

SECONDARY TRAUMATIC STRESS AND VICARIOUS POSTTRAUMATIC GROWTH IN HEALTHCARE PROFESSIONALS: THE ROLE OF RUMINATION

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Abstract

Due to the nature of their job, healthcare professionals are at a higher risk of developing secondary traumatic stress (STS). However, there is some evidence that it is still possible for positive changes to appear, in the form of a vicarious posttraumatic growth (VPTG). The aim of this study was to investigate the relationship between STS and VPTG in the case of healthcare professionals, both for the global scores and their dimensions. We have also tested if intrusive and deliberate rumination act as mediators in this relationship. The sample consisted of 146 healthcare professionals. Our results showed that between STS and VPTG there is a significant positive relationship, which confirms the idea that it is necessary to have a level of distress in order for growth to be a possible outcome. Moreover, both intrusive and deliberate rumination each fully mediated this relationship. These results could offer us some insight regarding the process through which some individuals manage to attain growth in different areas of their life even in the aftermath of exposure to a traumatic event. Thus, it is important for organizations to take both preventive and protective measures, to offer education and support groups in order to encourage self-disclosure and the cognitive processing of the event.

Cuvinte-cheie: STS, VPTG, cadre medicale, ruminare, mediere

Keywords: STS, VPTG, healthcare professionals, rumination, mediation

1. INTRODUCTION

After being indirectly exposed to stressful events, if they are perceived as highly disruptive, there is the risk that healthcare professionals will develop secondary traumatic stress (STS). Yet, experiencing distress can also be a catalyst for the emergence of vicarious posttraumatic growth (VPTG). The medical field is defined by difficult decisions regarding treatment, being alongside the patients for

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the whole process, having tough conversations with patients and caregivers, working with scarce resources and being exposed to a wide variety of trauma as to the type, cause and level of severity. As a result, the personnel are prone to STS, but also, if the right steps are taken, they have the possibility to experience growth in different life domains. Thus, it is important to study the relationship between STS and VPTG in the case of health staff, to identify in which instances growth is possible, and which steps should be taken in order to offer the right support both as prevention and intervention.

1.1. THE RELATIONSHIP BETWEEN STS AND VPTG

STS appears as a result of working with patients that experienced traumatic events and/or are suffering and it can impact the functionality of an individual through the presence of symptoms such as avoidant behaviors, arousal (e.g., difficulties maintaining attention) and intrusions (e.g., nightmares) (Figley, 1995).

Posttraumatic growth (PTG) refers to the positive consequences that could appear after the individuals are exposed to events that are perceived as being deeply disruptive (Tedeschi & Calhoun, 2004). VPTG appears as a result of the same adaptive process, its characteristic being the fact that it refers to the changes that appear after being indirectly exposed to trauma (Arnold *et al.*, 2005). These positive consequences may appear in five domains: relating to others (e.g., prioritizing relationships with persons that are valuable in the life of an individual, recognizing that asking for and accepting help may be beneficial), appreciation of life (e.g., being more appreciative of what every day may bring), spiritual and existential change (e.g., considering more spiritual, existential and religious takes regarding life), personal strength (e.g., appreciating themselves as being stronger after the traumatic event and being more prone to take on new challenges) and new possibilities (e.g., discovering new trajectories in life) (Tedeschi *et al.*, 2018).

The Theoretical Model of Posttraumatic Growth (Tedeschi & Calhoun, 1995; Tedeschi *et al.*, 2018) underlines the way in which exposure to traumatic events can lead to PTG. It also highlights the fact that the cognitive processing of the event is an essential element in this process (Tedeschi *et al.*, 2018). If the potentially traumatic event is perceived as being highly disruptive and representing a threat for the assumptions and beliefs of the individuals, affecting their day-to-day functioning, then the cognitive processing of the experience will begin (Tedeschi & Calhoun, 2004). Its role is to attempt to reduce the level of distress, but initially, the rumination will be more intrusive, the individuals experiencing frequently automatic thoughts related to the event (Zoellner & Maercker, 2006). Over time, if they succeed in letting go of the beliefs and assumptions that are no longer compatible with their new reality, the rumination will become more deliberate and reflective, the cognitive processing being focused on an accurate appraisal of the event (Zoellner & Maercker, 2006). At this point, even though the individuals still experience a level of distress, the focus will be more on finding

