

Coping styles and dispositional optimism as predictors of post-traumatic stress disorder (PTSD) symptoms intensity in paramedics

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Summary

Aim. The aim of the study was to determine the relationship between the severity of post-traumatic stress disorder (PTSD) symptoms and such predictors as coping style and dispositional optimism in the group of professional paramedics.

Method. The study was conducted in a group of 440 paramedics employed by various units of the Polish Emergency Medical Service in five voivodships. Finally, research data obtained from 159 people were analyzed. The mean age of the respondents was 34.14 ($SD = 8.67$), mean work experience – 9.22 years ($SD = 7.67$). The majority of participants were male

($N = 139, 87.4\%$), which reflects the gender balance observed in this particular professional group. Intensity of PTSD symptoms was assessed using the Impact of Event Scale – Revised (IES-R). Dispositional optimism was evaluated by means of the Life Orientation Test – Revised (LOT-R) and coping styles were measured with the use of the multi-faceted Coping Orientations to Problems Expected (COPE) inventory.

Results. On the basis of the conducted studies, it can be concluded that PTSD concerns 28% of the participants. Hierarchical regression analysis revealed that general risk of PTSD symptoms occurrence is caused by preferred coping style, namely the emotion-focused coping style (positive predictor). Furthermore, two-factor interaction regression analysis showed that dispositional optimism can play a role as a mediator of the relationship between PTSD general index and the emotion-focused coping style.

Conclusions. Paramedics are more prone to develop PTSD symptoms than general population. This indicates the need for preventive steps to be taken in the professional group of paramedics taking into consideration their coping styles and level of dispositional optimism.

Key words: PTSD, coping styles, dispositional optimism

Introduction

The work of a paramedic involves providing assistance to people whose health or life is in danger, which means that members of this professional group are particularly likely to experience extreme stress. This thesis has been confirmed in a number of studies conducted internationally – the exposure to traumatic events and its consequences have been observed in study groups composed of paramedics from countries such as Great Britain [1], Australia [2], Canada [3], Sweden [4], or Brazil [5]. Similar analyses with regard to stressors specific to this professional group have also been conducted in Poland. Results available to date identify a number of stress factors typically observed in the professional group of paramedics. These are related to the burden of responsibility for other people's lives and safety, to frequently witnessing patients in situations where their life or health is gravely threatened and, finally, to the dangers of the work itself [6–13]. A separate question raised in the present study concerned the degree to which work under conditions of severe stress can pose an actual threat of developing post-traumatic stress disorder.

PTSD results from experiencing stress of extreme, traumatic intensity. It was first identified as a nosological entity in the Diagnostic and Statistical Manual of Mental Disorders – DSM-III in 1980. PTSD was also introduced into ICD-10, and typically involves symptoms that can be classified into three groups:

- 1) intrusion – recurrent images, dreams or memories related to the traumatic experience;
- 2) avoidance – of places, people or topics related to the traumatic experience, accompanied by a general decrease in activity;
- 3) arousal – understood as increased psycho-physiological reactivity in the form of attention deficit disorders, circadian rhythm disorders, or increased vigilance [14].

Further research on PTSD led to diagnostic criteria changes and specification of occupational groups with higher risk of PTSD development which was proposed by DSM-5 authors [15].

Data collected globally in relation to the professional group of paramedics provide a highly varied spectrum of results with regard to the incidence of PTSD symptoms: between 4 and 46.7% [1, 4, 5, 16–19]. Equally inconclusive, indeed significantly disparate results can be quoted in the context of Polish studies. Ogłodek and Araszkiwicz report the incidence of PTSD symptoms in all paramedics participating in the study [9], while Klonowicz and Elisz observed no post-traumatic stress in any of the ambulance service staff members included in their research [20].

