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Spirituality and the negative and positive effects of traumatic experiences in a group of emergency service workers

Abstract:

Objective: Studies concerning the importance of spirituality on the negative and positive effects of traumatic experiences are very rare. Our study attempts to determine the role of spirituality in post-traumatic stress disorders, approached as a negative result of facing traumatic events, and profiting from such experiences in the form of posttraumatic growth.

Method: The study covered 116 emergency service workers (only men), including 43 firefighters (37.1%), 43 police officers (37.1%) and 30 paramedics (25.8%), who experienced a traumatic event in their line of work. Those surveyed were between 21 and 57 years of age ($M=35.28$; $SD=8.13$). The Impact of Event Scale was used to assess the negative effects of traumatic experience, and Posttraumatic Growth Inventory for assessing the positive effects. Spirituality was measured using the Self-description Questionnaire.

Results: 61.2% of the workers displayed at least moderate symptoms of posttraumatic stress disorder, whereas 38.8% displayed low intensity symptoms. Taking into consideration the positive effects of experienced traumatic events, it was discovered that almost 40% of those surveyed displayed low levels of posttraumatic growth, 34.5% average and 25.8% high. Correlation analysis was been performed to establish the relation between spirituality and posttraumatic stress and posttraumatic growth. Posttraumatic growth predictors were determined.

Conclusions: Study results show that spirituality is not related to the intensification of posttraumatic stress symptoms, whereas it contributes to positive posttraumatic changes. Among different aspects of spirituality, harmony plays a major role.

Keywords:

spirituality, posttraumatic stress, posttraumatic growth.

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Streszczenie:

Cel badań: Badania dotyczące znaczenia duchowości w pojawianiu się negatywnych, a także pozytywnych skutków doświadczeń traumatycznych należą do rzadkości. W badaniach podjęto próbę ustalenia roli duchowości w pojawianiu się objawów stresu pourazowego, traktowanych jako negatywna konsekwencja zmagania się z wydarzeniami traumatycznymi, oraz w czerpaniu korzyści z tego wydarzenia, w postaci potraumatycznego rozwoju.

Metoda: Badaniami objęto 116 pracowników służb ratowniczych (wyłącznie mężczyzn), w tym 43 strażaków (37.1%), 43 policjantów (37.1%) oraz 30 ratowników medycznych (25.8%), którzy doświadczyli wydarzenia traumatycznego w związku z wykonywaną pracą. Wiek badanych wahał się od 21 do 57 lat ($M=35.28$; $SD=8.13$). Do oceny negatywnych skutków doświadczanych zdarzeń traumatycznych wykorzystano *Skalę Wpływu Zdarzeń*, pozytywnych – *Inwentarz Potraumatycznego Rozwoju*. Pomiaru duchowości dokonano za pomocą *Kwestionariusza Samoopisu*.

Wyniki: Wśród przedstawicieli służb ratowniczych 61.2% badanych, ujawniło co najmniej umiarkowane nasilenie objawów stresu pourazowego, zaś 38.8% wykazuje ich niskie nasilenie. Biorąc pod uwagę pozytywne skutki doświadczanych zdarzeń traumatycznych ujawniono, że blisko 40% badanych wykazuje niski poziom wzrostu po traumie, 34.5% – przeciętny i 25.8% wysoki. Przeprowadzono analizę korelacyjną w celu ustalenia zależności pomiędzy duchowością a stresem pourazowym i potraumatycznym rozwojem. Ustalono predyktory potraumatycznego rozwoju.

Wnioski: Wyniki badań wskazały, że duchowość nie wiąże się z nasileniem objawów stresu pourazowego, sprzyja natomiast pojawianiu się pozytywnych zmian potraumatycznych. Wśród wymiarów duchowości szczególną rolę pełni harmonia.

Słowa kluczowe:

duchowość, stres pourazowy, potraumatyczny wzrost

Introduction

Due to the profile of their work people engaged with emergency services, especially firefighters, paramedics or police officers are particularly exposed to traumatic event. The available literature shows that the percentage of people exposed to stressors ranges from 3.6% to 75% (Heitzman, 2011). Firefighters are most exposed to such events (Cornell et al. 1999; Koniarek, Dudek, 2001; Ogińska-Bulik, Langer, 2007; Ogińska-Bulik, Kaflik-Pieróg, 2013). Also police officers and paramedics display a high percentage of traumatic events (Dudek, 2003).

