

Research Article

Occupational Area, Stress and Coping Strategies in the Outbreak of Covid-19 Pandemic

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Abstract

The study investigates the levels of perceived stress and coping strategies of the participants in relation to their occupation. We argue that the levels of perceived stress vary in relation to the area of occupation and that there are specific coping strategies for dealing with stress among the representatives of the different areas of occupation. The study was conducted online via the Kwiksurveys platform. The data were collected during the period of first lock down - last week of March 2020. A total number of 688 people took part in the survey. Four occupational areas were distinguished – Social work, law or politics; Education and science; Economics and business; Engineering and IT. The method used collects socio-demographic data, measures perceived stress and distinguish coping strategies. The results reveal the highest levels of perceived stress among representatives working in the area of Education and Science. They use Categorical thinking, Naïve optimism and Esoteric thinking as coping strategies significantly more often than other groups. An interesting outcome is that Emotional Coping, Behavioural coping and Superstitious thinking seem to be universal coping strategies. Possible factors underlying the stress among the representatives of the most stressed group and possible implications of the results are discussed.

Keywords: occupation; stress; coping.

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There are many studies reflecting the negative psychological conditions during Covid pandemic. Many researchers focus their attention on manifestation of stress, distress, anxiety, depression, insomnia according to gender, age and other demographic characteristics of participants (Huang & Zhao, 2020; Kangxing et al. 2020; Moccia et al., 2020; Sorokin et al., 2020; Yuan et al., 2020). Some of the researchers pay special attention on the expression of various negative symptoms amongst the professionals at the forefront of combating this outbreak – healthcare, social care workers, teachers and school counsellors (Chew et al., 2020; Wang et al., 2020; Zhang et al., 2020, Wu et al., 2020; Kosir et al., 2020; Klapproth et al., 2020, Ozamiz-Etxebarria et al., 2021; Collie, R., 2021; Silva et al., 2021). There are also a number of studies focusing on coping strategies for overcoming the stress among representatives of different occupation areas in general (Esnard & Roques, 2014) and during the Covid-19 Pandemic in particular (Balasubramanian, A et al., 2020; Huang et al., 2020; Klapproth et al., 2020; MacIntyre et al., 2020, Nasri et al., 2021)

Theories underlying the studies measuring the levels of stress and coping strategies are various. Some of them focus of the strategies for coping with stress - Lazarus and Folkman (1984)'s transactional theory where the person chooses either to resolve the problem or to regulate emotionally the situation; Carver and Scheier (1998)'s multidimensional model of coping designed to measure potentially effective and ineffective ways to cope with stressful life events. Other theories are focused on the constructs underlying coping strategies, widely adopted in occupational context like Bandura's social cognitive theory (Bandura, 1969) and the self-efficacy concept in particular and the theory of self-determination (Gagne & Deci, 2005) investigated in relation with self-efficacy (Esnard & Roques, 2014)



It is well known that stress and coping strategies are amongst the most studied areas worldwide over the last decades. However, most of the studies in this field have significant limitations. Some authors pay special attention to the fact that these studies did not come up with the results with clinical and theoretical value (Lazarus, 2000, Somerfield & McCrae, 2000). Amongst the significant limitations of the studies in this area is the lack of operationalization of the studied constructs. This results mainly from the fact that there are many controversial points of view related to their measurement and interpretation.