In literature, the experience of traumatic stress by an individual is not treated as the sole factor conditioning the development of PTSD. Conclusions drawn from

large-scale epidemiological studies indicate that PTSD develops in a relatively small percentage of people exposed to stress at traumatic levels [21, 22]. This suggests that there must be other – apart from the experience of stress itself – predictors of the development of this disorder.

The present study adopted the transactional model of stress coping after Lazarus and Folkman in order to account for the relation between the perceived demands of the environment and resources available to an individual. Where the assessment of the situational conditions and one's own capabilities results in a sense of being overwhelmed, threatened with respect to one's resources or wellbeing, a stress reaction occurs [23]. In order to complement this approach, the author proposed a relational depiction of coping. Coping with stress can be perceived as a process, strategy or orientation. The first term relates to the entirety of an individual's activity under given situation of stress. A strategy relates to the cognitive and behavioral efforts made with the view of overcoming the difficulty. Finally, orientation is understood as "a set of strategies or methods of coping, available to a given individual and characteristic of the same, some of which are activated in the process of coping with a particular stressful situation" [24, p. 19]. Initially, two key orientations were identified as either being focused on the problem or on emotions. The former is defined as an attempt to identify, change and eliminate the stressor influence, while the latter relates to regulating the emotional condition evoked by the experience of stress [23]. Carver, Scheier and Weintraub complemented the classification with the addition of an orientation focused on avoidance, i.e., on ignoring problems and their respective emotional consequences [25, 26].

Global reports on the relation between the preferred coping orientations and the risk of developing PTSD are inconclusive. Some studies suggest that coping focused on emotions and avoidance runs the risk of PTSD development [27–30]. Strelau et al. [31] argue that coping style oriented on emotions may be considered as PTSD occurrence predictor. On the other hand, Bonanno et al. [32] report that the avoidance coping strategy may in fact prevent the development of the disorder. Conversely, Gil and Weinberg [33] observe that only the problem-oriented strategy can result in lowering the risk of PTSD.

The continuous process of coping with stress, which constitutes an inherent element of professional experience in the group of paramedics, involves an individual's internal resources. The term was coined by Moos and Schaefer to refer to "the complex system of personality, attitude and cognitive factors that comprise a part of the psychological context of coping" [34, p. 234], and the most important of said resources (ones that condition actual stress resistance) include the sense of situational control, the sense of efficiency, and dispositional optimism. The later of the above constructs is understood as a personality trait reflecting the individual's generalized expectation with regard to the positive outcome of undertaken actions. It is said to improve the resistance to stressors and moderate situational assessment [35]. As described in literature, greater optimism corresponds to a better ability to cope with difficult life situations [36, 37]. As reported by Thomas et al. [38], dispositional optimism may be protective factor against the consequences of the extreme stress experienced in combat situations, while

Gil and Weinberg [33] observe that in individuals demonstrating high levels of this resource, the risk of developing PTSD when exposed to a traumatic event is relatively low. There are, however, studies whose results show that hypothetically postulated role of dispositional optimism as a protective factor after a traumatic exposure and a determinant of post-traumatic development was not confirmed [39].

In Polish studies conducted to date among paramedics, the primary focus has been on diagnosing the levels of experienced stress [7, 40], the coping styles and strategies [6, 12, 13], as well as post-traumatic development [11]. On the other hand, few reports pertain to the problem of post-traumatic stress disorder intensity in this particular professional group, and the scarce results obtained in this context have been rather inconclusive [9, 20]. This suggests that further analyses that would allow identification of not only PTSD risk factors, but also of potential protectors against this risk are needed.

Aim

The aim of the study was to consider the following research questions:

1. To what extent can preferred coping style and dispositional optimism account for PTSD intensity in the professional group of paramedics?
2. Does dispositional optimism serve the role of a negative predictor of PTSD symptoms intensity?

Material and method

The study was conducted individually and anonymously. The group of respondents was composed of employees of various units of the State Emergency Medical Service in five voivodships: Lublin, Podkarpackie, Świętokrzyskie, Podlaskie, and Masovian Voivodeship.