Without a doubt, a traumatic event brings many negative consequences, mainly concerning mental health (Dudek, 2003). Special attention should be paid to PTSD (posttraumatic stress-disorder). Diagnosis of PTSD (Juczyński, Ogińska-Bulik, 2009; Lis-Turlejska, 2009) is on one hand related to an occurrence of a traumatic event and on the other hand to three groups of symptoms. These groups are intrusion, i.e. re-experiencing the event in the form of memories and dreams; withdrawal resulting in decreased general reactivity, avoidance of stimuli, emotions or conversations related to the trauma; psychophysiological arousal resulting in problems with sleep, anger outbursts, attention deficiency and increased vigilance.

Typical PTSD symptoms that continue for at least a month were recorded with almost 5% of firefighters (Koniarek, Dudek, 2001) and 4% of police officers (Dudek, 2003).

However, one must distinguish a clinical diagnosis of posttraumatic stress, which enables one to determine whether PTSD exists or not, from PTSD symptoms measured using self-descriptive questionnaires. Studies by Ogińska-Bulik and Langer (2007), performed on a group of firefighters from firefighting and rescue teams using the Impact of Event Scale to measure PTSD symptoms, have shown that 18% of firefighters achieve high scores.

During recent years researchers and practitioners are more drawn towards the positive effects of traumatic experiences as posttraumatic growth. The term has been introduced into the literature by Tedeschi and Calhoun (1996) in reference to positive changes in self-perception, relations with others and appreciation of life, which can appear as a result of attempts to deal with the experienced traumatic event². This means that as a result of trauma, some people become stronger, more mature, they discover that they can cope better and survive in extreme circumstances. One must stress that posttraumatic growth is something more than just a return to equilibrium after a traumatic experience. This phenomena indicates that a person goes through a type of transformation and reaches a higher level of existence than before the trauma.

Emerging posttraumatic changes treated as a consequence of effectively handling the traumatic experience do not, however, exclude negative results. Furthermore, such negativity as PTSD symptoms, seems almost necessary for adapting to new circumstances and contributing to growth changes. This means that individuals experiencing growth can also display distress and a lowered sense of well-being (Ogińska-Bulik, 2013a).

Among the determinants of posttraumatic growth, apart from factors related to the trauma itself – amongst which trauma intensity plays a special role – particular attention should be paid to stress coping strategies and different social and personal resources (Ogińska-Bulik, Juczyński, 2010; Ogińska-Bulik, Juczyński, 2010a; Ogińska-Bulik, 2012; Ogińska-Bulik, 2013a; Heszen, 2013). One resource that seems to be related to the emergence of growth changes is spirituality.

Spirituality is understood in different ways, depending on the approach or branch of philosophy (Ostrowski, 2010). This term is similar to the noetic dimension of personality in psychology (Popielski, 2009). It also refers to Koziński's transgression construct (Koziński, 1987) or Antonovsky's sense of coherence (Antonovsky, 1995).

² Other posttraumatic growth concepts are also known. They are described in the book by N. Ogińska-Bulik titled "Pozytywne skutki doświadczeń traumatycznych czyli kiedy łzy zamieniają się w perły" ("Positive effects of traumatic experiences, that is, when tears turn into pearls"), Difin, Warszawa, 2013.

Heszen (2010, 2013) points out two main trends in understanding spirituality. The first one connects this term to religion. The second one assumes that spirituality and religion are two rather separate constructs, yet somehow connected to each other. Spirituality is related to individual and personal experience, whereas religion is treated as a social and institutionalized phenomena. The central concept for religion is transcendence, that is, moving beyond *oneself*. Irrespective of how spirituality is understood, it is always stressed that spirituality is a complex and multidimensional construct. In psychological research spirituality is treated as a human attribute. At the same time this means giving up the ontological assumption that the source of spirituality is supernatural. According to Juczyński (2010), treating spirituality as an attribute enables one to be active and to understand life's meaning and its sense, to experience the freedom and responsibility for taken decisions.

