	0.185	0.013	0.001	0.075	0.038	0.033	0.512	0.003	
B4. Self-confidence for exam requirements	4.6±1.7	5.6±1.6	<0.001	0.120	<0.001	0.146	0.574	0.002	0.089	0.022	0.003	0.066	0.046	0.030	
B5. Career and risk awareness for professional challenges	4.7±2.0	5.9±1.6	<0.001	0.136	<0.001	0.162	0.030	0.036	<0.001	0.115	0.627	0.002	0.421	0.005	
B6. Optimism towards everyday requirements	4.5±1.9	5.5±2.0	<0.001	0.005	0.322	0.035	0.968	0.000	0.061	0.027	0.620	0.002	0.590	0.002	
<b>C. Area of health and recreational behavior</b>															
C1. Relaxation after the working day	4.1±1.9	5.8±1.9	<0.001	0.093	0.002	0.121	0.005	0.059	0.548	0.003	0.058	0.027	0.411	0.005	
C2. Active recovery behavior in leisure time	4.5±2.1	5.5±2.0	<0.001	0.082	0.004	0.109	0.017	0.043	0.390	0.006	0.085	0.023	0.624	0.002	
C3. Health care for alert signals	4.4±1.8	6.3±1.5	0.500	0.111	0.001	0.138	<0.001	0.090	0.879	0.000	0.155	0.015	0.702	0.001	

DSI – Differential Stress Inventory.

<sup>a</sup> Mann-Whitney U test.

η<sup>2</sup> < 0.06 (mild effect), η<sup>2</sup> = 0.06–0.14 (moderate effect), η<sup>2</sup> > 0.14 (high effect).



**Table 7.** Distribution of Inventory for the *Personality Diagnosis in Situations* (IPS) profiles in comparison of the 2 countries

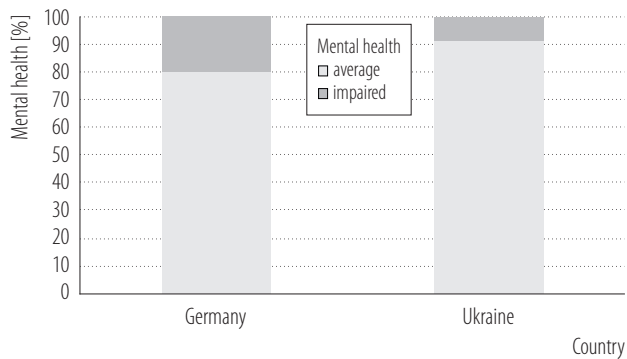
Profile*	Characteristics	Incidence [n (%)]		p <sub>Fisher</sub>
		Germany	Ukraine	
A. Area of social and communicative behavior				0.004
A1	active, powerful, stable, respectful	11 (12.2)	25 (30.1)	
A2	inconspicuous	23 (25.6)	21 (25.3)	
A3	expansive	5 (5.6)	8 (9.6)	
A4	communicative, but slightly offensive	6 (6.7)	9 (10.8)	
A5	inactive	21 (23.3)	2 (2.4)	
A6	unstable and strained	12 (13.3)	6 (7.2)	
B. Area of performance behavior				<0.001
B1	engaged, stable, success-oriented and optimistic	15 (16.7)	19 (22.9)	
B2	inconspicuous	25 (27.8)	10 (12.0)	
B3	little engaged, but self-confident and success-oriented	5 (5.6)	27 (32.5)	
B4	less career- and risk-orientated	21 (23.3)	6 (7.2)	
B5	less stable and self-unsure	6 (6.7)	2 (2.4)	
B6	little engaged, unstable, self-confident and not success-oriented	10 (11.1)	1 (1.2)	
C. Area of health and recreational behavior				<0.001
C1	relaxing, recreational and preventative	10 (11.1)	32 (38.6)	
C2	inconspicuous	16 (17.8)	26 (31.3)	
C3	relaxing and recreational, but little preventative	9 (10)	1 (1.2)	
C4	less able to relax, but in need of recreation	19 (21.1)	5 (6.0)	
C5	little ability to relax, little need for recreation and little preventative care	30 (33.3)	7 (8.4)	

