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Social support and negative and positive outcomes of experienced traumatic events in a group of male emergency service workers

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The paper investigates the relationship between perceived social support in the workplace and both negative (post-traumatic stress disorder (PTSD) symptoms) and positive outcomes (post-traumatic growth) of experienced traumatic events in a group of male emergency service workers. Data of 116 workers representing emergency services (37.1% firefighters, 37.1%, police officers and 30% medical rescue workers) who have experienced a traumatic event in their worksite were analyzed. The range of age of the participants was 21–57 years ($M = 35.27$; $SD = 8.13$). Polish versions of the Impact of Event Scale – Revised and the Post-traumatic Growth Inventory were used to assess the negative and positive outcomes of the experienced event. A perceived social support scale was measured by the scale What support you can count on. The data obtained from the study revealed the negative dependence of social support from supervisors with PTSD symptoms and positive – social support from co-workers with post-traumatic growth. Moreover the results of the study indicate the positive relationship between negative and positive outcomes of experienced traumatic events in the workplace. Perceived social support plays a more important role in gaining benefits from trauma than preventing negative outcomes of the experienced traumatic event. Support from co-workers, compared to support from supervisors, has greater importance.

Keywords: PTSD symptoms; post-traumatic growth; perceived social support; emergency service workers

1. Introduction

1.1. Negative and positive outcomes of experienced trauma

Emergency service workers performing their jobs are often exposed to traumatic situations, especially firefighters. Both foreign and Polish data available in this regard indicate that the percentage of firefighters experiencing traumatic events ranges from 70–90%.[1–5] It is slightly lower, but still high, reaching 60% in the group of emergency medical rescue workers and police officers.[6]

Experiencing a traumatic event usually has negative outcomes, especially as far as mental health is concerned. One of the major consequences of experiencing this type of event is the presence of symptoms that make up post-traumatic stress disorder (PTSD). This disorder is considered to be a delayed and/or prolonged reaction to a highly stressful event associated with life-threatening or serious injury, or a threat to physical integrity. Post-traumatic stress disorder is marked by constant going through and reflecting on the experienced events manifested in flashbacks, thoughts and dreams (intrusion), avoidance of stimuli associated with the trauma and the persistence of increased arousal and general numbness.[6–8] PTSD, depending on the type of experienced events, can concern 2% up to even 50% of those who experienced them.[8]

Only in recent years has it been highlighted that the experience of trauma may entail not only negative, but also positive outcomes. The presence of positive changes after trauma is referred to as post-traumatic growth (PTG). The term was introduced by Richard Tedeschi and Lawrence Calhoun [9] to describe the positive changes that occur as a result of attempts to cope with the aftermath of traumatic events. Three groups of changes constitute post-traumatic growth: positive changes in self-perception, relations to others and philosophy of life.[9–12]

Post-traumatic growth is more than just a return to equilibrium after a traumatic experience. This phenomenon indicates that one goes through some kind of transformation as a result of trauma and achieves a higher than before level of functioning. This does not mean, however, that the experience of trauma is something positive or necessary to make significant changes in your life. Do not expect that anyone who experienced trauma will experience growth or that it is a necessary condition for a full recovery. Tedeschi and Calhoun [13] clearly indicate that it is not the trauma that leads to the development, but the attempts taken by the individual to deal with the crisis.

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Experiencing both negative and positive outcomes of the trauma is the result of co-occurrence of a number of factors, among which the intensity of experienced events, the level of threat to health or life, ways of coping adopted, personal resources of individuals and social support are mentioned.[11]

1.2. The role of social support

Social support can influence experiencing stress, including stress associated with professional roles performance, in three ways.[14,15] First of all, it can directly reduce the level of occupational stress. In other words, employees who are supported in their workplace may perceive it as less stressful. Secondly, social support can enhance well-being, which means that the person experiencing a high level of support in the workplace feels safer and more comfortable. Thirdly, social support can constitute a buffer protecting the individual against the occurrence of negative outcomes of the experienced trauma or reducing their severity. Social support is regarded here as a protective shield for workers to be protected against health deterioration. In other words social support can directly influence stress and wellbeing, as well as moderate the correlation between stress and its outcomes.[15]

The importance of social support as a factor that protects against the negative consequences of stress incurred in the workplace has been shown in several studies.[4,6,15–17] Although the importance of support as a buffer that protects against the harmful outcomes of traumatic experiences has been fairly well documented, there is little research concerning the role of social support in the process of positive changes emerging after trauma.