Available data concerning the relation between spirituality/religiousness and negative traumatic effects do not provide a clear picture of dependencies between variables (Chen, Koenig, 2006). The majority of studies appear to indicate that spirituality protects against developing posttraumatic stress symptoms or at least lowering their intensity (Krejci et al., 2004; Watlington, Murphy, 2006). On the other hand it is pointed out that spirituality/religiousness can contribute to pathologies following a traumatic experience (Hassouneh-Phillips, 2003). Traumatic experiences can also lower the sense of religiousness (Fontana, Rosenheck, 2004).

Heszen (2010), indicating a positive relation between spirituality and health, stresses that applying coping strategies is important. Spirituality favors coping with meaning, and this form of coping is treated as the basic source of positive emotions that can coexist with stressful situations (Folkman, Moskowitz, 2006; Heszen, 2010). Coping through finding sense in suffering in a situation where one is struggling with chronic disease, especially with poor prognosis, can be the only form of coping left (Heszen, 2010, 2013). Studies confirm the positive relation of spirituality with adaptive coping strategies and its negative consequence – however small – with maladaptive strategies (Heszen, 2008), and also spirituality's role in lowering the intensity of depression and anxiety (Heszen-Niejodek, 2003).

Spirituality, treated as one's resource or disposition towards coping through referring to religion can have an important impact for positive changes after a traumatic experience. This outcome results from studies carried out on a group of young adults, who experienced trauma (Calhoun et al., 2000). A positive relation between spirituality/religiousness was also shown in studies carried out on a group of adults, which has shown forgiveness playing a strong role (Schultz et al., 2010). Furthermore, the relation between forgiveness and posttraumatic growth was mediated by the level of spirituality.

Results of studies carried out on a group of people who experienced losing someone close, are an indirect proof of the relationship between spirituality and positive post-traumatic changes. They indicate a positive relation between posttraumatic growth and noodynamics, that is, between spiritual dynamics and a sense of coherence, especially the aspect of meaningfulness (Felcyn-Koczewska, Ogińska-Bulik, 2012) or sense of life (Ogińska-Bulik, 2013a).

One should add that spirituality/religiousness is related to a person's individual resources that become activated during a crisis, above all hope and optimism, which can additionally contribute to growth changes.

Purpose and method of the study

The purpose of our study is to establish the role of spirituality in the occurrence of negative (posttraumatic stress symptoms) and positive (posttraumatic growth) effects of experienced traumatic events in a group of emergency service workers. The following research questions were asked:

- To what level do the emergency services workers experience posttraumatic stress symptoms?
- What types of positive changes do the studied workers see in themselves?
- Do age and occupation have any impact on the level of positive and negative effects of traumatic experiences?
- Is spirituality related to intensification of posttraumatic stress and posttraumatic growth?
- Which spirituality aspects enable one to predict negative and positive consequences of a traumatic event?

Our study covered 200 employees representing emergency services (from the Podkarpacie, Łódź and Warsaw regions)³. Prior to the study all those surveyed and their superiors consented. Our purpose was explained to the participants and they were informed about the anonymity of the study. Before filling out the forms, the participants answered the question (in writing) as to whether they had experienced a work-related traumatic event. One hundred and sixteen workers admitted that such an event had taken place. This group, constituting 58% of all studied individuals, was the basis for further research. The group consisted only of men, including 43 firefighters (37.1%), 43 police officers (37.1%) and 30 paramedics (25.8%). The participants of the study were between 21 and 57 years of age ($M=35.28$; $SD=8.13$).

³ Survey conducted by a participant of MA seminar, Bartłomiej Dziuba.

The Impact of Event Scale was used to assess the negative effects of the traumatic experience, and Posttraumatic Growth Inventory for assessing the positive effects. Spirituality was measured using the Self-description Questionnaire.

The Impact of Event Scale is a Polish adaptation of the revised Impact of Event Scale (IES-R), by Weiss and Marmar, developed by Juczyński and Ogińska-Bulik (2009). It contains 22 statements and takes into consideration three aspects of PTSD: 1. Intrusion, in the form of re-occurring images, dreams, thoughts or perceptive sensations related to trauma; 2. hyperarousal in the form of increased vigilance, anxiety, impatience, attention deficiencies and 3. avoidance, in the form of efforts to move away from thoughts, emotions or conversations related to the trauma. According to the instructions, the person must first describe a negative event (in this case an event related to his line of work) and then assess the symptoms using a 5-degree Likert-type (0–4) scale. The purpose of this scale is to determine the subjective sense of discomfort related to the specific event that occurred. This tool has good psychometric parameters. The Cronbach's *alfa* index is 0.92 for the whole scale (for individual factors between 0.78 and 0.89).