Previous research conducted in Bulgaria (Karastoyanov & Velichkov, 1994; Karastoyanov, 1995; Karastoyanov, 1996; Rusinova-Hristova & Karastoyanov, 2000) using as a methodological basis Lazarus' theory about stress and coping (Lazarus, 1966) that was later upgraded as a Theory of Emotion (Lazarus, 1994) revealed valuable results about the effectiveness of the usual strategies for coping with stress. The results show that the use of specific problem-focused strategies for coping as well as a specific emotionally-focused strategy for positive redefinition and development are related to lower levels of perceived stress. The more frequent use of emotionally-focused strategies (such as psychological and behavioral disengagement, focusing on emotions and their expression, behavioral disengagement, use of alcohol and drugs) is related with higher levels of perceived stress. The received results fully correspond to Lazarus' theory. He postulates that there are two fundamental mechanisms for regulation of affection – emotionally focused and problem focused. However the data from the studies does not support the idea of the two general coping mechanisms. The results revealed that only one coping factor relates to the two general coping mechanisms. The primary factors of the problem-focused and emotionally focused coping containing sub-factors (specific strategies) remain empirically not proved (Folkman & Lazarus, 1988; Lazarus, 1993). Another issue pointed out in previous research in Bulgaria was that specific coping strategies include definitions from more than one paradigm, predominantly cognitive, psychoanalytical or various other theories, which made the interpretation of the results in a wider context impossible.

The critical analysis of the studies conducted by Karastoyanov (Karastoyanov, 2014a; Karastoyanov 2014b) and some of the most important studies in the area of the effective regulation over the last 30 years revealed one more important limitation – these studies are not based on personality theory that would allow the consistent interpretation of the results. This limitation complicates the theoretical summaries on one hand and influences the quality of work of the practitioners working in the area of stress management on the other hand. For the purposes of the present study we use a method that overcomes the discussed limitations and is based on the potential of the cognitive experiential self-theory.

At present the number of studies discussing the negative psychological conditions of the participants in relation to their occupation is still limited (Alon et al., 2020; Kangxing et al., 2020; Wang et al., 2020; Yuan et al., 2020). Even more underrepresented are those studying the strategies for coping with stress during the pandemic in relation to occupation or working arrangement (Gupta et al., 2021).

Therefore, the current study aims to outline the levels of perceived stress and coping strategies of the participants in relation to their occupation. The rapid progression of COVID situation in Bulgaria clearly pointed out that some occupational groups are under more stress than other. In addition to the risk of spread of the infection some occupational fields perceived an additional stress related to the needs for rapid changes in their work patterns. Such an example is the teaching profession. Studies have shown that teachers are forced to quickly adapt their work to the new online reality that leads to high levels of stress among these groups (Ozamiz-Etxebarria et al., 2021; Gupta et al., 2021; Klapproth et al., 2020; MacIntyre et al., 2020). In addition their working model is still unclear, due to the on-going public debate on pros and cons of online teaching and learning. In the light of these observations we ended up with the following research question: Does the level of perceived stress vary in relation to the area of occupation? We assume that the highest level of stress will be observed among the representatives of the area of Education/Science, especially in the field of Education. Another key research question is whether there is a relation between area of occupation and the coping strategies. Previous studies show that representatives from areas of Education/Science and Economics/Business use more coping strategies due to stress related to the need for quick changes in their fields (Yuan et al., 2020; MacIntyre et al., 2020; Klapproth et al., 2020) and that Emotional and Behavioural coping will be the most effective way to deal with the perceived stress for all the groups (Karastoyanov & Hristova, 2000). Based on these studies we assume that there will be specific coping strategies for dealing with stress for the different areas of occupation.

The onset of Covid-19 crisis in Bulgaria was officially acknowledged through the first restrictions applied by the government in mid March 2020. Our cross-sectional population-based study was conducted a week after the first major lock down in the country. The questionnaire was disseminated via the social media channels using Kwiksveys platform. The questionnaire includes scales for measurement of stress, coping strategies and some socio-demographic characteristics of the participants.

Method

Sample

A total number of 688 participants took part in the study. They answered the questionnaire anonymously. Nevertheless, the number of the participants included in the analysis of the data was reduced to 429, due to the fact that some of the studied participant either did not finish the questionnaire, did not answer what is their occupation or have misunderstood the question and have filled in their position, rather than their profession.