The study was approved by the Bioethics Committee of the Medical University of Lublin (KE-0254/159/2010).

Respondents

The study was conducted in a group of 440 paramedics – due to the low questionnaire return rate and missing data, the final study group was composed of 159 individuals. Most of the surveyed paramedics were employed by Emergency Medical Services ($N = 122$), Hospital Emergency Departments ($N = 19$), or both types of units functioning within the State Emergency Medical Service ($N = 18$). The mean age of the respondents was 34.14 years ($SD = 8.67$), and mean seniority was 9.22 years ($SD = 7.67$). A considerable disproportion was observed between the number of surveyed women ($N = 20$, 12.6%) and men ($N = 139$, 87.4%), which, however, reflects the actual gender balance present in this professional group. The fact that so few women participated in the study made a comparative analysis with respect to gender impossible.

Tools

The following research tools were employed:

The Impact of Event Scale – Revised – IES–R, adapted into Polish by Juczyński and Ogińska-Bulik [41]. The scale allows a PTSD diagnosis with respect to both the general index and the three specific dimensions of Intrusion, Arousal and Avoidance. The authors of the Polish adaptation recommend calculating the mean results for the three respective scale dimensions and the PTSD general index. For this purpose, the total points under each respective dimension are divided by the number of statements corresponding to the given dimension. The total points for the entire scale should be divided by 22 (i.e., the number of statements in the IES-R) to obtain the PTSD general index. A mean score of over 1.5 points for the particular scale dimensions and the PTSD general index is an indication that symptoms of at least moderate intensity are present. Similar intensity observed with respect to all scale dimensions provides an even more reliable diagnosis, however, one that still requires verification by careful examination of the patient using PTSD diagnostic criteria as per ICD-10 [14]. The overall scale reliability measured with Cronbach's alpha is 0.92.

The Coping Orientations to Problems Experienced (COPE) multi-faceted inventory – Polish adaptation by Juczyński and Ogińska-Bulik [42]. The inventory allows a diagnosis with regard to three coping orientations: (a) active coping, (b) avoidance, and (c) looking for support and focusing on emotions. The scale reliability measured with Cronbach's alpha is 0.85.

The Life Orientation Test – Revised (LOT-R) adapted into Polish by Juczyński and Poprawa [43], which allows a diagnosis of dispositional optimism. The scale reliability measured with Cronbach's alpha is 0.64.

Furthermore, a survey to collect basic demographic data including information about professional experience, place of employment (Hospital Emergency Department or Emergency Medical Service) and subjective assessment of one's exposure to trauma in the context of professional practice, including a list of traumatic events compiled on the basis of literature, was used.

Statistical data analyses were performed using SPSS 22.0 software package for Windows.

Results

Each of the respondents reported having experienced at least one event in the previous year that could be subjectively classified as traumatic (survey data). More than half (52.6%) of the paramedics stated that in the previous year they had experienced numerous traumatic events. The respondents would most commonly mention in this context the provision of medical care to victims of communicational accidents – 94.3% and people suffering from mental disorders – 91.8%. Furthermore, such incidents as witnessing a cardiac arrest, witnessing a death of a patient after long resuscitation and helping a patients under influence of psychoactive substances were also described as traumatic by 89.3%, 81.3% and 76.1% of respondents, respectively.

Data in Table 1 present the results of descriptive statistics with respect to intensity of PTSD symptoms based on the general index as well as specific dimensions.