Posttraumatic Growth Inventory – PTGI by Tedeschi and Calhoun (1996) has been adapted to Polish conditions by Ogińska-Bulik and Juczyński (2010). The tool consists of 21 statements describing different positive changes following an experienced traumatic event (for example: “I changed my priorities about what is important in life”), to which a given individual must relate, by selecting answers from *I did not experience this change as a result of my crisis* (0 points) to *I experienced this change to a very great degree as a result of my crisis* (5 points). The higher the score the greater the change intensity. With the Polish version the Inventory assesses four aspects comprising post-traumatic growth: changes in self-perception, changes in relations with others, greater appreciation of life and spiritual changes). The overall result is the sum of all four afore-said factors. The tool achieved satisfactory psychometric properties. Cronbach's *alfa* index is 0.93 (for individual factors between 0.63 and 0.87), and is somewhat higher than in the original version.

The Self-description Questionnaire by Metlak, Heszen-Niejodek and Gruszczyńska (Heszen-Niejodek, Gruszczyńska, 2004) was used to measure spirituality. This is a 20-question questionnaire scored between 1 – definitely not, and 5 – definitely yes. The questionnaire measures three aspects of spirituality: 1) religiousness (seven questions), which is the level of religious practices in everyday life, 2) ethical sensitivity (seven questions), concerning the ethical attitude and 3) harmony (six questions), expressing a sense of belonging to the world, seeing the world as friendly, feeling internal peace and happiness. The tool achieved satisfactory psychometric properties. The higher the index the higher

the level of spirituality sensed by the subjects. Cronbach's *alfa* index is 0.91 (for individual factors between 0.81 and 0.90).

Study results

Once distribution normality of the analyzed variables was checked – by the Kolmogorov-Smirnov test: for the overall result of The Impact of Event Scale $d=0.07$, $p>0.20$; kurtosis= -0.87 , skewness= -0.00 ; for the Posttraumatic Growth Inventory $d=0.07$, $p>0.2$; kurtosis= -0.39 , skewness= -0.48 , for the Self-description Questionnaire $d=0.08$ $p>0.20$, kurtosis= 1.18 , skewness= -0.67) – we calculated the mean values and their standard deviations. Age and professional role were also taken into consideration. In respect to negative and positive effects of experienced traumatic events. Student's t-test and test F of analysis of variance (one-way Anova) were used to establish the differences between averages. After that we determined relations between variables, using Pearson correlation coefficients, and checked which spirituality aspects (explanatory variable) are predictors for posttraumatic stress and posttraumatic growth symptoms, treated as dependent variables. Regression analysis (forward stepwise) was conducted to establish the predictors.

Negative and positive effects of traumatic events⁴

Table 1. Mean values of PTSD and posttraumatic growth symptoms.

	M	SD	Min	Max
Posttraumatic stress symptoms – total	38.32	19.09	0	78
1. Intrusion	14.46	7.87	0	29
2. Hyperarousal	11.69	6.77	0	28
3. Avoidance	12.16	6.24	0	26
Posttraumatic growth – total	56.14	21.24	5	99
Factor 1. Changes in self-perception	23.75	9.23	0	43
Factor 2. Changes in relations with others	18.21	8.44	0	35
Factor 3. Appreciation of life	9.34	3.94	0	20
Factor 4. Spiritual changes	4.84	2.81	0	10

M – mean; SD – standard deviation; Min – minimum value; Max – maximum value.

The mean values of posttraumatic stress do not deviate from normalization studies (Juczyński, Ogińska-Bulik, 2009). Assuming that 1.5 is the limit value for PTSD, and

⁴ The results of negative and positive effects of traumatic experiences in this group were also described in N. Ogińska-Bulik's text (2013b). Negative and positive effects of traumatic experiences in a group of emergency service workers – the role of personal and social resources, *Medycyna Pracy [Occupational Medicine]*, 64(4), 463–472.

recommended for the IES-R – for this purpose the received overall result of IES-R was divided by the number of statements comprising it – 71 people, constituting 61.2% of the group, display at least moderate intensity of posttraumatic stress symptoms, whereas 45 people (38.8%) display low intensity.