They are divided in four age groups (19-30 years old; 31-40 years old; 41-50 years old; over 51 years old) and their average age is 39.7 years ($SD = 11.05$). The participants are almost equally divided by gender (48.7% male and 51.3% female). Most of them have University degree (72.2%) and the rest have school degree (27.8%). This is mainly due to the fact that the study was conducted online during the period of lock down in the country when most of the people with high education were working from home. The participants were split in four groups in relation to their area of occupation. Almost half of them (47.6%) belong to a group of people working in the area of Social work, Law or Politics (16.8%) or in the area of Education or Science (30.8%). The other half (52.4%) belong either to the group working in the area of Economics/ Business (28.2%) or to the area of Engineering/IT (24.2%).

Ethical statement

The study was conducted in accordance with the Declaration of Helsinki and was approved by the Institutional Ethical Committee. Participants could withdraw from the survey at any moment without providing any justification.

Methods

The questionnaire consists of **three main parts**. **The first one** collects socio-demographic data (gender, age, education, occupation, position, income, actual working status). **The second one** is based on Perceived Stress Scale (Cohen et al., 1983, adapted for Bulgaria by Karastoyanov & Rusinova-Hristova in 2000). It measures the perceived stress. This is one of the most widely used scales in the area of social sciences. Due to the characteristics of the items - easily understandable, not related to particular event, not culturally determined and applicable for various contexts - the scale is adapted in many countries worldwide (Remor, 2006; Shamsi et al., 2010; Orucu & Demir, 2008; Leung, et al., 2010; Mimura & Griffiths, 2008; Wongpakaran, & Wongpakaran, 2010). The scale examines the subjective perspective for perceived stress, rather than objective presence or frequency of stressful events. It is sensitive toward the assessment of the influence of the important events and

changes in life, everyday troubles and stressors from the environment. At the same time it is sensitive toward the influence of unexpected single stressful events or chronic stress through the processes of assessment and reassessment. Lazarus and Folkman (1984) define one situation as stressful when an individual assesses (mainly unconsciously) that the demands related to the situation exceed his resources to deal with it. In other words, the instrument measures the perceived ability to manage stress and the extent to which the individual assesses his life as “unpredictable, uncontrollable and overloaded” (Cohen et al. 1983). Participants use a five point Likert scale to assess how often during the last month they have thought or think in the way described in the statements using the following alternatives: never- 1, almost never – 2, sometimes- 3, often – 4, very often – 5. The internal consistency of the scale (Cronbach’s Alpha) is .86. **The third one** is based on cognitive-experiential self-theory of Epstein (2014) based on the assumption that people have two fundamental conceptual systems for adaptation that are independent from each other on one hand and collaborate on the other: unconscious “experiential/ intuitive system” that automatically learns from the experience and conscious “rational/ intellectual system” that acts through conscious reasoning. The Constructive Thinking Inventory (Epstein, 1998) recognizes the main components of constructive and destructive thinking. It contains two scales for constructive thinking, three scales for destructive thinking and one scale that can be referred to both types of thinking depending on the level of expression. Finally the inventory distinguishes the following styles for coping with stressful events: Emotional coping (the ability to cope with the internal world of the feelings), Behavioural coping (the ability to cope with the external world), Categorical thinking (rigid thinking, the world is seen in “black and white colours”, no shades of grey), Superstitious beliefs (Doesn’t refer to the traditional superstition. It addresses the personal or mental games that people play in order to prepare for disappointment), Esoteric thinking (believes that unusual and paranormal phenomena are the reason for the events), Naïve optimism (a tendency to believe that one separate positive result guarantees that every time the things will end in a positive way). The respondents estimate the statements via five point Likert scale ranging from absolutely wrong (1) to absolutely correct/right (5). Reliability and validity of the inventory allow its use for research purposes. The reliability of the entire inventory is good (Cronbach’s Alpha .76)

Statistical analysis

First, descriptive analyses were conducted to describe the socio-demographic characteristics of the participants. Second, the prevalence of stress and different types of coping strategies, stratified by gender, age, occupation, position, income and working status were analysed via One-way ANOVA and the significance of the results is determined via

Post-Hoc test (Games-Howell). Third, regression analyses were performed in order to find to what extent socio-demographic characteristics mediate and explain the relation between stress and coping strategies. All data is analysed using the SPSS v26.0. P-values of less than 0.05 were considered statistically significant (a 2-sided tests).