\* Mixed types were not considered.

the area of performance behavior, and 6.3% of the German and 71.4% of the Ukrainian bank employees for the area of health and recreational behavior. The problematic IPS profiles A/B/C 5+6 were distributed as follows: 65.7% of the German and 16.7% of the Ukrainian bank employees for the area of social and communicative behavior, 25% of the German and 20% of the Ukrainian bank employees for the area of performance behavior, and 93.8% of the German and 0% of the Ukrainian bank employees for the area of health and recreational behavior.

## DISCUSSION

This study focuses on the mental health of bank employees in 2 European countries with regard to the attitude of the employees to stressful situations as well as their behavior in such circumstances. It becomes clear that bank employees from different countries have different ways of managing stress. The Ukrainian sample has more favorable values for stress management and better mental health based on the subjective assessment, with both subsamples being independent on the senior position.



**Figure 1.** Representation of the mental health of bank employees (12-item General Health Questionnaire) in comparison of the 2 countries ( $p_{\text{Fisher}} = 0.05$ )

The results of the subjectively assessed mental health study correspond to the statistical data on diagnosed cases of mental diseases from the corresponding federal offices. For example, the prevalence of depressive disorders in Ukraine was 6.3% in 2015, and the prevalence of anxiety disorders was 3.2% [9]. Exact data on bank employees are not available for Ukraine. The 12-month prevalence of all mental diseases in the German population was 28.5% in the age group corresponding to the German sample [16]. In 2009–2018, the number of days of incapacity for work increased from 51.2 to 120.5 days [17]. No complete data are available for Ukraine. In summary, it can be said that the Germans are more and more affected by mental diseases. In this study, 8.8% of the Ukrainian sample tended to be mentally impaired, while this parameter in the German sample was found to reach 20%. It is also noticeable that the German sample with impaired mental health showed far more DSI and IPS profiles requiring intervention. Nevertheless, the small numbers of health-impaired employees did not allow a reliable assessment of the distribution of psychological characteristics (stress, behavior, and personality) associated with DSI types and IPS profiles. These data should be used with caution and cannot be generalized. This is seen as a limitation of the study. Comparing to other German occupational groups involving contacts with customers or patients, bank employees were preceded

by medical assistants (25.6%), nurses (38.8%) and teachers (24.7%) in terms of impaired mental health [18].

This study demonstrates the occupational health relevance of looking at mental stress among employees. The data shows a higher level of stress in banking sectors and also that there is a need *per se* for changes in both countries. The establishment of a company health promotion program that aims to prevent illness, as well as to optimize the well-being of employees and students, is considered to be an approach to solutions. The following basic elements are available in Europe through the implementation of occupational health organizations [6]. Occupational medicine provides contacts to employees who may fall through the classic general practitioner model because those affected do not go to the doctor. Knowledge about individual stress life as well as personal coping with stress is not only relevant for personal well-being and professional success [7], but also for the permanent reduction of work-related stress, which can lead to mental disorders and other diseases. Work-related mental disorders can cause cardiovascular diseases [19], anxiety disorders [20] or depression [21].

In terms of their behavior in stressful situations, bank employees in both countries were found to differ, in some cases even to a highly significant degree (e.g., DSI types, stress trigger through everyday events or interaction, physical stress manifestation, and external/internal stress stabilization). In individuals with daily stress, successful coping (type I) was observed or there was no prominent reaction to stress triggers (type III); however, DSI type III hardly recognizes emotional (palliative) coping. In such a situation, particular measures to promote positive instructions or to carry out a talk could be undertaken. A large number of the Ukrainian bank employees have DSI type IV (low stress/successful coping) or DSI type V (high stress/successful coping). In the German bank employees, these types are slightly less prominent. More specifically, DSI type V shows above-average stress due to work and interactions with other people.

