

FROM NEGATIVE TO POSITIVE EFFECTS OF SECONDARY EXPOSURE TO TRAUMA – THE MEDIATING ROLE OF COGNITIVE COPING STRATEGIES

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ABSTRACT

Background: Professionals working with trauma victims can experience both negative and positive effects following exposure to secondary trauma. The aim of the study was to determine the relationship between secondary traumatic stress (STS), secondary post-traumatic growth (SPTG) and cognitive coping strategies and to establish the mediating role of cognitive coping strategies in the relationship between STS and SPTG. **Material and Methods:** A group of 500 professionals working with trauma survivors were surveyed. The *Secondary Traumatic Stress Inventory*, the *Secondary Posttraumatic Growth Inventory* and the *Cognitive Processing of Trauma Scale* was used. **Results:** The results indicated that 29% of professionals demonstrate a high intensity of STS, and nearly 34% exhibit a high level of SPTG. Denial and regret were positively correlated with STS; positive cognitive restructuring, resolution/acceptance and downward comparison were positively related to SPTG. Two cognitive coping strategies, i.e., positive cognitive restructuring and downward comparison, were found to act as mediators in the relationship between STS and SPTG. **Conclusions:** Understanding the effects of secondary exposure to trauma and the coping responses of professionals working with trauma survivors will support the development of prevention and intervention actions aimed at protecting them from the deleterious impact of exposure to secondary trauma at work and promoting secondary posttraumatic growth. *Med Pr Work Health Saf.* 2023;74(6):449–60.

Key words: stress, professionals, exposure to secondary trauma, secondary posttraumatic stress, secondary posttraumatic growth, cognitive coping strategies

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INTRODUCTION

Professionals working with people experiencing traumatic experiences are themselves exposed to various types of stressors as part of their professional life, including the secondary effects of trauma. On account of professionals can suffer various negative consequences, such as secondary traumatic stress (STS) symptoms. Figley [1] classifies STS as the behavioural and emotional outcomes experienced by an individual upon gaining knowledge of another person's stressful experience and is treated as the cost of helping others. It resembles the symptoms of post-traumatic stress disorder (PTSD), including, according to the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) classification [2], intrusions, avoidance, negative changes in cognition and emotions, and increased arousal and reactivity. For this reason, STS is also referred to as secondary

traumatic stress disorders (STSD). Some authors also emphasize that like professional burnout, STS can be regarded as a negative consequence of stress experienced in the workplace [3].

Research conducted in this area indicates the occurrence of STS among various groups of professionals working with people after traumatic experiences, including social workers, medical rescuers, nurses, therapists/psychologists and probation officers [4–9]. The STS symptoms have also been observed among police officers [10] and clergymen providing pastoral care in hospitals, hospices or prisons [11].

Professionals working as therapists or social workers perform work whose aim is to help people in various situations related to material, mental, emotional or spiritual problems [12]. Probation officers carry out educational, rehabilitation, diagnostic, preventive and control tasks specified by law, working with the entire system, both with perpetrators and victims. Probation

officers are expected to meet the goals of public safety, punishment and rehabilitation while managing a large caseload. Often when working with violent offenders, for example, they are themselves at risk [13,14]. Medical staff, paramedics and nurses often witness the death of patients and have to conduct difficult and emotionally engaging conversations with patients and their families. They provide their help not only by performing medical procedures, but also by getting involved in the patient's emotional life [15].

All listed professions, by virtue of the fact that they work with individuals or systems in difficult life situations, require professionals to "give of themselves," care and be responsible. This emotional involvement in helping can increase the likelihood of trauma transmission from patient/client to professional [1].

Working with traumatized clients can also be a source of positive posttraumatic changes, reflected in the form of vicarious or secondary posttraumatic growth (VPTG/SPTG). However, relatively little research has been devoted to this phenomena. The SPTG is the equivalent of posttraumatic growth (PTG) experienced by people who have been directly traumatized. Hyatt-Burkhart [15] describe SPTG as the positive consequence of working with people directly affected by traumatic situations. In professionals, this may be regarded as an effect of transmitting positive changes from the trauma survivor to the helper [7]. Like PTG, SPTG consists of positive changes in psychosocial functioning which relate to self-perception, relationships with others, and philosophy of life [5,6,16–20]. However, despite their similarities, SPTG and PTG are not identical constructs, and some differences between them can be distinguished in appreciation of their own work and spiritual sphere [17,21]. The SPTG has also been observed as a positive effect of working with victims of traumatic experiences, and this seems to be an important indicator that influences the quality and effectiveness of the work done [22].