Results and Discussion

Relation between the area of occupation and perceived stress

One-way ANOVA between groups analysis was conducted to compare the influence of the area of occupation on perceived stress. The results show that the levels of the perceived stress vary in relation to the area of occupation. The level of perceived stress is highest ($M = 11.34$, $SD = 3.12$) among the participants in working in the area of Education and Science and lowest among the representatives working in the Social work, Law or Politics ($M = 10.21$, $SD = 2.81$) and the difference between these groups is significant ($p < .05$).

Table 1.

Effect of area of occupation on perceived stress (One way Anova)

	<i>N</i>	Mean	<i>SD</i>	<i>SE</i>	<i>F</i>	<i>p</i>	Post-hoc Games-Howell
1.Social work/ Law/ Politics	72	10.21	2.81	.332			
2.Economics/ Business	121	10.83	3.39	.308			
3.Engineering/ IT	104	10.42	2,88	.282	2.74	<0.04	1<4
4.Education and Science	132	11.34	3.12	.271			
Total	429	10.79	3.11	.150			

These results can be explained with the fact that people working in the area of Education and Science were forced to reorganize their work entirely within few weeks so that they can switch from onsite to online model of teaching. In addition in Bulgaria the debate about the best measures in the area of education (both on school and university level) took a lot of time and this put at high stress (due to the high infections rates at schools) and uncertainty about work organization teachers and lecturers. Moreover, teachers per se are considered to be one of the most stressful professions. The transition from traditional to remote teaching and learning itself is related with a lot of anxiety. All these factors have cumulative effect and increase the typical occupational stress with other sources of stress related to the teaching profession and the circumstances around Covid-19 situation.

At the same time working conditions of the representatives of the Social work/ Law/ Politics didn't change significantly, i.e. no extra efforts toward adaptation were made from these

groups. They didn't perceive any pressure related to the implementation of their duties and respectively the levels of perceived stress turned out to be the lowest among all studied areas of occupation.

The Homogeneity of Variances test we applied did not show a significant result ($p > .05$). This gives us a good reason to accept the obtained results as correct, regardless the uneven variances.

Relation between the area of occupation and coping strategies

Three out of six coping strategies – **Emotional coping**, **Behavioural coping** and **Superstitious thinking** - don't seem to be exclusively dependant to any particular area of occupation. However the other three coping strategies were significantly more represented in some of the areas of occupation. Representatives of the areas "Education and Science" ($M = 9.11$, $SD = 2.25$) and "Economics/Business" ($M = 9.23$, $SD = 2.3$) have significantly higher levels of **Categorical thinking** (respectively $p = .008$ and $p = .003$) in comparison to those from "Social work/ Law/ Politics" ($M = 8.04$, $SD = 2.22$). It seems that the areas demanding fast and definite changes happened to use this coping strategy as a way to go through the lockdown period. Rigid "black or white" thinking and acting in the "right" way according to those participants seems to help them deal with the difficulties related to the pandemic situation.

Table 2.

Effect of area of occupation on Categorical thinking (One way Anova)

	N	Mean	SD	SE	F	p	Post-hoc Games-Howell
1. Social area/ Law/ Politics	72	8.04	2.22	.262			
2. Economics/ Business	121	9.23	2.3	.209			
3. Engineering/ IT	104	8.84	2.47	.242	4.51	.01	1 < 2
4. Education and Science	132	9.11	2.25	.196			1 < 4
Total	429	8.90	2.34	.113			

Data shows that the **Naïve Optimism** also depends on the area of occupation. Identically to the data related to the Categorical thinking, the representatives of the areas "Education and Science" ($M = 12.52$, $SD = 2.09$) and "Economics/Business" ($M = 12.52$, $SD = 2.18$) have significantly higher levels of Naïve Optimism ($p < .05$ and $p < .05$) in comparison to those from "Social work/ Law/ Politics" ($M = 11.63$, $SD = 2.27$). The groups with higher levels of

Naïve Optimism are more likely to think that a single good result guarantee that the things will happen in the same way in the future.