Table 1. PTSD symptoms intensity in the study group of paramedics

| The IES-R result | PTSD | | Intrusion | | Arousal | | Avoidance | |
|------------------|------|-------|-----------|-------|---------|-------|-----------|-------|
| | n | % | n | % | n | % | n | % |
| Value < 1.5 | 115 | 72.3% | 116 | 73.0% | 66 | 41.5% | 101 | 63.5% |
| Value > 1.5 | 44 | 27.7% | 43 | 27.0% | 93 | 58.5% | 58 | 36.5% |

In accordance with the recommended method of calculating the results on the IES-R [41], the reference threshold value of 1.5 was adopted and related to the values obtained by dividing the total points under each of the dimensions by the number of respective items. As illustrated in Table 1, results exceeding the threshold value were the most common in the case of Arousal (more than half of the respondents), followed by Avoidance (over one third) and, finally, Intrusion (more than one in four respondents). The latter was also reflected by the general index for the analyzed variable. Therefore, one could conclude that the PTSD diagnosis can be suspected in 44 individuals, although partial symptoms, particularly with regard to arousal, were observed in a considerably greater number of respondents.

In order to determine the significant PTSD predictors, a hierarchical regression analysis was performed, with the dependent variable defined as intensity of PTSD symptoms. Firstly, the presence of initial prerequisites for a regression analysis was confirmed with respect to the PTSD general index and its particular dimensions: normal distribution of residuals (statistically insignificant Kolmogorov-Smirnov test value), linear dependence (statistically significant χ^2 value) and absence of strong inter-correlations between the predictors (Durbin-Watson statistic value oscillating around 2). With respect to PTSD (general index), coping style focused on emotions was the first variable added to the regression equation (model 1), followed by: avoidance (model 2), active coping (model 3), and dispositional optimism (model 4).

Data presented in Table 2 allow to check efficacy of subsequently tested models.

Table 2. Results of the hierarchical regression analysis accounting for PTSD intensity – general index

| Model | R | R ² | Adjusted R ² | Standard estimation error | Statistics of change | | | | |
|-------|-------|----------------|-------------------------|---------------------------|-----------------------|----------|-----|-----|--------------------------|
| | | | | | R ² change | F change | df1 | df2 | Significance of F change |
| 1 | 0.371 | 0.137 | 0.132 | 14.05 | 0.137 | 25.010 | 1 | 157 | 0.000 |
| 2 | 0.380 | 0.144 | 0.133 | 14.04 | 0.007 | 1.256 | 1 | 156 | 0.264 |
| 3 | 0.398 | 0.158 | 0.144 | 13.96 | 0.014 | 2.589 | 1 | 155 | 0.110 |
| 4 | 0.412 | 0.169 | 0.148 | 13.92 | 0.011 | 2.062 | 1 | 154 | 0.153 |

R – correlation coefficient; R² – coefficient of determination; F – value of test statistic; df – degrees of freedom

The results presented in Table 2 indicate that model 1 – with the single predictor of coping style focused on emotions – explains approximately 13% of variance of the dependent variable PTSD (adjusted R^2 for model 1). The subsequent addition of further variables has no significant bearing on R^2 . To recapitulate: model 1 proved the most effective in predicting PTSD incidence (general index).

Analogous regression analyses were performed with respect to the specific dimensions of PTSD by testing the explanatory power of the respective four models. A summary of the relevant data is presented in Table 3.

Table 3. Summary of models explaining PTSD intensity in the following dimensions: Avoidance, Arousal and Intrusion

| Model | R^2 | | | Adjusted R^2 | | | Statistics of change | | | | | | | | |
|-------|-------|-------|-------|----------------|-------|-------|----------------------|-------|-------|----------|-------|-------|--------------------------|-------|-------|
| | | | | | | | R^2 change | | | F change | | | Significance of F change | | |
| | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| 1 | 0.077 | 0.128 | 0.128 | 0.071 | 0.122 | 0.122 | 0.077 | 0.128 | 0.128 | 13.09 | 22.95 | 22.95 | 0.001 | 0.001 | 0.001 |
| 2 | 0.090 | 0.133 | 0.129 | 0.078 | 0.122 | 0.118 | 0.013 | 0.005 | 0.002 | 2.207 | 0.928 | 0.320 | 0.139 | 0.337 | 0.573 |
| 3 | 0.093 | 0.148 | 0.148 | 0.075 | 0.131 | 0.132 | 0.003 | 0.015 | 0.019 | 0.503 | 2.707 | 3.448 | 0.479 | 0.102 | 0.065 |
| 4 | 0.093 | 0.159 | 0.174 | 0.069 | 0.137 | 0.152 | 0.001 | 0.011 | 0.025 | 0.017 | 2.005 | 4.710 | 0.898 | 0.159 | 0.032 |