A number of studies confirm the occurrence of SPTG in professionals working with trauma survivors, including health care providers [4–6,23,24], therapists [5–7,17], social workers [5–7], probation officers [7], police officers [25] and clergymen providing pastoral care in hospitals, hospices or prisons [11].

It is also worth noting here that the previously mentioned studies confirming the existence of secondary traumatic stress and vicarious growth after trauma indicate different levels of both phenomena, from low to high in different groups of professionals [7].

The relationships between secondary traumatic stress and secondary posttraumatic growth

Many studies have examined the links between PTSD and PTG, but few have looked at the links between STS and SPTG, and the available ones do not give a clear picture of these connections. Some researchers have suggested that STS and VPTG are uncorrelated [26], whereas others have indicated a negative relationship [27,28]; however, most researchers indicate that STS and SPTG are positively correlated. A meta-analysis of the conducted research [29] shows that almost half of the respondents have reported that helping trauma victims yields both negative and positive effects. Positive associations between STS and SPTG were found among therapists working with victims of sexual violence [30], among police officers [31]. Positive relationships have also been demonstrated in Polish studies of professionals exposed to secondary trauma [7]. A meta-analysis of studies conducted among healthcare professionals [32] and adults vicariously exposed to trauma [33] also revealed a positive correlation between STS and VPTG. There are studies in the literature that indicate the existence of a curvilinear relationship, where an increase in secondary traumatic stress is accompanied by an increase in vicarious post-traumatic growth up to a certain point, after which a further increase in stress is associated with a decrease in growth. Such a relationship has been confirmed in research with healthcare professionals [34], where the highest level of growth was associated with moderate levels of STS.

The occurrence of STS and SPTG and the relationship between them may depend on the studied group of professionals. This is confirmed by Manning-Jones et al. [5] in a study of medical personnel, social workers and psychologists, in which secondary traumatic stress was only found to predict positive post-traumatic change in the latter group. This complex issue clearly merits further exploration.

The role of cognitive coping strategies in the prevalence of negative and positive effects of secondary exposure to trauma

Many factors may determine the occurrence of STS and SPTG. Some are connected with the work environment, including workload, work satisfaction, or social support received from supervisors and co-workers. However, a more important group of factors determining the occurrence of negative and positive effects of secondary exposure to trauma are the subjective properties of the helpers, including their approach to cognitively

processing the trauma [7,8,24]. The PTSD models indicate that cognitive processing of trauma plays a significant role in fostering negative consequences following traumatic events [35–37]. This is also noted in the case of STS by The *Constructivist Self-development Theory* [38] and the *Ecological Framework of Trauma Model* [39].

In turn, the model of PTG [18–20] indicates that cognitive processing plays a role in supporting the development of positive consequences following exposure to trauma. According to this model, traumatic events experienced by people seeking help constitute a significant challenge for the cognitive schemata of the professionals providing assistance. Those challenges trigger the cognitive processing of the trauma, which is aimed to assign sense and meaning to the experienced traumatic situations. The *Vicarious Posttraumatic Growth in Trauma Workers Model* developed by Cohen and Collens [29] links the mechanisms by which either or both vicarious trauma or vicarious growth occur to 2 primary factors: individual characteristics and remedial strategies. This approach emphasizes the importance of personality properties, expressed in the form of personal resources, and the cognitive activity of the helper, typically expressed in the form of cognitive strategies for coping with trauma.

Williams et al. [40] highlight the importance of cognitive strategies in coping with trauma; this classification distinguishes negative (maladaptive) coping strategies, such as denial and regret from positive (adaptive) ones, such as resolution/acceptance, cognitive restructuring and downward comparison. Generally, the purpose of these strategies is to give the experienced event a sense and meaning, and thus to adapt to the new reality which has arisen as a result of trauma. The cognitive processing of trauma may be the mechanism that links its negative and positive effects. Janoff-Bullman suggests [37] that processing of trauma is an important cognitive task which allows those who experience traumatic events to integrate the information of trauma with their existing schemas.

The available data indicate positive associations between maladaptive coping strategies and STS, and between adaptive strategies and SPTG. Studies of professionals working with people after traumatic experiences have shown that regret and denial are positively related to STS [7], and cognitive restructuring and resolution/acceptance revealed negative relations [11].