Table 3.

Effect of area of occupation on Naïve Optimism (One way Anova)

	<i>n</i>	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>F</i>	<i>p</i>	Post-hoc Games-Howell
1. Social work/ Law/ Politics	72	11.63	2.27	.267			
2. Economics/ Business	121	12.52	2.18	.198			1<2
3. Engineering/ IT	104	11.80	2.41	.236	4.46	<. 01	
4. Education and Science	132	12.52	2.09	.182			1<4
Total	429	12.19	2.25	.109			

Esoteric thinking is a coping strategy used mostly by the participants working in the area of Education and Science ($M = 7.92$, $SD = 2.87$). They use it significantly more than the participants from Social work/ Law/ Politics ($M = 6.43$, $SD = 2.66$), ($p < .01$) and Engineering/IT ($M = 6.36$, $SD = 2.58$) ($p < .001$). This coping strategy is associated with believes in unusual and paranormal phenomena. It might be used by the representatives of the area of Education/Science to further deal with those aspects of stress that can't be covered or explained via the rational thinking or behaviour.

Table 4.

Effect of area of occupation on Esoteric thinking (One way Anova)

	<i>n</i>	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>F</i>	<i>p</i>	Post-Hoc Games-Howell
1. Social work/ Law/ Politics	72	6.43	2.66	.314			
2. Economics/ Business	121	7.29	2.87	.260			1<4
3. Engineering/ IT	104	6.36	2.58	.253	7.93	<.001	
4. Education and Science	132	7.92	2.87	.250			3<4
Total	429	7.11	2.83	.137			

Relation between perceived stress and coping strategies depending on the area of occupation

For all studied areas of occupation the use of **Emotional coping** reduces the levels of perceived stress ($p < .001$). However, this coping strategy is most effective for representatives of Education and Science area ($p < .001$).

Table 5.

Emotional coping as predictor of perceived stress (Regression analysis).

Area of occupation	Adj. R ²	B	SE	β	t	p
Social area/ Law/ Politics	.163	-.345	.090	-.418	-3.85	< .001
Economics/ Business	.106	-.224	.057	-.337	-3.91	< .001
Engineering/ IT	.166	-.332	.072	-.417	-4.64	< .001
Education and Science	.277	-.405	.057	-.531	-7.15	< .001

Behavioural coping reduces the perceived stress for all the areas of occupation ($p < .001$, $p < .05$), except for the area of Economics/ Business ($p > .05$). It seems that the behaviourally oriented thinking doesn't lead to reduced levels of stress for the participants working in this area. This result might be related to the tough times for the business at the time of the first lock down in the country. The uncertainty in short and long term seems to require much more efforts from the representatives of this area that doesn't reduce their level of stress when it comes to Behavioural coping.

Table 6.

Behavioural coping as predictor of perceived stress (Regression analysis).

Area of occupation	Adj. R ²	B	SE	β	t	p
Social area/ Law/ Politics	.048	-.165	.078	-.247	-2.13	<.05
Economics/ Business	.017	-.091	.052	-.160	-1.76	=.08
Engineering/ IT	.146	-.254	.059	-.393	-4.32	<.001
Education and Science	.068	-.137	.042	-.274	-3.24	<.01

Naïve optimism seems to be effective coping for reduction of the perceived stress only for the representatives of the area of Education and Science ($p < .01$). It seems that this is the occupational group that uses the most coping strategies for dealing with stress amongst the studied occupational groups.

Table 7.