Moreover, preventive measures to reduce stress can be initiated in a targeted manner. It is unclear how long DSI type V can also counteract these high stress levels.

Stress reduction seems to be reasonable. A small number of the German and Ukrainian samples belong to DSI type II (overstressed). Here a high expression of stress triggers can be seen, especially through everyday stress and existential fears. In addition, there are also high external enhancers, contributing to the fact that stress is seen as indispensable by the individuals referred to DSI type II and a feeling of helplessness can develop. Stress chronification is also possible. In particular, DSI type II requires the highest priority in prevention and health promotion measures, e.g., a stress management course. In summary, 20% of the German and 12% of the Ukrainian bank employees have DSI types that require intervention. This corresponds approximately to the incidence of impaired mental health. This result shows quite a good condition of staff in the banking sector. Maybe some behavior in stressful situations prevents health from deterioration. Nevertheless, the noticeable persons should receive medical support.

The analysis of the individual DSI categories shows a significantly increased incidence of stress triggers with less prominent coping strategies among the German bank employees. Overall, there is also an increased stress manifestation among the German bank employees, which can lead to various stress symptoms (e.g., pain, nausea, mental continued employment). A noticeable feature of the Ukrainian sample was the higher level of internal stress stabilization, which means that, e.g., there is self-reproach in case of mistakes. In addition, a targeted preventative approach should be seen.

Comparative studies on DSI and other professional groups cannot be found internationally, so the study represents an international comparison of a professional group with customer contact between two European countries. Furthermore, categorizations according to the DSI study can be helpful in evaluation/consultation discussions with employees, as they provide a simple and intuitive under-

standing of complex phenomena such as stress and how to cope with them. Therefore, other studies that used other instruments were discussed. For example, an effort-reward-imbalance and increased intrinsic overcommitment shows some evidence of mental disorders, with stronger associations being found among women [22]. The risk patterns of work-related behavior and experience are also associated with an imbalance in the reward for effort, chronic stress and reduced mental health [23].

In addition to the survey of stress perceptions and their coping, differences between the German and Ukrainian bank employees were analyzed and confirmed in the areas of social and communicative behavior, performance behavior, and health and recreational behavior. In the area of social and communicative behavior, more than half of the Ukrainian bank employees and nearly 38% of the German ones exhibited favorable behavior. Half of the German sample and about 30% of the Ukrainian sample required intervention assistance, and one-third of the German bank employees were unstable and burdened. A similar picture emerges for performance behavior. Almost half of both samples need intervention. The results in health and recreational behavior are also alarming. Regarding this factor, nearly 16% of the Ukrainian sample and nearly 65% of the German bank employees were in need for intervention. A third of the German respondents had low recreational, relaxation-seeking and preventive abilities, compared with only 8.4% of the Ukrainian ones. These results also underline the importance of health promotion and prevention measures in the workplace setting.

These results confirm the critical stress level in the banking sector described above [1], which is particularly true for the German bank employees. Only 30% of the German bank employees classify themselves as able to recover, so the vast majority do not manage to relax in their free time. These findings are consistent with the results of a former study on work-related stress among bank employees, in which respondents indicated that they were troubled by

work-related problems at home, as well as did not have sufficient recovery periods [24]. The imbalance of coping stress between the 2 countries, which was described above, suggests that the self-assessment of the respondents in this study was either very uncritical (Ukraine) or supercritical (Germans). It is also possible, however, that the test had a very strong discriminatory aspect in regard to this issue. Finally, the discussion of the comparability of the subjectively assessed mental health of both samples should be held. Studies show a higher use of mental health services in high income countries such as Germany (from 12.1% of the population), up to 8.7% in middle-to-upper income countries and up to 3.6% in low income countries [25]. The health care system in Ukraine is an issue that tends to change under the influence of health policy. Thus, the prevalence of mental diseases could be underestimated. Furthermore, the role of religious advisors in mental health care plays a greater role in Ukraine than in Germany (24.9% vs. 12.9%) [21]. This could also reduce the prevalence of mental diseases in Ukraine. For example, one study showed an increased prevalence of depression in the Ukrainian sample aged >50 years [22], while the Ukrainian sample was significantly younger than the German sample.