Cognitive strategies of coping with trauma can also mediate the relationship between the subjective prop-

erties of an individual and STS. A study of professionals helping victims of violence [41] indicated that cognitive coping strategies play a mediating role in the relationship between various aspects of empathy and STS.

Adaptive coping strategies such as positive cognitive restructuring, resolution/acceptance and downward comparison have been found to positively correlate with SPTG among various groups of professionals exposed to secondary trauma [7]. Similarly to STS, cognitive strategies of coping with trauma can mediate the relationship between the subjective properties of an individual and SPTG [41].

As noted by Tedeschi and Calhoun [19], coping responses seem to act as mediators between the negative and positive effects of exposure to trauma. However, few studies have examined the mediating role of cognitive coping strategies in the relationship between STS and SPTG [42].

Aim of research

The aim of the present study was to determine the relationship between secondary traumatic stress, secondary growth and cognitive coping strategies associated with trauma, and to identify the mediating role played by cognitive coping with trauma in the relationship between STS and SPTG.

It was assumed that STS symptoms will positively correlate with SPTG. It was also assumed that maladaptive coping strategies with trauma will be positively correlated with STS, and negatively with SPTG; in turn, adaptive coping strategies will be negatively associated with STS and positively with SPTG. Moreover, it may be assumed that coping strategies will mediate the relationship between STS and SPTG.

MATERIAL AND METHODS

Participants

The study was cross-sectional and involved professionals working with people experiencing various types of traumatic events, such as traffic accidents, violence, struggling with a chronic somatic disease and the sudden death of a loved one. The research was conducted in several centers in Poland (mainly in the Łódź Voivodship and other areas of central Poland), including crisis intervention centers, social care facilities, courts and hospitals. The criteria for study inclusion incorporated a permanent position working with people after traumatic experiences for at least a year preceding the study. The study was approved by the bioethics

committee. The research was voluntary and anonymous. All participants gave their oral approval to take part in the study. The study questionnaires were delivered to the participants and collected by the authors and co-workers. Since no medical information was gathered, no formal and written informed consent was necessary. Voluntary completion of the delivered questionnaires was regarded as providing consent to take part. Of the 580 participants, all being professionals exposed to secondary trauma, 500 completed the questionnaires and hence were qualified for further analysis. The respondents represented 5 professional groups, i.e., therapists providing psychological assistance (N = 80), paramedics (N = 120), nursing staff employed in post-accident wards and palliative care (N = 65), social workers (N = 95) and probation officers (N = 140). Most of the respondents were women (76.4%) (the above study include a sample of women, which may be helpful in interpreting the results) [7]. The age of the respondents ranged 20–67 years (M±SD 44.09±9.85) and seniority (work experience) ranged 1–43 years (M±SD 15.94±10.0). Age and seniority were highest among the probation officers and the lowest among the therapists. The mean number of hours per week devoted to working with people after traumatic experiences ranged 1–140 h (M±SD 32.79±20.90), these were highest among paramedics and lowest among the therapists.

Measures

The study employed a specially-devised survey comprising questions about sex, age, seniority (work experience), and the weekly number of hours devoted to working with trauma victims. The last 2 variables were taken as indicators of exposure to secondary trauma. In addition, the following 3 standard research tools were used: The *Secondary Traumatic Stress Inventory* (STSI), the *Secondary Posttraumatic Growth Inventory* (SPTGI), and the *Cognitive Processing of Trauma Scale* (CPOTS).

The STSI is a modified version of the Polish adaptation [43] of the PTSD checklist for DSM-5, i.e., the PCL-5 (PTSD checklist for DSM-5), developed by Weathers et al. [44]. The STSI is a self-assessment tool designed to study people who provide assistance to people after traumatic experiences. The participants respond to 20 statements (“To what extent did you have repeated, unpleasant and unwanted memories of stressful client events”) indicating the extent to which they had experienced the mentioned reactions during the previous month in connection with the assistance provided to

people after traumatic experiences. The STSI describes the basic symptoms included in the PTSD criteria:

- 1) intrusion,
- 2) persistent avoidance of trauma-related stimuli,
- 3) negative cognitive and emotional changes,
- 4) increased arousal and reactivity.