A – PTSD Avoidance; B – PTSD Arousal; C – PTSD Intrusion R^2 – coefficient of determination; F – value of test statistic

The obtained results (Table 3) reveal that in the case of Avoidance and Arousal the highest explanatory power is offered by model 1 (coping style focused on emotions). The model explains 7% and 12% of variance of the dependent variables, respectively. In the case of Intrusion, the highest explanatory power is offered by model 4 explaining 15% of variance. Increase in the efficacy of this model, in relation to model 1, should be attributed exclusively to dispositional optimism (significance of F change = 0.032). The obtained results indicate the need for more detailed analyses of dispositional optimism role in relation to coping style focused on emotions in prediction of PTSD symptoms occurrence. For this purpose interaction analysis in two-factor regression analysis was performed. Coping style focused on emotions was considered as predictor and dispositional optimism as interaction factor. Calculations were made according to SPSS SYNTAX commands. The obtained results, in a form of comparison of two regression models efficacy – model of effects of main predictors: dispositional optimism and focus on emotions (model 1) and model with additional interaction factor: dispositional optimism x focus on emotions (model 2), are presented in Table 4.

Table 4. Results of compared regression models explaining PTSD occurrence (specific dimensions and general index)

| Model | | B | Standard error | Beta | t | p |
|--------------------|---|--------|----------------|--------|--------|-------|
| Avoidance | | | | | | |
| Model 1 | Constant | 12.710 | 0.586 | | 21.679 | 0.000 |
| | Dispositional optimism | -0.004 | 0.109 | -0.003 | -0.036 | 0.972 |
| | Focus on emotions | 0.098 | 0.027 | 0.280 | 3.637 | 0.000 |
| Model 2 | Constant | 12.646 | 0.585 | | 21.608 | 0.000 |
| | Dispositional optimism | -0.169 | 0.153 | -0.119 | -1.107 | 0.270 |
| | Focus on emotions | 0.096 | 0.027 | 0.273 | 3.552 | 0.001 |
| | Dispositional optimism X Focus on emotions | -0.010 | 0.006 | -0.166 | -1.542 | 0.125 |
| | | | | | | |
| Arousal | | | | | | |
| Model 1 | Constant | 8.296 | 0.386 | | 21.511 | 0.000 |
| | Dispositional optimism | -0.939 | 0.519 | -0.134 | -1.809 | 0.072 |
| | Focus on emotions | 0.237 | 0.048 | 0.369 | 4.964 | 0.000 |
| Model 2 | Constant | 8.355 | 0.384 | | 21.753 | 0.000 |
| | Dispositional optimism | -0.979 | 0.515 | -0.140 | -1.980 | 0.050 |
| | Focus on emotions | 0.227 | 0.048 | 0.354 | 4.774 | 0.000 |
| | Dispositional optimism X Focus on emotions | -0.113 | 0.061 | -0.136 | -1.841 | 0.067 |
| | | | | | | |
| Intrusion | | | | | | |
| Model 1 | Constant | 11.555 | 0.643 | | 17.982 | 0.000 |
| | Dispositional optimism | -0.234 | 0.120 | -0.143 | -1.95 | 0.053 |
| | Focus on emotions | 0.151 | 0.030 | 0.375 | 5.120 | 0.000 |
| Model 2 | Constant | 11.500 | 0.643 | | 17.874 | 0.000 |
| | Dispositional optimism | -0.374 | 0.168 | -0.228 | -2.227 | 0.027 |
| | Focus on emotions | 0.149 | 0.030 | 0.369 | 5.044 | 0.000 |
| | Dispositional optimism X Focus on emotions | -0.008 | -0.007 | 0.102 | -1.189 | 0.236 |
| | | | | | | |
| PTSD general index | | | | | | |
| Model 1 | Constant | 28.723 | 1.106 | | 25.978 | 0.000 |
| | Dispositional optimism | -0.546 | 0.292 | -0.138 | -1.868 | 0.064 |
| | Focus on emotions | 0.706 | 0.137 | 0.381 | 5.167 | 0.000 |