It seems that the awareness of mental diseases among the younger Ukrainian population has not been so prominent yet. A “not-failure” from the family could be also hidden here. The topic of mental diseases is very stigmatized in Ukrainian society. According to the study results on Russian bank employees, 40.7% of the subjects had preclinical mental disorders. The most frequent were isolation, exaggerated distrust, emotional lability, restlessness and fatigue. It is interesting to comment that those affected by the above symptoms did not feel burdened: they had even described themselves as healthy persons and never sought professional help [26].

The socio-political situation in Ukraine has been very unstable in recent years and the society in general has been under constant stress. Accordingly, it is possible to

explain better results in the Ukrainian sample by the fact that work-related stress is not assessed as stress “due to work,” but as a “normal or ordinary condition” due to living conditions. Furthermore, differences between the 2 different banking systems can be found. Many employees thus leave the banking sector after 5–6 years [27]. It could be assumed that psychological problems are tolerated and not discussed. Answering the questionnaire in paper format is considered as another limitation. Answers in the sense of social wanting cannot be excluded. These are most likely to be suspected in the Ukrainian sample. It should also be commented that Ukrainian bank employees are still relatively young, with an average age of around 31 years. Thus, there is also a shorter period of being involved in professional practice, which is one reason for the better results being observed.

Professional experience was not taken into account here. Literature shows that younger people, e.g., students, also suffer from mental health problems [28] and may even develop burnout symptoms [29]. Future studies maybe worthwhile, which analyze employees (regardless of the nation) with impaired health and average health in the context of behavior in stressful situations to identify factors that promote and protect against stress perception.

The described aspects of the issue support the importance of targeted cooperation models in the sense of a company-based supply network via company offers. An integrated health management with occupational physicians, psychotherapists, general practitioners and employee representatives is accepted [30]. Senior managers should be involved in the discussion, and prevention and intervention measures should be offered to increase internal resources for stress and conflict management of bank employees [31]. Although this data does not provide evidence for less favorable levels and behaviors with regard to stressful situations among senior managers, health promotion and prevention programs should also be applied to people in senior positions. There are often excessive obligations and

senior managers are employed in the so-called “sandwich” positions between the employer and non-executive staff, which leads to additional conflicts [26].

## CONCLUSIONS

Bank employees from Germany and Ukraine are shown to demonstrate different attitudes to stress and behavior in stressful situations, with the Germans showing less favorable results. This is reflected in the higher incidence of impaired mental health among the Germans who are predominantly referred to DSI and IPS profiles requiring intervention. For both samples, there is a need for the workplace health promotion and preventive programs.

## ACKNOWLEDGMENTS

The authors would like to thank Dr. Maryna Iakymenko, Dr. Corinna Wernecke and Dr. Antje Wonneberger, who were particularly involved in the initial phase of the study.