A general score of at least 33 indicates a high probability of a diagnosis of STSD. The tool has very good psychometric properties; Cronbach’s α coefficient is very high and amounts to $\alpha = 0.95$ for the whole scale, and $\alpha = 0.71$ for intrusion, $\alpha = 0.85$ for avoidance, $\alpha = 0.89$ for negative changes in cognition and mood, and 0.87 for increased arousal and reactivity.

The SPTGI, developed by Ogińska-Bulik and Juczyński [45], is designed to measure positive posttraumatic changes related to exposure to indirect trauma in professionals. It contains 12 statements (“I have learned to accept others more”) assessed on a 6-degree scale. The SPTGI allows 4 factors to be identified, namely:

- 1) new challenges and increased professional skills,
- 2) an increase in spiritual experiences and a sense of responsibility for others,
- 3) greater self-confidence and appreciation of life,
- 4) an increase in acceptance and acting for the benefit of others.

Each factor is composed of 3 statements. High indicators of reliability were obtained and expressed by Cronbach’s α coefficient, namely $\alpha = 0.90$ for the overall scale and $\alpha = 0.71$, $\alpha = 0.85$, 0.89, and 0.87 for the 4 respective individual factors.

The CPOTS was developed by Williams, Davis and Millsap [40] and adapted to Polish conditions by Ogińska-Bulik and Juczyński [46]. The tool consists of 17 statements (“Overall, there is more good than bad in this experience”) and measures 5 aspects of cognitive processing: positive cognitive restructuring, resolution/acceptance, downward comparison, denial and regret. The first 3 represent positive cognitive processing, and the last 2 negative cognitive processing. Participants respond to each statement on a 7-point scale. The score for each scale is calculated separately. Cronbach’s α coefficients range from $\alpha = 0.89$ to $\alpha = 0.56$ ($\alpha = 0.84$ for positive restructuring, $\alpha = 0.82$ for resolution/acceptance, $\alpha = 0.89$ for downward comparison, $\alpha = 0.56$ for denial and $\alpha = 0.72$ for regret). The study used a version adjusted to the investigation of people indirectly exposed to trauma.

Statistical analyses

Statistical analysis were performed using IBM SPSS software, v. 25. As the obtained data either met or approx-

imated the criteria of normality, parametric tests were employed (Student's t-test and Pearson's correlation coefficients). Variables such as sex, age, work experience and number of hours spent per week on direct assistance to victims of trauma were controlled. Mediation analysis was conducted, using the bootstrapping procedure proposed by Preacher and Hayes [47]. The method allows a more complex structure of the model to be established, in which the independent variable which acts as a predictor (STS in this study) is associated with dependent variable (SPTG) via a third variable that acts as a mediator (the cognitive coping strategies with trauma).

RESULTS

The means, standard deviations and correlation coefficients are presented in Table 1. The result of secondary traumatic stress is $M \pm SD$ 24.14 \pm 16.11. Taking into account the cut-off point set for STSI, it is 33 pts [7], it was found that 29% of all surveyed professionals reveal high and 71% low intensity of STS symptoms. The secondary posttraumatic growth was $M \pm SD$ 31.06 \pm 12.14. According to the SPTGI criteria [45] a high level of SPTG (>5 sten) was reported by 33.6%, average (5–6 sten) 36.8% and low (<5 sten) by 29.6% participants.

It was also checked whether sex, age, work experience with people after traumatic experiences and the number of hours spent per week on direct assistance to victims of trauma were related to the intensity of the overall SPTGI score in the surveyed group of professionals exposed to secondary trauma. Work experience and the weekly numbers of hours were treated as indicators of secondary exposure to trauma. Sex was found to differentiate the severity of SPTG (men: $M \pm SD$ 28.89 \pm 12.90; women: $M \pm SD$ 31.73 \pm 11.83, $t = 2.23$, $p < 0.05$). The age of the subjects and work experience with people after traumatic experiences were significantly but poorly related to the severity of SPTG ($r = 0.11$, $p < 0.01$; $r = 0.12$, $p < 0.01$). The number of working hours per week did not correlate with SPTG ($r = -0.01$).

The STS symptoms positively correlated with all areas of positive changes constituting secondary growth after trauma, and most strongly with an increase in spirituality and sense of responsibility for others. Regarding the relationships between secondary growth and individual categories of secondary stress symptoms, it can be seen that the highest values of the correlation coefficients relate to intrusions, and the lowest to negative changes in the cognitive and emotional spheres.