The positive role of social support in the process of getting benefits from traumatic experiences is indicated, among others, by Harvey et al.[18] They emphasize that the possibility of disclosing one's own reactions to other people is a key factor in the process of dealing with trauma, especially when a loved one is lost. Social support provides the possibility of expressing negative emotions and receiving practical assistance to help in the process of 'working through the trauma'. Tedeschi and Calhoun,[10] drawing attention to it, suggest that the importance of support is due to the fact that the aid granted to a person who has experienced trauma enhances active rumination processes which favor the occurrence of positive changes as the outcome.

In the process of effective coping with trauma, which may lead to the occurrence of positive changes, both received and perceived support is important. The type of support and its source are also important. In the initial stages of coping with trauma, emotional support is more important, while in the subsequent stages the importance of instrumental support increases. The search for support, instrumental or emotional, is associated primarily with noticing new life opportunities and improving relations to others. With respect to the stress occurring in the workplace the importance of support from co-workers and supervisors is highlighted.[16]

Most studies on the correlation of social support with the growth after trauma was performed on people suffering from physical illnesses. The search for social support was significantly correlated with positive changes after trauma in oncological patients [19] and those with rheumatoid arthritis.[20]

One should also pay attention to the studies not confirming the correlation of support and the occurrence of positive changes after trauma. It has not been found in cardiological patients,[21] people suffering from cancer,[22] nor in patients with HIV who have experienced trauma due to Hurricane Katrina in the USA.[23] A weak correlation between social support and the presence of positive changes was also found in the group of children and adolescents who were participants in road accidents.[24]

Linley and Joseph [25] point out that for people experiencing trauma it is not just social support that matters but the satisfaction of social support received as well. Ambiguities occurring in the relationship between social support and the growth after trauma justify the need for further research in this area.

2. Material and methods

2.1. Study design

The aim of this study was to determine the relationship between perceived social support in the workplace and the negative and positive outcomes of traumatic events experienced in a group of emergency service workers. The indicator of negative consequences of traumatic experiences were post-traumatic stress symptoms, and the positive ones – the occurrence of changes that make up post-traumatic growth. A theoretical model of the relationships between variables is presented in Figure 1.

The following research questions were asked:

- Whether and to what extent post-traumatic stress symptoms occur in the examined emergency service workers?

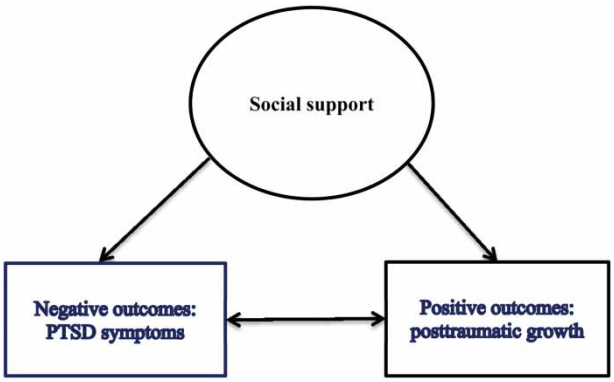

Figure 1. Theoretical model.
Note: PTSD = post-traumatic stress disorder.

- Whether and what kind of positive changes after the trauma the respondent workers perceive in themselves?
- Are age and occupation associated with the severity of negative and positive outcomes of traumatic experiences?
- Is social support perceived in the workplace associated with the severity of PTSD symptoms and post-traumatic growth?
- What sources of support make it possible to predict post-traumatic stress and growth symptoms?
- Are negative and positive consequences of traumatic events correlated?