## REFERENCES

- Giorgi G, Arcangeli G, Perminiene M, Lorini C, Ariza-Montes A, Fiz-Perez J, et al. Work-Related Stress in the Banking Sector: A Review of Incidence, Correlated Factors, and Major Consequences. *Front Psychol.* 2017;8:2166, <https://doi.org/10.3389/fpsyg.2017.02166>.
- Zylka-Menhorn V. Mental illnesses: A worldwide epidemic. *Dtsch Arztebl Int.* 2011;10:510.
- Bundesministerium der Justiz und für Verbraucherschutz [Internet]. Berlin: The Bundesministerium; 2020 [cited 2020 Sep 6]. [Gesetz über die Durchführung von Maßnahmen des Arbeitsschutzes zur Verbesserung der Sicherheit und des Gesundheitsschutzes der Beschäftigten bei der Arbeit (Arbeitsschutzgesetz – ArbSchG)]. Available from: <https://www.gesetze-im-internet.de/arbSchg/BjNR124610996.html>. German.
- Ukrainian Parliament [Internet]. Ukraine: The Parliament; 2020 [cited 2020 Oct 2]. [Labor Code of Ukraine]. Available from: <https://zakon.rada.gov.ua/laws/show/322-08#Text>. Ukrainian.
- Böckelmann I, Seibt R. [Methods for the indication of predominant mental workload and strain at work – possibilities for the corporate practice]. *Z Arb Wiss.* 2011;65:205–22, <https://doi.org/10.1007/BF03373839>. German.
- Sakowski P, Marcinkiewicz A. Health promotion and prevention in occupational health systems in Europe. *Int J Occup Med Environ Health.* 2019;32(3):353–61, <https://doi.org/10.13075/ijomeh.1896.01384>.
- Lefèvre S, Kubinger KD. *Differential Stress Inventory*. Manual. Göttingen: Hogrefe; 2004.
- Buck M, Böckelmann I, Lux A, Thielmann B. The role of personality traits in handling workload and health-related problems. *Zbl Arbeitsmed.* 2019;69:191–201, <https://doi.org/10.1007/s40664-019-0336-7>. German.
- World Health Organization [Internet]. Geneva: The Organization; 2017 [cited 2020 Oct 1]. *Depression and Other Common Mental Disorders – Global Health Estimates*. Available from: [https://www.who.int/mental\\_health/management/depression/prevalence\\_global\\_health\\_estimates/en/](https://www.who.int/mental_health/management/depression/prevalence_global_health_estimates/en/).
- Schaarschmidt U, Fischer AW. *Inventory for Personality Assessment in Situations*. Mödling: Schuhfried GmbH; 2004.
- Goldberg D. *Manual of the General Health Questionnaire*. Windsor: National Foundation for Educational Research; 1978.
- Linden M, Maier W, Achberger M, Herr R, Helmchen H, Benkert O. Mental illnesses and their treatment in general practices in Germany. *Nervenarzt.* 1998;67:205–15.
- Burlachuk LE, Dukhnevich VN, Dubrovinsky GR. General Health Questionnaire: preliminary results Russian-language adaptation. *J Pract Psychol.* 2005;11:49–57. Russian.
- Goldberg D, Williams P. *A user's guide to the General Health Questionnaire*. Windsor: NFER; 1988.
- Cohen J. *Statistical Power Analysis for the Behavioral Sciences*. Hoboken: Taylor and Francis; 1988.
- Jacobi F, Höfler M, Strehle J, Mack S, Gerschler A, Scholl L, et al. Mental disorders in the general population: Study on the health of adults in Germany and the additional module mental health (DEGS1-MH) [Psychische Störungen