The obtained correlation coefficients indicate that 4 out of 5 cognitive strategies of coping with trauma have a positive relationship with the symptoms of STS. The strongest associations of the overall STS score refer to maladaptive strategies, i.e., regret ($r = 0.47$) and denial ($r = 0.49$), which is in line with expectations. However, STS was also found to have positive associations with adaptive strategies, i.e., downward comparison and positive cognitive restructuring. Although the obtained correlation coefficients are significantly lower than those concerning the associations of STS with regret and denial, they are nevertheless statistically significant. This seems to indicate that adaptive strategies may also increase the severity of STS.

The SPTG turned out to be positively associated with all 3 adaptive coping strategies: more strongly with positive cognitive restructuring ($r = 0.34$) and resolution/acceptance ($r = 0.34$), and slightly less with downward comparison ($r = 0.14$). Neither of the 2 maladaptive coping strategies was found to be associated with SPTG. It is worth noting, however, that all the analyzed coping strategies, including both the negative ones, correlate positively with one of the SPTG areas, i.e., with an increase in spiritual experiences and a sense of responsibility for others.

The next stage examined which coping strategies act as mediators in the relationship between STS and SPTG among the professionals exposed to secondary trauma. The mediation analysis revealed 2 significant models for the relationships between STS and SPTG.

Two cognitive strategies of coping with trauma turned out to act as mediators in the relationship between the negative and positive effects of trauma (Figure 1). The STS was found to predict positive cognitive restructuring as well as SPTG (Figure 1a). Positive cognitive restructuring also plays a predictive role for SPTG. The introduction of cognitive restructuring as a mediator weakened the relationship between the negative and positive effects of trauma, indicating partial mediation. This means that the relationship between STS and SPTG is partly explained by the role of positive cognitive restructuring. Both STS and positive cognitive restructuring act as predictors for SPTG.

A similar situation was observed when analyzing the impact of the downward comparison strategy on the relationship between STS and SPTG (Figure 1b). Here again, partial mediation occurs, meaning that the relationship between STS and SPTG is partly explained by the downward comparison strategy. However, changes in the beta coefficient are not large, which may

Table 1. Correlation coefficients, mean and standard deviations among group of professionals from Poland (N = 500)

Variable	M±SD	Correlation															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1. STS total	24.14±16.11	-															
2. Intrusion	6.43±4.34	0.88***	-														
3. Avoidance	2.77±2.10	0.70***	0.66***	-													
4. Negative changes in cognition and/or mood	7.36±5.90	0.93***	0.73***	0.57***	-												
5. Increased arousal and reactivity	7.58±5.74	0.92***	0.72***	0.54***	0.83***	-											
6. Positive cognitive restructuring	7.62±4.14	0.15*	0.12*	0.11*	0.13*	0.16*	-										
7. Downward comparison	18.85±3.23	0.27***	0.20**	0.19*	0.27***	0.27***	0.51***	-									
8. Resolution/acceptance	12.95±4.92	-0.05	-0.05	0.03	-0.10*	-0.03	0.51***	0.38***	-								
9. Denial	6.24±4.86	0.49***	0.37***	0.31***	0.53***	0.44**	0.35***	0.43***	0.11*	-							
10. Regret	5.29±4.08	0.47***	0.38***	0.26***	0.49***	0.44***	0.24***	0.31***	0.08	0.59***	-						
11. SPTG total	31.06±12.14	0.22***	0.26***	0.17*	0.15*	0.20**	0.34***	0.14*	0.34***	0.07	0.10*	-					
12. New challenges	7.83±3.29	0.14*	0.19**	0.15*	0.08	0.11*	0.22***	0.03	0.30***	-0.07	-0.04	0.74***	-				
13. Increase in spiritual experiences	5.74±4.22	0.27***	0.25***	0.18*	0.24***	0.26***	0.31***	0.19*	0.22***	0.26***	0.19*	0.72***	0.28***	-			
14. Greater self-confidence	9.29±4.01	0.14*	0.17*	0.12*	0.09	0.14*	0.27***	0.13*	0.30***	-0.08	0.05	0.85***	0.54***	0.49***	-		
15. Increase in acceptance	8.20±3.82	0.13*	0.20**	0.10*	0.07	0.10*	0.27***	0.07	0.25***	-0.06	0.05	0.84***	0.61***	0.44***	0.65***	-	

SPTG – secondary posttraumatic growth, STS – secondary traumatic stress.