table continued on the next page

| | | | | | | |
|---------|--------------------------|--------|-------|--------|--------|-------|
| Model 2 | Constant | 28.892 | 1.97 | | 26.347 | 0.000 |
| | Dispositional optimism | -0.598 | 0.290 | -0.151 | -2.059 | 0.041 |
| | Focus on emotions | 0.677 | 0.136 | 0.365 | 4.980 | 0.000 |
| | Dispositional optimism X | -0.073 | 0.035 | -0.155 | -2.109 | 0.037 |
| | Focus on emotions | | | | | |

B – non-standardized regression coefficient; Beta – standardized regression coefficient; t – value of test statistic; p – statistical significance

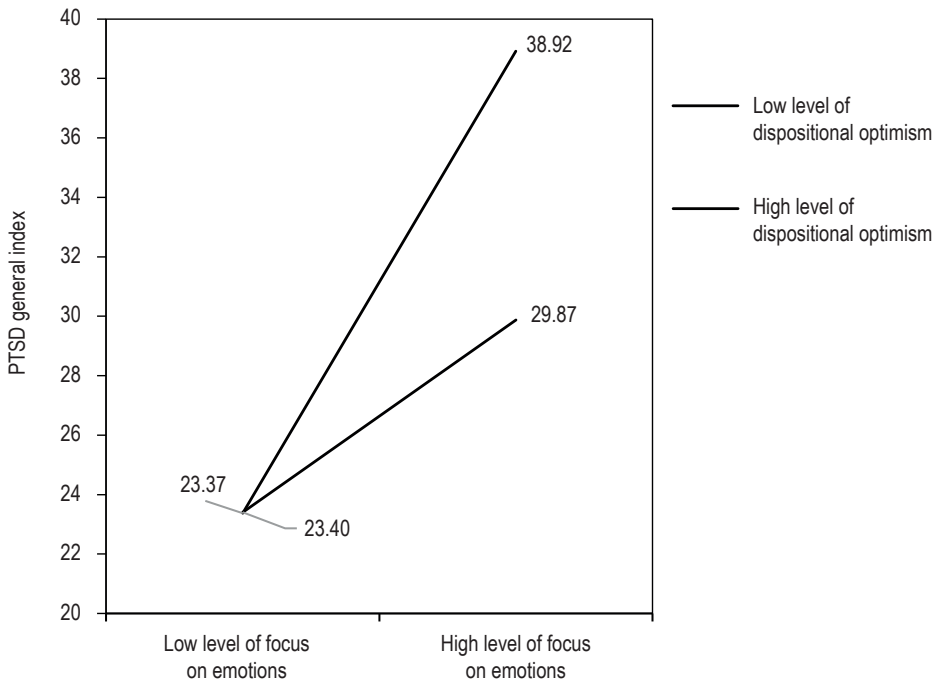
Data presented in Table 4, recapitulating comparative regression analyses, inform that in the case of one of PTSD specific dimensions, namely Avoidance, considering dispositional optimism as interaction factor does not change prediction of dependent variable. Focus on emotions remains the sole predictor. In the case of Arousal, introduction of model 2 presents dispositional optimism as a significant negative predictor (Beta = -0.140; $p = 0.050$), which did not happen in model 1. Both predictors: focus on emotions (stronger and positive) and dispositional optimism (weaker and negative) do not interact significantly. Similar picture of prediction is observed in the case of Intrusion.