2.2. *Sampling and measures*

The study group consisted of 200 emergency service workers (men only) from central and south-east Poland, who confirmed the experience of traumatic events in the context of their work as accounted for this subject group. The study was conducted subsequent to supervisors' and the studied subjects' consents. The workers were informed of the goal and of the study and its anonymity. Prior to filling in questionnaires, subjects answered (in writing) a question regarding whether they had experienced a traumatic event related to their profession. 116 (58%) representatives of the emergency services admitted experiencing such an event. This group was the subject of further analyses. It included 43 firefighters (37.1%), 43 police officers (from the prevention department) (37.1%) and 30 medical rescue workers (25.8%). The age of respondents ranged from 21 to 57 years ($M = 35.28$, $SD = 8.13$). Three research instruments were used, namely: Impact of Event Scale to assess the negative outcomes of trauma, Post-traumatic Growth Inventory to assess positive post-traumatic changes and social support scale "What support you can count on" to measure perceived social support in the worksite.

Impact of Event Scale is a Polish adaptation of the revised version of the Impact of Event Scale – R (IES-R) by Weiss and Marmar.[26] The Polish version of the scale,[7] just like the original, contains 22 statements (e.g., 'As soon as I remembered this incident emotions were brought back') and takes into account the three dimensions of PTSD: (a) intrusion – expressing recurring images, dreams, thoughts or perceptual experience associated with the trauma; (b) arousal – characterized by increased vigilance, fear, impatience, difficulty in concentration and (c) avoidance – as evidenced by the efforts to get rid of thoughts, emotions or conversations associated with the trauma. According to the instruction of IES-R, the respondents assess symptoms of an experienced traumatic incident which was work-related, using a 5-point Likert-type scale (0–4). The scale is used to determine the actual, subjective feeling of discomfort associated with the given event. The tool has satisfactory psychometric properties (Cronbach's α coefficient equals .92).

Post-traumatic Growth Inventory – PTGI by Tedeschi and Calhoun,[9] was adapted to Polish conditions by Ogińska-Bulik and Juczyński.[12] The tool consists of 21 statements describing various positive changes occurring as a result of experienced traumatic events (e.g., 'I have changed priorities about what is important in life') which the respondent answers, selecting from *I have not experienced this change* (0 points) to *I have experienced this change to a very great extent* (5 points). The higher the score, the higher the intensity of positive change. The Polish version of the inventory measures four factors contributing to post-traumatic growth. They are: changes in self-perception, changes in relations to others, appreciation of life and spiritual changes. The total score is the sum of these four factors. The tool has satisfactory psychometric properties. Cronbach's α coefficient equals .93 (for each factor from .63 to .87) and is slightly higher than in the case of the original version.

The scale *What support can you count on?* is a shortened version of the Social Support Scale developed by Widerszal-Bazyl and Cieślak.[16] It contains 16 statements about perceived social support in the workplace. Eight items apply to support from supervisors (e.g., 'To what extent can you count on your supervisors helping you in a particular way?') and eight to support from co-workers (e.g., 'To what extent can you count on your co-workers helping you in a particular way?'). For each statement, the respondent answers, using a scale from 1 (*very little*) to 5 (*very much*). The tool has satisfactory psychometric properties. The reliability of both scales is considered high (Cronbach's α coefficient equals .89).

2.3. *Statistical analysis*

Before starting calculations, the normality of distributions of variables included in the study was checked, and then in subsequent steps of results analysis post-traumatic stress symptoms intensity and post-traumatic growth level in the whole group were established depending on age and occupation (t test). Then the relationship between variables (using Pearson correlation coefficients) was established and the sources of support playing a predictive role of negative and positive changes after trauma were examined – using regression analysis. Finally, the existence of a relationship between the negative and positive outcomes of the experienced trauma was checked. Distributions of the results are normal, which authorizes the use of parametric tests.

3. Results

3.1. *Post-traumatic stress symptoms intensity and the level of post-traumatic growth*

The obtained means of posttraumatic stress symptoms (Table 1) do not differ significantly from the results of

Table 1. Means of post-traumatic stress symptoms.

Variables	*M*	*SD*	Range
PTSD symptoms – total	38.32	19.09	0–78
Intrusion	14.46	7.87	0–29
Arousal	11.69	6.77	0–28
Avoidance	12.16	6.24	0–26

Note: PTSD = post-traumatic stress disorder.

Table 2. Means of post-traumatic growth.