Age does not differentiate the general PTSD result: younger (up to 35 years of age; $n=67$) – $M=37.28$, $SD=18.64$; older (35 years of age and more, $n=49$) – $M=39.73$; $SD=19.80$), nor any of its components. Correlation analysis has confirmed the lack of any relationship between age and intensity of posttraumatic stress disorder (for the overall result of The Impact of Event Scale $r=0.06$, intrusion $r=-0.01$, hyperarousal $r=0.04$, avoidance $r=0.15$).

The professional role also is not related to the intensified PTSD symptoms. An analysis of variation for the general result of The Impact of Event Scale did not show significant differences between means ($F=1.95$; $df=2$): firefighters – $M=33.93$ ($SD=18.82$), police officers – $M=39.97$ ($SD=22.05$), paramedics – $M=42.23$ ($SD=13.44$). However, significant differences were detected in respect to avoidance ($F=3.15$; $df=2$; $p<0.05$). Paramedics displayed a significantly higher avoidance intensity ($M=14.17$; $SD=4.33$) in comparison with firefighters ($M=10.53$; $SD=5.84$; $p<0.05$).

The mean value of posttraumatic growth achieved by the workers corresponds to 5 sten; therefore it is an average result not significantly different from results achieved with normalization studies (Ogińska-Bulik, Juczyński, 2010). 46 (39.7%) of workers display a low level of posttraumatic growth, 40 (34.5%) display average, and 30 (25.8%) display high.

There were significant differences in the levels of posttraumatic growth factors. The average values (obtained by dividing individual growth aspects by the number of corresponding statements) are 1. changes in self-perception – $M=2.63$ ($SD=1.02$); 2. changes in relations with others – $M=2.60$ ($SD=1.20$); 3. appreciation of life – $M=3.13$ ($SD=1.31$); 4. spiritual changes – $M=2.42$ ($SD=1.41$). The group represents a higher level of appreciation of life than other analyzed posttraumatic growth factors (factor 1–3 $t=-4.58$, $p<0.0$, factor 2–3 $t=-5.22$ $p<0.001$, factor 3–4 $t=-5.46$ $p<0.001$).

The age of the men does not differentiate posttraumatic growth intensity. The mean value for younger emergency service workers is 55.98 ($SD=21.31$) and statistically is not significantly different ($t=-0.09$) from the average obtained by older workers: $M=56.37$ ($SD=23.78$). No differences in individual posttraumatic growth aspects were stated either. Correlation analysis confirmed the lack of any relationship between age and intensity of posttraumatic growth (for the overall result of Posttraumatic Growth Inventory $r=0.05$, factor 1 $r=0.11$, factor 2 $r=0.06$, factor 3 $r=0.11$, factor 4 $r=0.09$).

We also checked whether the occupation (firefighter, police officer, paramedic) is related to the level of positive posttraumatic changes. The men, regardless of their occupation, represent similar levels of positive changes after experiencing a traumatic event ($F=1.06$; $df=2$); firefighters: $M=59.84$ ($SD=17.42$), police officers: $M=53.46$ ($SD=24.42$), paramedics: $M=54.70$ ($SD=21.31$). No significant differences in posttraumatic growth intensity were stated either.

The mean values obtained for measuring spirituality are: for the general index: $M=72.18$ ($SD=12.97$), religiousness: $M=24.92$ ($SD=6.38$), ethical values: $M=26.70$ ($SD=4.79$), harmony: $M=20.55$ ($SD=4.48$).

Relation between spirituality and positive and negative effects of traumatic experiences

The relation between spirituality and negative and positive effects of traumatic events was established using correlation coefficients, specified in Table 2 and 3.

Table 2. *Correlation coefficients between spirituality and PTSD symptoms.*

	PTSD – total	Intrusion	Hyperarousal	Avoidance
Spirituality – total	0.01	-0.05	0.01	-0.03
Religiousness	0.01	-0.05	0.04	0.02
Ethical sensitivity	-0.03	-0.01	0.02	-0.01
Harmony	-0.08	-0.05	-0.07	-0.07

The correlation coefficients presented in table 2 indicate a lack of correlation between spirituality and posttraumatic stress symptoms. No component of spirituality correlates in any statistically significant way with PTSD symptoms.