Naïve optimism as predictor of perceived stress (Regression analysis)

Area of occupation	Adj. R ²	B	SE	β	t	p
Social work/ Law/ Politics	-.012	.040	.096	.050	.419	>.05
Economics/ Business	.004	-.072	.058	-.112	-1.234	>.05
Engineering/ IT	-.006	.051	.083	.061	.622	>.05
Education and Science	.120	-.239	.055	-.356	-4.345	<.01

The rest of the coping styles don't reduce the stress in any of the studied areas of occupation. **Categorical thinking** doesn't work as a coping strategy for stress reduction in any of the occupation. The situation is even worse when it comes to **Superstitious thinking**. It seems that this coping strategy even increase the level of stress in all the

groups, especially among the participants working in the area of Economic/ Business ($p < .01$). The mental games played by the people aiming to prepare their mind for disappointment actually increase the stress among people in the area of business/ economics as their main task in the reality is to win, not to lose.

Table 8.

Superstitious thinking as predictor of perceived stress (Regression analysis).

Area of occupation	Adj. R ²	B	SE	β	t	p
Social work/ Law/ Politics	.075	.246	.095	.3	2.6	< .05
Economics/ Business	.138	.305	.068	.38	4.49	< .01
Engineering/ IT	.032	.188	.090	.2	2.09	< .05
Education and Science	.036	.171	.07	.21	2.43	< .05

Similarly, **Esoteric thinking** doesn't reduce the stress in any of the areas of occupation. On contrary - explaining the situation with unusual or paranormal phenomena and even increases the stress significantly among the people working in the area of Economics/ Business ($p < .01$). This coping strategy doesn't bring any sense of success in the reality and thus is useless or even can be harmful when it comes to dealing with stress.

Table 9.

Esoteric thinking as predictor of perceived stress (Regression analysis).

Area of occupation	Adj. R ²	B	SE	β	t	p
Social work/ Law/ Politics	-.006	-.086	.113	-.091	-.77	>.05
Economics/ Business	.050	.203	.075	.24	2.7	<.05
Engineering/ IT	-.007	-.044	.089	-.049	-.5	>.05
Education and Science	-.006	-.043	.081	-.046	-.53	>.05

Limitations of the study

Amongst the most important limitations of the study is the fact that the sample consists of literate participants, with access to Internet. They are also sufficiently biased by their interest in the subject of the study. A possible explanation is that people that would be more interested to join the study are those who are more stressed by the pandemic. These sources of bias are closely related to our sample as it has been recruited online. Therefore the study findings are skewed. The extent of bias in our online study is unclear, as there is no way to understand the motives of those who responded. In addition the analysis of the data reveals that the participants are less like to stay fully engaged with the survey for more than 8-10 minutes than with other research methods. Statistical confidence and margin of errors are questionable, due to the lack of quality random sampling.

Conclusion

The study outlines the levels of perceived stress and coping strategies of the participants in relation to their occupation. The hypothesis assuming higher levels of perceived stress among representatives working in the area of Education and Science was confirmed. The main factors underlying the perceived stress (high levels of uncertainty, the need for rapid change of the stereotypes, the unusual methods for practicing the profession and the high risk of infection) contribute to a greater extend for the levels of stress among this occupational group. A wide range of coping strategies - Categorical thinking, Naïve optimism and Esoteric thinking - are used by the participants to cope with the stress.

The universal character of Emotional coping, Behavioural coping and Superstitious thinking should be underlined. It seems that people from all the studied areas of occupation use these strategies to cope with stress equally.

The study not only provides data related to the perceived stress and the coping strategies among the representatives of various areas of occupation, but also clearly points out possible factors underlying the stress among the most stressed group. These results might advice the practitioners supporting the adaptation of people representing different occupational areas during the process of dealing with stress related to the unusual epidemiological situation in the country. There is no doubt that further research in this direction is needed in order to support the received results and to establish a stable background for any strategies for prevention and coping with stress among representatives of the different occupational fields.

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Competing Interests

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