Variables	*M*	*SD*	Range
Post-traumatic growth – total	56.14	21.24	5–99
Changes in self-perception	23.75	9.23	0–43
Changes in relations to others	18.21	8.44	0–35
Appreciation of life	9.34	3.94	0–20
Spiritual changes	4.84	2.81	0–10

standardization.[7] However, they are significantly higher than in the study of firefighters from rescue units [5] which amounted to the general – $M = 21.49$ ($p < .01$), intrusion – $M = 6.43$ ($p < .01$), arousal – $M = 6.43$ ($p < .01$) and avoidance – $M = 8.62$ ($p < .01$). There were no statistically significant differences in the severity of individual post-traumatic stress symptoms with average results (total points divided by the number of statements of the given factor): intrusion $M = 1.43$, arousal: $M = 1.67$, avoidance: $M = 1.52$.

Age does not differentiate the total result of the Impact of Event Scale (younger – under 35 years: $M = 37.28$ $SD = 18.64$, older – 35 years and older: $M = 39.73$ $SD = 19.80$) or any of the factors comprising it. Occupation is not associated with the level of PTSD symptoms. The analysis of variance for the total result of the Impact Event Scale showed no difference between the means ($F = 1.95$): firefighters – $M = 33.93$ ($SD = 18.82$), police officers – $M = 39.97$ ($SD = 22.05$), medical rescue workers – $M = 42.23$ ($SD = 13.44$). However significant differences in avoidance ($F = 3.15$, $p < .05$) were found. Medical rescue workers are characterized by significantly higher intensity of avoidance ($M = 14.17$, $SD = 4.33$) compared with firefighters ($M = 10.53$, $SD = 5.84$; $p < .05$).

The percentage of respondents revealing high and low PTSD symptoms was also examined. For this purpose, in accordance with the instructions in the Impact Event Scale, the respondents were divided on the basis of the limit value 1.5 point for a mean result obtained on this scale (mean result is the sum of all points divided by the number of statements). Results exceeding this value indicate at least average, and results below it, low post-traumatic stress symptoms.[7] Among the examined representatives of the emergency services, 45, i.e., 38.8% of the group, present low and 71, i.e., 61.2%, present average or high levels of post-traumatic stress symptoms.

The mean result of post-traumatic growth (Table 2) corresponds to the value of 5 sten, which is an average result. The total result of Post-traumatic Growth Inventory does not differ statistically significantly from the result standardization where it equalled: $M = 61.62$.[12] There were also statistically significant differences with respect to changes in the appreciation of life ($M = 10.00$) and spiritual changes ($M = 4.67$). However, there are small but significant differences in relation to the other two areas of post-traumatic growth. In the group of emergency service workers the level of changes in self-perception is lower than in the standardization group ($M = 26.18$; $p < .05$), similar to the level of changes in relations to others ($M = 20.76$; $p < .02$).

There were no significant differences in the level of individual factors of post-traumatic growth, with means (obtained by dividing the results by the number of the corresponding statements) equalling: factor 1. changes in self-perception – $M = 2.63$, factor 2. changes in relations to others – $M = 2.60$, factor 3. appreciation of life – $M = 3.13$, factor 4. spiritual changes – $M = 2.42$. This means that the examined workers present a similar level of changes for all four analyzed dimensions contributing to the growth after trauma.

Respondents' age did not differentiate the severity of post-traumatic growth. The mean for younger workers equals 55.98 ($SD = 21.31$) and does not differ statistically significantly from the mean of the elderly – 56.37 ($SD = 23.78$). There were also no differences in various dimensions of post-traumatic growth. According to the standards developed for Post-traumatic Growth Inventory [12] percentages of people with different levels of positive post-traumatic changes were established. Among the respondents, in 30 (25.8%) a high level of post-traumatic growth was reported, in 40 (34.5%) an average one and in 46 (39.7%) a low one.

Respondent emergency service workers, regardless of their occupation, present a similar level of positive post-traumatic changes ($F = 1.06$); firefighters: $M = 59.84$ ($SD = 17.42$), police officers: $M = 53.46$ ($SD = 24.42$), medical rescue workers $M = 54.70$ ($SD = 21.31$). There were also no significant differences in the intensity of individual post-traumatic growth factors.