While model 1 shows a statistical tendency of dispositional optimism as main effect (Beta = -0.19; $p = 0.053$), model 2 presents statistically significant negative prediction (Beta = -0.228; $p = 0.027$). Also, no interaction effect with stronger positive predictor, i.e., focus on emotions was observed (Beta = 5.04; $p = 0.001$). Finally, the picture of prediction of dependent variable considering model 2 is changed the most in the case of PTSD general index. Apart from main effect in the form of focus on emotions observed in model 1, another main effect appeared in the form of dispositional optimism (Beta = -2.059; $p = 0.041$). Furthermore, both variables interact (Beta = -0.155; $p = 0.037$). It means that relation between predictor (focus on emotions) and dependent variable (PTSD general index) is different in terms of direction on disparate levels of moderator (dispositional optimism) [44]. In order to better understand moderating (i.e., changing the way the predictor affects the dependent variable) role of dispositional optimism, there is a graph of interaction in regression based on matrix given by Dawson [45].

Moderating role of dispositional optimism (Graph 1) is observed only in high levels of focus on emotions as a coping style. In the analyzed sample, moderator determines two subsets of subjects significantly different with regard to the level of PTSD general index. In the case of high level of dispositional optimism, mean PTSD symptoms intensity is 1.36 (29.87:22), which is below threshold level of 1.5 suggesting at least moderate PTSD severity. Low level of dispositional optimism determines mean level of PTSD symptoms intensity as 1.77 (38.92: 22), i.e., – above threshold level.

Discussion

It would be prudent to begin the discussion by considering the reliability of the obtained data. Originally, the study was intended to include a considerably larger sample of paramedic professionals employed in various units of the system and operating in



Graph 1. **Dispositional optimism as a moderator of relation between PTSD general index and coping style focused on emotions**

a number of voivodships. The intention was to minimize the potential artefact in the form of the regional specifics of medical emergency service management. Unfortunately, the low percentage of correctly filled in and returned survey sheets (36%) limited the actual size of the sample. Nonetheless, it is still considerably larger than in any other Polish study to date [9], while also maintaining the representation of a variety of units and territorial divisions of the system. The low return rate is not a phenomenon unique to the present study, its common occurrence with regard to research conducted among paramedics was reported by Smith and Roberts [46] on the basis of a systematic review of literature. The reasons for the lack of response are a separate matter and contradictory hypotheses could be offered to account for this: (1) the individuals unwilling to participate in the study were those actually suffering from the disorder (due to induction of anxiety caused by the content of the survey sheets), (2) and people who believe that the problem does not concern them. Despite these limitations, however, the results of the presented study manage to contribute new information in the area of identifying the predictors of post-traumatic stress disorder in the professional group of paramedics, and as such can be practically applied.

All the respondents were able to identify events related to their work that could be subjectively described as traumatic. In the case of 28% of the paramedics, the fact translated to a potential PTSD diagnosis, although the risk group was considerably

larger while taking into consideration the intensity of symptoms attributable to the particular dimensions of the disorder. This result can be considered as high not only with respect to data obtained in the general population [27, 28], but also in comparison to results of similar studies conducted in a group of firefighters (22%), i.e., members of another profession exposed to work-related traumatic events [41].

The first stage of statistic analyses, testing “additive” hierarchic regression model (Table 2 and 3), allowed to identify one significant predictor of PTSD severity. It is coping style focused on emotions which is congruent with already available data [27–31]. The explanatory power of this factor is nearly identical (and relatively higher, oscillating around 12%) both in terms of the PTSD general index and the Arousal dimension.