meaning in the experience and on modifying or developing new core beliefs. Once the individuals manage to incorporate the traumatic experience in their life narrative, to modify their beliefs and to adapt to the new circumstances, growth will be possible (Tedeschi *et al.*, 2018). Therefore, it is suggested that there is a relationship between distress and PTG, especially because a certain level of distress is needed in order for changes related to growth to continue to appear (Tedeschi *et al.*, 2018).

The literature is varied. Some studies found a significant positive relationship between STS and VPTG (Hamama-Raz & Minerbi, 2019; Zeng *et al.*, 2023), while others found a negative (Măirean, 2016; Ogińska-Bulik, 2018) or the absence of a relationship (Hamama-Raz *et al.*, 2021). Consequently, it is important to further study this relation, as well as the variables that intervene in this relationship.

1.2. RUMINATION AS A MEDIATOR

Rumination is seen as a key element in the occurrence of PTG, the cognitive processing being at the center of the modified assumptions and beliefs (Xu *et al.*, 2016). This is also in line with the Theoretical Model of Posttraumatic Growth (Tedeschi & Calhoun, 1995; Tedeschi *et al.*, 2018), where rumination appears both in the first instances after the traumatic event and the appraisal of its severity took place, and subsequently. As mentioned before, the rumination will be initially more automatic, the level of distress being higher (Tedeschi *et al.*, 2018). This happens because after experiencing a traumatic event that disrupted their goals and beliefs, the individuals are losing precisely what could help them understand and give meaning to the event (Cann *et al.*, 2011). Yet, the search for a new meaning for the event represents an essential element in overcoming the negative consequences of exposure to trauma and the occurrence of growth (Tedeschi *et al.*, 2018). In order for the individuals to be able to do this, it is necessary for them to resort again to rumination, but this time, a deliberate one which is more reflexive, thoughtful and implies a focused effort on the re-appraisal of the experience (Cann *et al.*, 2011). To reach this stage, the coping strategies used by the individuals when experiencing automatic thoughts need to be successful in helping to let go of the beliefs and goals that are no longer attainable in the current life circumstances, which will also reduce the level of distress to a more manageable degree (Tedeschi *et al.*, 2018).

Therefore, cognitive responses to situations that are aversive involve to some degree rumination, but they will lead to different results. A person who will focus only passively on the causes and consequences of the event, without engaging in emotional regulation strategies, or one that will try to suppress these thoughts will suffer more symptomatology (Brooks *et al.*, 2017). In contrast, when the person makes a conscious effort to understand the implications of the event and has the attention oriented towards finding a solution, as in deliberate rumination (Carr,

2019), though it could be initially associated with negative consequences, there is a higher chance to attain growth (Cann *et al.*, 2011; Tedeschi *et al.*, 2018).

There is evidence that between traumatic stress and rumination is a significant positive relationship among healthcare workers (Portoghese *et al.*, 2021). Between deliberate rumination and PTG research shows a significant positive relationship (Cui *et al.*, 2021; Ogińska-Bulik, 2016), while for intrusive rumination some studies show a positive relationship in populations exposed to trauma (Ogińska-Bulik & Juczyński, 2015), while others show a negative one (Cui *et al.*, 2021).

1.3. THE PRESENT STUDY

The aim of this study was to investigate the relationship between STS and VPTG in the case of healthcare workers. Our objectives were to study this relationship between the global scores of STS and VPTG, between the dimensions of STS and VPTG and between STS and the domains of VPTG, as well to investigate if rumination acts as a mediator in this relationship. We hypothesized that: (H1) there is a significant positive relationship between STS and PTG in the case of health professionals; (H2) intrusive rumination mediates the relationship between STS and VPTG, and (H3) deliberate rumination mediates the relationship between STS and VPTG in the case of medical workers.