Means for social support obtained in the study group equal: support from supervisors: $M = 22.31$ ($SD = 7.54$), support from co-workers: $M = 26.56$ ($SD = 7.25$). There were no significant differences in the level of support from both sources.

3.2. *The relationships between social support in the workplace and post-traumatic changes*

In order to determine the relationship between perceived social support and negative and positive outcomes of

experienced traumatic events Pearson correlation coefficients were calculated. Due to the lack of significant differences between different groups of respondents (firefighters, police officers, medical rescue workers) analysis was conducted over the entire group of respondents. The correlation coefficients between social support and post-traumatic stress symptoms and post-traumatic growth are presented in Table 3. Perceived social support from supervisors is negatively associated with symptoms of post-traumatic stress, mainly with intrusion and avoidance. In turn, support from co-workers correlates positively with growth after trauma, a stronger correspondence relates to growth after trauma. Significant correlation concerns both the total level of growth and almost all (except for appreciation of life) post-traumatic growth factors. Social support from co-workers correlates more with changes in self-perception and relations to others than with spiritual changes.

To determine the predictive role of social support for negative and positive outcomes of trauma, regression analysis was performed (forward stepwise), introducing both sources of support into the model. The summary of the regression analysis for post-traumatic stress symptoms is presented in Table 4. Perceived support from supervisors turned out to be a predictor of post-traumatic stress symptoms expressed by the total result of the Impact of Event Scale. The negative β ratio indicates that the more support from their superiors emergency service workers may experience, the less intensified posttraumatic stress symptoms will be. It should be noted that this type of support explains a small percentage of the variance of the dependent variable (only 4%).

Table 3. Correlation coefficient between social support and negative and positive outcomes of experienced traumatic events

Variables	Support from supervisors	Support from co-workers
PTSD symptoms – total	–0.19*	–0.10
Intrusion	–0.22*	–0.10
Arousal	–0.08	–0.02
Avoidance	–0.18*	–0.08
Post-traumatic growth – total	0.14	0.30**
Changes in self-perception	0.17	0.30**
Changes in relations to others	0.14	0.32**
Appreciation of life	–0.07	0.11
Spirituals changes	0.19*	0.19*

Note: PTSD = post-traumatic stress disorder; *$p < .05$, **$p < .01$.

Table 4. Predictors of post-traumatic stress symptoms

Variables	β	B	*Error B*	t	p
Support from supervisors	–0.19	–0.46	0.23	–2.01	.05
Constant		48.72	5.49	8.87	.01

Note: $R = .19$; $R^2 = .04$; β = standardized regression coefficient; B = non-standardized regression coefficient.

Table 5. Predictors of post-traumatic growth

Variables	β	B	*Error B*	t	p
Support from co-workers	0.31	0.88	0.26	3.37	.01
Constant		32.73	7.20	4.55	.01

Note: $R = .31$; $R^2 = .10$; β = standardized regression coefficient; B = non-standardized regression coefficient.

Predictors of individual posttraumatic stress symptoms were also sought. Support from supervisors turned out to be a predictor of intrusion ($\beta = –0.23$; $R = .23$, $R^2 = .06$) and arousal ($\beta = –0.19$; $R = .19$; $R^2 = .04$). In both cases, however, it explains the small percentage of the dependent variable variance. None of the analyzed types of support allows one to predict avoidance. Social support from co-workers explained 10% of variance of the dependent variable, being post-traumatic growth. With the increase of support from co-workers the likelihood of positive changes after the experienced trauma increases.

The role of social support for the individual dimensions of post-traumatic growth was also analyzed. The data confirmed the importance of support from co-workers, which turned out to be a predictor of positive changes in self-perception ($\beta = 0.30$, $R = .30$, $R^2 = .09$) and changes in relationships with others ($\beta = 0.32$, $R = .32$, $R^2 = .10$). In the first case, it explains 9%, and the other 10% of the dependent variable variance. None of the analyzed types of support acts as a predictive factor for the other two post-traumatic growth factors, i.e., appreciation of life and spiritual realm.