Table 3. *Correlation coefficients between spirituality and posttraumatic growth.*

	PTGI	F 1	F 2	F 3	F 4
Spirituality – total	0.40***	0.26**	0.45***	0.22*	0.54***
Religiousness	0.35***	0.20*	0.40***	0.20*	0.55***
Ethical sensitivity	0.23*	0.15	0.25**	0.12	0.29**
Harmony	0.41***	0.30***	0.46***	0.22*	0.45***

Designations:

PTGI – Posttraumatic Growth Inventory total result

Factor 1. Changes in self-perception

Factor 2. Changes in relations with others

Factor 3. Appreciation of life

Factor 4. Spiritual changes

*** $p<0.001$, ** $p<0.01$, * $p<0.05$

The results indicate a statistically significant positive relation between spirituality and posttraumatic growth. This applies to all aspects comprising the Posttraumatic

Growth Inventory. Spiritual changes exhibit the strongest correlation with spirituality, which is understandable. A rather strong relation exists also in relations with others, whereas there is a weaker one with the changes in self-perception and appreciation of life. From all aspects comprising spirituality, harmony and religiousness proved to have the strongest relation with growth.

Our next step was to investigate which spirituality aspect performs a significant role in predicting negative and positive effects of experienced traumatic events. For this purpose we used regression analysis (forward stepwise). Both the general and individual results of the Posttraumatic Growth Inventory were considered as explained variables in regression analysis. Only final models were taken into account for presentation of results. Collinearity of the explanatory variables (which are spirituality factors) was also examined. The tolerance coefficients (harmony=0.756, religiousness=0.756, ethical sensitivity=0.608), as well as the variance inflation factor VIF (harmony=1.322, religiousness=1.322, ethical sensitivity=1.643) indicate a weak association between the variables.

No spirituality factor has a predictive role for posttraumatic stress symptoms. This applies both to the general result, measured using the Impact of Event Scale, and to individual symptoms; whereas spirituality allows one to predict positive posttraumatic changes (Table 4).

Table 4. *Posttraumatic growth predictors.*

	Beta	B	Error B	t	p
Harmony	0.32	1.49	0.45	3.26	0.001
Religiousness	0.20	0.65	0.32	2.05	0.05
Constance		9.05	9.03	1.00	ni

R=0.45; adjusted R²=0.21

Designation:

R – correlation coefficient

R² – determination coefficient

Beta – standardized regression coefficients

B – non-standardized regression coefficients

Error B – non-standardized regression coefficients error

t – value of test t

p – significance level

Two aspects comprising spirituality, namely harmony and religiousness, proved to be predictors of posttraumatic growth for the studies groups. Both support positive changes after experienced trauma. Harmony has a stronger impact, as it explains 17% of variance of dependent variable.

In searching for predictors of individual growth, it has been determined that harmony enables one to predict positive changes in self-perception (*Beta*=0.31), explaining 10%

of dependent variable variance. For relations with others, two spirituality factors proved to be predictors of positive changes – harmony ($Beta=0.35$), which predicts 21% of changes and ($Beta=0.30$), which explains 4% of dependent variable variance. Whereas greater appreciation of life is explained by harmony ($Beta=0.16$) – however, to a small extent of only 5%. Predictors of positive changes of spirituality proved to be religiousness ($Beta=0.45$), explaining 29% and harmony ($Beta=0.29$) explaining 5% of the dependent variable variance.

We have also checked whether there is a correlation between posttraumatic stress disorder intensity and posttraumatic positive changes. Correlation coefficients showed that the overall result of The Impact of Event Scale is not associated in a statistically significant way with the overall Posttraumatic Growth Inventory result ($r=0.17$). However, there were found some weak correlations between different factors of analyzed variables. Intrusion was positively correlated with changes in the relationship with others ($r=0.21$, $p<0.05$) and appreciation of life ($r=0.26$, $p<0.05$). Hyperarousal was positively associated with appreciation of life ($r=0.21$, $p<0.05$). In contrast, avoidance did not correlate with any posttraumatic growth factors.

Summary

In the studied group of emergency service workers 61.2% displayed at least moderate posttraumatic stress intensification symptoms, whereas 38.8% displayed a low intensification level. However, one should stress that this is not a clinical diagnosis of PTSD. Yet, our results testify to high stresogenic properties in their line of work. Taking into consideration positive effects of experienced trauma, it should be pointed out that almost 40% displayed a low posttraumatic growth level (34.5% – average and 25.8% high).