- in der Allgemeinbevölkerung: Studie zur Gesundheit Erwachsener in Deutschland und ihr Zusatzmodul Psychische Gesundheit (DEGS1-MH)]. *Nervenarzt*. 2014;85:77–87, <https://doi.org/10.1007/s00115-013-3961-y>.
17. Meyer M, Maisuradze M, Schenkel A. Krankheitsbedingte Fehlzeiten in der deutschen Wirtschaft im Jahr 2018 – Überblick. In: Badura B, Ducki A, Schröder H, Klose J, Meyer M, editors. *Fehlzeiten-Report 2019: Digitalisierung – gesundes Arbeiten ermöglichen*. Berlin, Heidelberg: Springer Berlin Heidelberg; 2019. p. 413–77, [https://doi.org/10.1007/978-3-662-59044-7\\_27](https://doi.org/10.1007/978-3-662-59044-7_27). German.
  18. Diekmann K, Böckelmann I, Karlsen HR, Lux A, Thielmann B. Effort-Reward Imbalance, Mental Health and Burnout in Occupational Groups That Face Mental Stress. *J Occup Environ Med*. 2020;62(10):847–52, <https://doi.org/10.1097/JOM.0000000000001978>.
  19. Siegrist J. Effort-reward imbalance at work and cardiovascular diseases. *Int J Occup Med Environ Health*. 2010;23(3): 279–85, <https://doi.org/10.2478/v10001-010-0013-8>.
  20. Ray A, Gulati K, Rai N. Stress, Anxiety, and Immunomodulation: A Pharmacological Analysis. *Vitam Horm*. 2017;103:1–25, <https://doi.org/10.1016/bs.vh.2016.09.007>.
  21. Rugulies R, Aust B, Madsen IEH, Burr H, Siegrist J, Bultmann U. Adverse psychosocial working conditions and risk of severe depressive symptoms. Do effects differ by occupational grade? *Eur J Public Health*. 2013;23:415–20, <https://doi.org/10.1093/eurpub/cks071>.
  22. Lidwall U. Effort–reward imbalance, overcommitment and their associations with all-cause and mental disorder long-term sick leave – A case-control study of the Swedish working population. *Int J Occup Med Environ Health*. 2016;29(6):973–89, <https://doi.org/10.13075/ijomeh.1896.00712>.
  23. Voltmer E, Spahn C, Frank E. Factors for and against establishing and working in private practice correlated with work-related behavior and experience patterns of Ferman physicians in Schleswig-Holstein: A 2-year longitudinal study. *Int J Occup Med Environ Health*. 2017;30(3):485–98, <https://doi.org/10.13075/ijomeh.1896.00775>.
  24. Michailidis M, Georgiou Y. Employee occupational stress in banking. *Work*. 2005;24:123–37.
  25. Kovess-Masfety V, Evans-Lacko S, Williams D, Andrade LH, Benjet C, Have M ten, et al. The role of religious advisors in mental health care in the World Mental Health surveys. *Soc Psychiatry Psychiatr Epidemiol*. 2017;52:353–67, <https://doi.org/10.1007/s00127-016-1290-8>.
  26. Mendelevich D, Orlov G, Yakhin K. Preclinical mental disorders at bank employees. *Practical Med*. 2009;38:60–2. Russian.
  27. Yakymenko M. Mental stress and strain for German and Ukrainian bank employees in leading and non-leading positions [Disseration]. Magdeburg: Otto-von-Guericke-Universität; 2019.
  28. Backović DV, Maksimović M, Davidović D, Zivojinović JI, Stevanović D. Stress and mental health among medical students. *Srp Arh Celok Lek*. 2013;141:780–4, <https://doi.org/10.2298/sarh1312780b>.
  29. Gusy B, Lohmann K, Drewes J. Burnout in undergraduate [Students Burnout bei Studierenden, die einen Bachelor-Abschluss anstreben]. *Praev Gesundheitsf*. 2010;5:271–5, <https://doi.org/10.1007/s11553-010-0251-4>. German.
  30. Michaelis M, Balint EM, Junne F, Zipfel S, Gündel H, Lange R, et al. Who Should Play a Key Role in Preventing Common Mental Disorders that Affect Employees in the Workplace? Results of a Survey with Occupational Health Physicians, Primary Care Physicians, Psychotherapists, and Human Resource Managers. *Int J Environ Res Public Health*. 2019;16(8):1383, <https://doi.org/10.3390/ijerph16081383>.
  31. Iakymenko M, Thielmann B, Zavgorodnij I, Bessert K, Hintzenstern J von, Kapustnik W, et al. Symptomatology of burnout in bank employees in leading positions. *Zbl Arbeitsmed*. 2015;65:78–86, <https://doi.org/10.1007/s40664-014-0088-3>. German.