3.3. *The co-occurrence of negative and positive post-traumatic changes*

It was also examined whether any of the employees surveyed emergency posttraumatic stress symptoms were associated with post-traumatic growth. The relationships between the variables were determined by the correlation coefficients presented in Table 6. The obtained correlation coefficients indicate a positive – albeit weak – correlation of post-traumatic stress symptoms and growth intensity after trauma. The total result of the Impact Event Scale does not correlate with the total result of post-traumatic growth, but only with its two factors, i.e., changes in relation to others and appreciation of life. This means that

Table 6. Correlation coefficient between post-traumatic stress symptoms and post-traumatic growth

PTSD symptoms	PTG – total	PTG factors 1	2	3	4
PTSD symptoms – total	0.17	0.06	0.21*	0.23*	0.16
Intrusion	0.19*	0.06	0.21*	0.26*	0.16
Arousal	0.13	0.02	0.17	0.21*	0.13
Avoidance	0.16	0.08	0.19*	0.16	0.16

Note: PTSD = post-traumatic stress disorder; PTG = post-traumatic growth; * $p < .05$; factors 1 = changes in self-perception; 2 = changes in relations to others; 3 = appreciation of life; 4 = spiritual changes.

with increasing severity of post-traumatic stress the likelihood of positive changes in these two areas making up growth after trauma increases. Intrusion is the symptom of post-traumatic stress which correlates with growth the strongest and it is correlated with both the total result of Post-traumatic Growth Inventory and changes in relation to others and appreciation of life. Arousal correlates only with appreciation of life and avoidance with changes in relation to others.

In addition, the relationship between the examined social support and post-traumatic growth in groups of workers with different severities of PTSD symptoms was checked (i.e., low, and at least average level). Data is presented in Table 7. The correlation coefficients in the table indicate a significant relationship between perceived social support from co-workers and growth after trauma only in the group of employees having revealed at least an average level of post-traumatic stress symptoms. The strongest correlation considers changes in relations to others, the weakest one considers spiritual changes. Such correlations do not take place among those who reported low levels of distress. Furthermore, an important – albeit weaker – correlation between the support from supervisors and positive changes in relation to others and spiritual changes was reported.

4. Discussion

Respondent emergency service workers, having experienced traumatic events in the context of their work, bear negative consequences in the form of post-traumatic stress symptoms. 61.2% of respondents revealed average or high levels of these. This figure appears to be high, particularly in comparison with other research, including a group of firefighters where 18% of respondents revealed high level PTSD.[5] However, a different criterion of division was adopted in those studies (it was 1 *SD* from the mean), distinguishing three groups of subjects, i.e., with low, average and high severity of symptoms. Similarly large percentages of people with high levels of PTSD symptoms among women after mastectomy were revealed [7] as well as in patients after cardiac surgery.[27]

At the same time, however, representatives of the emergency services exposed to traumatic events derive some benefits from these situations. They relate to positive changes in self-perception – individuals see new opportunities and feel an increased sense of personal strength, changes in relations to others, expressed by increased empathy, a sense of closeness with others, appreciation of life – reflected in changes in priorities and enjoying each day and – to a lesser extent – spiritual changes manifested by better understanding of spiritual problems or religious growth.

In nearly 26% of the respondents a high level of post-traumatic growth was reported, in 34.5% – average level and in almost 40% – low level. A similar proportion of people with high levels of growth was obtained in another group of firefighters.[28] It is, however, lower than in the group of women who experienced breast resection [29] or in patients who have undergone cardiac surgery.[27] This suggests that the experience of traumatic events in connection with one's professional role is associated with a lower level of growth than the struggle with a somatic disease. This can be explained by the fact that the occurrence of a disease is unexpected, surprising, and the occurrence of traumatic events while being a firefighter, police officer or medical rescue worker is quite common and representatives of these professions are ready for this type of event

Table 7. The relationship between social support and post-traumatic growth in a group of employees of low and average/high level PTSD symptoms

Variables	Low level of PTSD symptoms: Support from supervisors	Low level of PTSD symptoms: Support from co-workers	Average/high level of PTSD symptoms: Support from supervisors	Average/high level of PTSD symptoms: Support from co-workers
Post-traumatic growth – total	0.05	0.15	0.22	0.39***
Changes in self-perception	0.17	0.18	0.19	0.37**
Changes in relations to others	–0.05	0.11	0.27*	0.42***
Appreciation of life	–0.02	0.09	–0.05	0.16
Spiritual changes	–0.01	0.11	0.31**	0.23*

Note: PTSD = post-traumatic stress disorder; *$p < .05$; **$p < .01$; ***$p < .001$.