* p < 0.05, ** p < 0.01, *** p < 0.001.

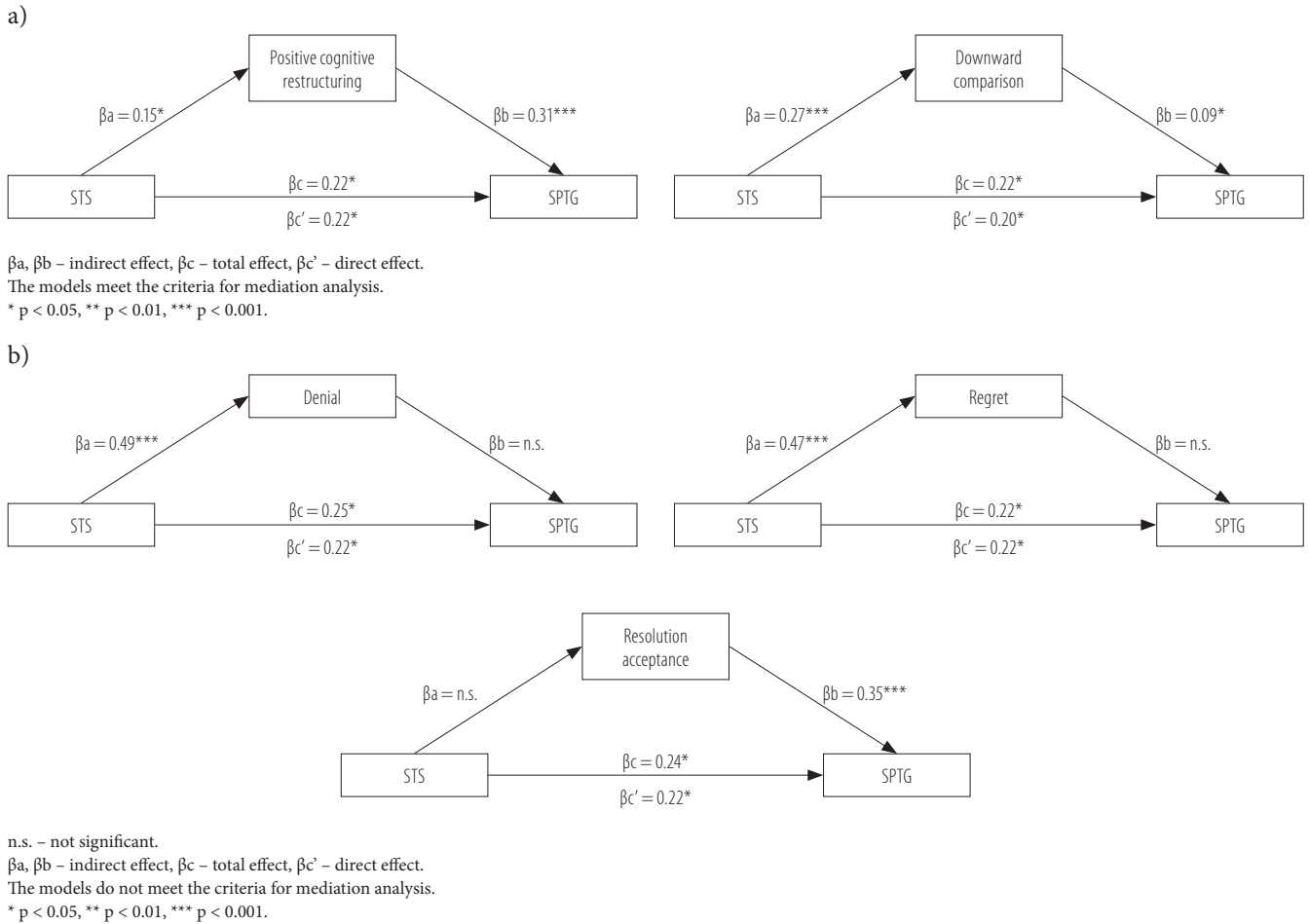


Figure 1. Model of relations between secondary traumatic stress (STS), cognitive coping strategies in the form of: a) positive cognitive restructuring, downward comparison, b) denial, regret, resolution/acceptance and secondary posttraumatic growth (SPTG)

indicate that negative effects have a significant role in the development of SPTG.

Mediation models with the strategy of regret, denial and resolution/acceptance (Figure 1b) were found to be statistically insignificant.