Spirituality proved to be related only with positive effects of experienced traumatic events. It has a positive connection with all posttraumatic growth aspects, with strongest relations, obviously, to positive changes in the spiritual sphere, and weakest to the appreciation of life. Among the aspects of spirituality, the most important role must be attributed to harmony, whereas the role of religiousness is somewhat smaller. Harmony, expressing internal peace and happiness, and having a place in the world and seeing the world as a friendly place, enables one to predict positive changes in all posttraumatic growth aspects, mainly in spirituality and relations with others. A similar significance, yet somewhat smaller, is attributed to religiousness, expressing the tendency to religious practices in everyday life, which mainly supports positive changes in the spiritual sphere.

A positive impact of spirituality/religiousness on posttraumatic growth can result from coping strategies related to the third coping function, which is concentration on meaning. Among the strategies performing this function – used usually when struggling with chronic

somatic disease – special importance must be attributed to positive redefinition of values and religious coping. The role of these strategies on positive posttraumatic changes has been shown in many studies (Calhoun et al., 2000; Schultz et al., 2010; McIntosh et al., 2011; Ogińska-Bulik, 2013a). Confirming the importance of spirituality in posttraumatic growth would require further studies conducted on other groups, also encompassing women.

No aspects comprising spirituality enable prediction of posttraumatic stress symptoms. This suggests that spirituality treated as a subjective value, plays a somewhat different role in respect to other personal and social resources. Studies on a group of workers exposed to professional stress (Ogińska-Bulik, 2006) have shown that such resources as sense of coherence, self-efficacy, life optimism, emotional intelligence, and social support protect against negatively experienced stress. So, why isn't spirituality connected to posttraumatic stress symptoms? This can be related to the type of experienced events, for which the workers are, or at least should be prepared. These situations are usually controllable. And this means that emergency service workers faced with them, will first of all undertake active coping strategies aimed at handling the situation, and not escaping from stress towards God, religion, and so on. Presumably this is also related to gender, as men reach towards religion to cope with stress decisively less often. One could assume that when emergency service workers confront traumatic experiences in their line of work, a more important role will be attributed to other resources, mainly to the feeling of self-efficacy, resiliency and also received social support, especially from superiors (Ogińska-Bulik, 2013b).

One should stress the need for differentiating such concepts as spirituality and religiousness, which are most often associated with each other. This seems important in the study results indicating an ambiguous relation between them and negative consequences of trauma. A study by McIntosh and others (2011) shows that in case of intrusion, religiousness played the weaker predictive role, whereas spirituality proved to be the stronger predictor of this symptom.

One should also point out so-called negative spirituality or negative religious coping. This type of spirituality/religiousness is related to dissatisfaction with God, attributing blame or responsibility for what has transpired to God. Such spirituality can result in persistent PTSD symptoms. As shown by Wortmann and others (2011), spiritual struggle, relative to negative convictions relating to God were additionally related to strengthening PTSD symptoms.

Summarizing, we should point out the limitations of our studies. The studies were cross-sectional, which does not permit statements concerning the existence of cause and effect relationships. Therefore, it cannot be unequivocally stated that spirituality supports positive posttraumatic changes. The reverse impact is also possible, namely that effective coping with traumatic experience, in the form of posttraumatic growth, increases the spirituality level. One

must also pay attention to the possibility of a common source for the variance of spirituality and posttraumatic growth (one posttraumatic growth aspect is positive changes in respect to spirituality). Furthermore, the assessed negative and positive effects of experienced trauma were conducted on a self-descriptive basis. Thus, one cannot exclude the impact of changing social approval, that is, the subjects' urge to present themselves in better light, especially in respect to posttraumatic growth. The study also does not take into consideration the importance of experienced traumatic event, nor the time that passed since its occurrence.

Despite the limitation specified above, our studies are significant and their results must be stressed. On one hand they contribute new content related to experienced trauma, on the other hand they can be used in practical applications. They suggest that forming a feeling of internal peace, satisfaction, belonging to the world and perceiving it as a friendly place – with other people who have experienced trauma – can favor benefiting from trauma, especially in the spiritual sphere and in relations with others.

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