(or at least they should be). They showed a different role of the perceived social support sources, occurring in the workplace for negative and positive outcomes of experienced trauma. Support from supervisors is negatively correlated with symptoms of post-traumatic stress, mainly with intrusion and avoidance, and support from co-workers correlated positively with post-traumatic growth. Stronger correlation was observed for growth. This means that support from supervisors acts as a buffer, reducing the severity of post-traumatic stress symptoms, primarily intrusion and arousal. However, the support provided by co-workers promotes health by encouraging positive growth changes, particularly in self-perception and relations with others. It should be noted that the perceived support from co-workers enhances growth after trauma only in the case of average and high severity of PTSD symptoms. It does not serve such a role at low severity distress. Perceived social support was a factor more correlated with positive than negative outcomes of experienced trauma. This is particularly important in the context of the trend of positive psychology stressed in the last few years, emphasizing positive aspects of human functioning.

The results of the study pointed to the coexistence of negative and positive outcomes of experienced trauma in the group of emergency service workers. Positive correlation between post-traumatic stress symptoms (measured with the Impact of Event Scale – Revised), and all dimensions of post-traumatic growth (measured with PTGI) was also found among American police officers.[30] The results are largely consistent with the results obtained in the studies of people who have experienced other types of trauma. Positive correlation between distress and increased growth after trauma was observed in victims of road traffic accidents,[31] victims of a terrorist attack,[32] prisoners of war in Israel,[33] as well as in Japanese students who have experienced different types of trauma.[34] The confirmation of the correlation between negative and positive outcomes of experienced trauma can be found in Polish studies as well.[24,27] It should be noted, however, that there are also studies having shown negative correlation between support and growth after trauma [36] and those that did not confirm correlation between variables.[37,38] This shows the need for further research in this area.

It is also important to pay attention to the limitations of the study. These relate to, among others, the tools used. The Impact of Event Scale measures only the symptoms of post-traumatic stress and not PTSD as approached in clinical studies. The scale used in the study to measure social support estimates perceived support only and does not take into account the types of support. For the assessment of positive changes, measured by Post-traumatic Growth Inventory, one cannot exclude the impact of social approval, which is the tendency of respondents to present themselves in a better light, and assign changes, even if they have not occurred. In the study it was not analyzed what traumatic events were experienced by the respondent rescue service workers in the context of their work, or how much time had elapsed since the events. In addition, the study was cross-sectional in nature, which does not allow one to state causal connection. This could mean that support determines both negative and positive consequences of trauma, but it can also be the result of them. Effective coping with a traumatic event may lead to increased support. Ineffective coping with trauma may contribute to the reduction and deterioration of the phenomenon of social support, as Kaniasty points out.[39]

Despite the aforementioned limitations, the importance of conducted research and obtained results has to be emphasized. They apply to popular trend, that is positive psychology, which focus on the 'strong' side of man. They have implemented novelties in the area of issues concerning the effects of experienced traumatic events, and can be used in practice. Social support, regardless of its source, seems essential in the process of dealing with trauma. In the case of emergency service workers having experienced traumatic events in relation to their professional role, in the first stage of the struggle with trauma, support from superiors seems more desirable. It can reduce the symptoms of distress. In the next stages of coping support from co-workers becomes significant, it increases the chances for post-traumatic growth to occur.

In future research it would be worthwhile to include other sources of support, including the family. It would be worthwhile to check the importance of different types of support (emotional, instrumental), especially for the positive outcomes of the experienced events and determine what the role of social support in the relation trauma–outcomes is, taking into account strategies for dealing with the experienced events. It seems important to analyze the expectations of an individual concerning the need for social support. Not all people who experience stress await help. It depends, among others, on the type of stressful situation, but also on individual characteristics, mostly related to one's personality, which, irrespective of support, may affect the outcomes of experienced events. This seems to be important in the context of the theory of support – stress – matching.[40]

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