DISCUSSION

The research confirmed that professionals working with trauma survivors can experience both negative and positive effects associated with secondary exposure to trauma. Furthermore, negative trauma coping strategies in the form of regret and denial were found to be positively related to STS, while positive strategies such as positive cognitive restructuring, resolution/acceptance and downward comparison positively correlated with SPTG. The study also confirmed the mediating role of cognitive coping strategies in the relationship between STS and SPTG.

In the studied group 29% of all surveyed professionals were found to exhibit a high probability of STSD,

while 71% revealed a low risk. However, the severity of STS has been found to vary between individual groups of professionals [5–7]. Two groups appear particularly susceptible to the negative consequences of secondary exposure to trauma, these being medical personnel, including medical rescuers and nurses [7] and social workers [6].

Despite these negative effects, professionals may also perceive some positive changes in their own functioning resulting from working with trauma survivors. Indeed, authors' present findings indicate that 1/3 of the surveyed professionals (33.6%) revealed a high level of SPTG, slightly more than 1/3 (36.8%) an intermediate level, and slightly less than 1/3 (29.6%) a low level of SPTG. Women are more likely to see positive post-traumatic changes than men. Age and work experience as a professional working with trauma survivors were significantly but poorly related to the severity of SPTG. The weekly working hours of the participants did not correlate with the positive effects of exposure to secondary trauma.

The STS symptoms positively correlated with all areas of SPTG and most strongly with an increase in spirituality and sense of responsibility for others. This means that the negative effects of secondary exposure to trauma that usually occur soon after the experienced situation seem to favor the occurrence of positive posttraumatic changes, which appear later. In other words, the negative symptoms of secondary exposure to trauma can pave the way for positive changes to occur. The STS can therefore be a catalyst for SPTG, which confirms the concepts of occurrence of positive posttraumatic changes [19,20,29]. In other words, the path to growth leads through suffering.

The applied cognitive coping strategies appear to be related to both STS and SPTG. These findings largely confirm the expectations as that maladaptive coping strategies are positively associated with STS and adaptive strategies with SPTG. Regret and denial were found to be positively correlated with STS symptoms in the group of studied professionals. It must be remembered that generally speaking, maladaptive coping strategies are not an effective way to cope with stress: they are used because they usually work quickly, directly and temporarily relieve stress.

However, it should be noted that unexpected positive relationships were also obtained between 2 adaptive strategies, viz. downward comparison and positive cognitive restructuring with STS. The obtained data seem to indicate that the cognitive processing of trauma in the form of coping activity, regardless of the type of strategies used (except for resolution/acceptance), may contribute to the occurrence of negative consequences of secondary exposure to trauma. Why, then, should adaptive strategies, such as downward comparison and cognitive restructuring foster the occurrence of STS symptoms rather than protecting from them? Perhaps assessing the life situation of others, including one's own traumatized patients or clients, as worse than one's own situation (downward comparison), and attempting to re-evaluate one's own situation (positive cognitive restructuring) brings back memories, unwanted thoughts and negative emotions. Such strategies may increase the severity of STS, at least initially. Later however, they seem to favor the occurrence of SPTG, which would confirm the assumption that the path to SPTG leads through STS.

Positive links between adaptive coping strategies and STS have also been revealed in other studies. For example Kalaitzaki and Rovithis [48] note that planning contributes to higher STS in a group of healthcare workers during the first COVID-19 lockdown in Greece.

All 3 adaptive coping strategies (positive cognitive restructuring, resolution/acceptance, and downward comparison) were positively associated with SPTG, which confirms the results of other studies [7,11]. Total SPTGI result was not found to be related with maladaptive trauma coping strategies. However, it is worth noting that all the analyzed coping strategies, including both negative and positive ones, correlate positively with an increase in spiritual experiences and a sense of responsibility. This means that for such positive posttraumatic change to take place, it is beneficial to experience regret and denial earlier. Additionally, the obtained results indicate that when analyzing the relationships between cognitive strategies of coping with trauma and SPTG, it is important to consider not only the overall result, but also to consider its relationship with individual areas of posttraumatic growth.