While the adopted explanatory model shows Arousal as a dimension most “coherent” with PTSD general index, Avoidance and Intrusion are least “coherent”, however, in a different way. In the former dimension, coping style focused on emotions is capable of explaining only approximately 7% of PTSD symptoms intensity. It means that proposed prediction is not effective in cases of avoidance of places, people and talks related to trauma, which require further analyses. Intrusion, on the other hand, was explained to the greatest extent (approximately 15%). It should be emphasized that only for this dimension there are two predictors with different explanatory power. Focus on emotions is a stronger predictor (12%) which is congruent with other analyses. This clearly suggests that the tendency towards an emotional reaction when attempting to eliminate undesirable thoughts, images or memories may result in their higher accessibility and the activation of emotional memory, which in turn stimulates anxiety [47].

Wegner’s concept of ironic processes of mental control seems to adequately account for the described phenomenon [48]. The paradoxical nature of such monitoring stems from the fact that in a stressful situation, the most undesirable content becomes more readily available to the conscious mind. For the first time, and yet contrary to other analyses, dispositional optimism is a weak (approximately 3%) negative predictor (Beta = - 0.164; $p = 0.032$). Again, it should be emphasized that the assumptions with regard to the theoretically postulated and empirically verified, in other studies [33], role of dispositional optimism was confirmed only in the case of Intrusion. This personality resource understood as a relatively constant tendency towards evaluating and explaining perceived phenomena in positive terms [49] did not reduce the risk of PTSD symptoms intensity neither in dimensions of Arousal and Avoidance nor in PTSD general index.

This revealed ambiguous role of dispositional optimism in previously accepted model explaining PTSD (Tables 2 and 3) was a ground for more profound – than additive – statistical analyses. Furthermore, suggestion of Frazier et al. [50] regarding the use of moderation and mediation analyzes in the case of research relevant for psychological counseling/psychological therapy were taken into account. According to them [50, p. 116]: “If moderators are ignored in treatment studies, participants may be given a treatment that is inappropriate or perhaps even harmful for them”. Based on those reasons second stage of statistical analyses – interaction analysis in two-factor regression analysis (dispositional optimism x focus on emotions) revealed new predictive or moderating role of dispositional optimism (Table 4).

To recapitulate – first stage of analyses revealed that general risk for PTSD symptoms development is increased by preferred coping style, namely coping style focused on emotions. The presented results carry a strong practical significance. They illustrate the need for organizing trainings to facilitate the ability of constructive (other than focus on emotions) coping with stress, addressed both to individuals training to become paramedics as well as those already employed in units of the State Emergency Medical Service. The framework of primary preventive efforts should also aim to identify individuals with coping style focused on emotions and extend particular care to them. Furthermore, persons responsible for managing the system should also participate in targeted training. In this case, the focus should fall on the skills of providing adequate social support. It is particularly important given the fact that most paramedics are men who are less likely – compared to women – to take advantage of this resource in coping with traumatic experiences [51].

However, results of the second stage of analyses inform that while planning such preventive and counseling actions, questions “when” or “for whom” (specific for moderator) should be taken into consideration. In our research, answer to those questions is as follows: coping style focused on emotions predict PTSD symptoms intensity in cases of low dispositional optimism. For such individuals there is the need for organizing trainings considering their own style of understanding events, especially adverse ones, and then its modification to “learn how to be optimistic” [52, p. 18]. When planning support measures, it is therefore advisable to consider the individual needs and preferences of particular paramedics.

Conclusions

1. The results suggest that 28% of the studied paramedics may be potentially diagnosed with PTSD.
2. The results of our study show that among coping styles the one focused on emotions is the only significant predictor of the intensity of PTSD symptoms.
3. Dispositional optimism is negative predictor and/or moderator only while considering relation between PTSD general index and coping style focused on emotions.
4. The obtained results reveal a large percentage of unexplained variance of PTSD symptom intensity, which illustrates the need for further analysis in this area. Analyzes of their results should include moderators and mediators of the studied dependencies.
5. In the context of further research, a new research procedure should be developed to facilitate greater interest of paramedics in participating in psychological studies.

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