Authors' findings, indicating the importance of both adaptive and non-adaptive coping strategies, are partly consistent with those of other studies. For example, a study that used the Mini-Cope to assess coping strategies of medical rescuers [49] found higher levels of SPTG in rescuers who reconsidered the situation (positive reframing) and turned to other activities to avoid thinking about the traumatic situation (self-distraction). Kalaitzaki and Rovithis [42] report that self-distraction, that is a maladaptive coping strategy, predicted all 5 domains of SPTG (measured with the *Posttraumatic Growth Inventory*). In turn, denial predicted personal strength and appreciation of life. This suggests that undertaking coping strategies regardless of their nature (adaptive/maladaptive) may be beneficial for the development of positive posttraumatic changes, and above all for increasing spirituality and sense of responsibility for others. It is possible that maladaptive strategies allow people struggling with trauma (both their own and others) to distance themselves from the experienced problem, and to reconsider the situation positively, thus fostering positive posttraumatic changes.

Cognitive coping strategies play a mediating role in the relationship between STS and SPTG. The STS and positive strategies for coping with trauma, in the form of positive cognitive restructuring and downward comparison, were found to be positive predictors for SPTG, whereas cognitive strategies did not significantly alter the relationship between STS and SPTG and appeared as partial mediators. This may indicate that STS and cognitive coping strategies play a similar role in the development of SPTG. The STS symptoms may increase SPTG directly and indirectly through cognitive strategies.

This indirect effect may suggest that cognitive coping strategies act as an explanatory mechanism for the process of transforming negative changes into positive post-traumatic changes. In addition, the negative effects of secondary trauma have a positive predictive role for coping strategies. Perhaps the experience of symptoms of STS triggers the cognitive processing of the trauma; by altering or flexing cognitive schemas and comparing oneself to those in a more difficult life situation, it may be possible to attribute meaning to the traumatic situation and thus allow positive growth changes to emerge. These findings are consistent with reports in the literature indicating the roles of cognitive strategies as mediators [42,48].

The conducted research is not free from certain limitations. Its cross-sectional nature does not allow for conclusions about cause-and-effect relationships. The analyses were carried out on an entire group of respondents without division into individual groups of professionals, which could have influenced the results obtained; indeed, previous findings [5–7] indicate that the intensity of the consequences of secondary exposure to trauma, especially the negative ones, differ according to the nature of the work performed. In the case of the present study, it was decided to analyze the entire group of respondents to account for the small numbers in some professional subgroups. In addition, the analyses did not take into account the types of events experienced by patients/clients, or the traumatic experiences that may have been experienced directly by the surveyed professionals. Finally, the analysis of the results did not take into account other variables, such as sex, age or work experience. The study assumed only a linear relationship between STS and SPTG.

Despite these limitations, authors' findings provide a new insight into the relationship between the negative and positive effects of secondary exposure to trauma and their determinants among professionals. They demonstrate the role of cognitive coping strategies in the occurrence of secondary stress symptoms and secondary posttraumatic growth. Most importantly, the study group comprises a large number of respondents representing several groups of professionals working with people after traumatic experiences. It also employs new measurement tools, including the STSI, based on the PTSD classification according to DSM-5, and the SPTGI developed for professionals working with trauma survivors.

The obtained results may be an inspiration for further research, which should aim to include other indicators of cognitive processing of trauma, such as ruminating

about traumatic events experienced by clients, or distortion in basic beliefs. It is also recommended to include longitudinal studies that can capture changes in the scope of STS and SPTG.

The conducted research can also be used in practice to develop training programs aimed at preventing STS and increasing SPTG among groups of professionals working with victims of trauma. Experiencing such growth can result in an increase in life competences and self-confidence, thus translating into a change in emotional attitudes towards the workplace, where tasks are treated as new challenges and difficulties are interpreted as less burdensome. It would be worth encouraging workers to expand their competences in dealing with trauma, primarily by the less frequent use of maladaptive coping strategies and the more frequent use of adaptive ones. Encouraging the use of social support and self-care practices, as pointed out frequently in previous research [7,50] may also be useful. These programs used by the working environment could strengthen the ability of such workers to cope with trauma and thus allow for effective protection of their mental health.

CONCLUSIONS

The occurrence of symptoms of secondary traumatic stress favors the occurrence of secondary posttraumatic growth. Cognitive coping strategies appeared to act as mediators for the relationship between negative and positive effects of trauma. Cognitive coping strategies, both adaptive and non-adaptive, play an important role in the transition from the negative to the positive effects of trauma. Flexibility in their use may facilitate the process of adaptation to trauma and enable the occurrence of positive post-traumatic changes, which can contribute to better functioning in the workplace.

Author contributions

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