2. METHOD

2.1. PARTICIPANTS

The sample consisted of 146 healthcare professionals working in hospitals and clinics, with experience ranging from one year to 40 years ($M = 15.55$, $SD = 11.27$), aged 22 to 69 years ($M = 42.51$, $SD = 11.16$). The majority of the sample was comprised of women (78.8%). Regarding professional category, 48.6% of the participants were physicians, 36.3% were nurses and 3.4% other categories of medical workers. They were from multiple specializations (e.g., emergency medicine, intensive care medicine, family and internal medicine). 48.6% worked only with adults, 9.6% only with children and 41.8% with both adults and children.

2.2. MEASURES

STS was measured using The Secondary Traumatic Stress Scale (STSS; Bride *et al.*, 2004). This scale has 17 items rated on a 5-point Likert Scale (1 = *never* to 5 = *very often*). It measures STS and its three aspects: intrusion (e.g., “Reminders of my work with clients upset me.”), avoidance (e.g., “I was less active than usual.”) and arousal (e.g., “I felt jumpy.”). Alpha Cronbach varied from .790 to .925.

Intrusive and deliberate rumination were measured using The Event Related Rumination Inventory (ERRI; Cann *et al.*, 2011). There are 10 items each for intrusive (e.g., “I thought about the event when I did not mean to.”) and deliberate rumination (“I deliberately thought about how the event had affected me”) rated on

a 4-point Likert Scale (0 = *not at all* to 3 = *often*). The instructions were presented oriented to the secondary exposure to the traumatic experiences of health workers patients. Alpha Cronbach was .942 for intrusive and .916 for deliberate rumination. VPTG was measured using the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996). PTGI consists of 21 items rated from 0 (*I did not experience this change*) to 5 (*I experienced this change to a very great degree as a result of my crisis*). It measures PTG and its five outcomes: relating to others (e.g., “I better accept needing others”), personal strength (e.g., “I have a greater feeling of self-reliance”), new possibilities (e.g., “I developed new interests”), spiritual change (e.g., “I have a stronger religious faith.”) and appreciation of life (e.g., “I can better appreciate each day”). Alpha Cronbach varied from .772 to .960.

The participants also offered information such as age, gender, professional category, years of experience, specialization, and the type of population cared for.

2.3. PROCEDURE

This study was approved by the ethical commission of the faculty (number 3645/10.11.2021). As at the time of conducting this research access in the hospitals was still not possible, the data was collected through Google Forms. The link was distributed to staff working in hospitals and clinics through a number of designated persons of contact. The only restriction was that the participants had to be medical workers. At the start of the form, the participants were informed that participation is voluntary, the answers are anonymous and that they could withdraw from the study at any point in the time. They also received a contact address if they wanted to ask any questions. There was no remuneration for taking part in this research.

2.4. STATISTICAL ANALYSES

For our analyses, we have used SPSS 22 and Process v. 4 (Hayes, 2022). A statistical significance value .05 was adopted. We have checked for the normality of distribution, for differences based on gender and professional category, we ran analyses to verify the correlations between our variables and mediation analyses.

3. RESULTS

3.1. PRELIMINARY ANALYSES

After checking the normality of the distribution of the data, we verified the mean scores and the frequency of STS in order to assess its prevalence. The mean scores were 39.69 ($SD = 11.42$) for STS, and 61.32 ($SD = 22.21$) for VPTG. A number of 21 participants (14.4%) had “little or no STS”, 46 participants (31.5%) had “mild STS”, 29 participants (19.9%) had “moderate STS”, 22 participants (15%) had “high STS” and 28 participants had “severe STS” (Bride, 2007).

There were significant differences in STS and VPTG based on professional category ($F(2, 143) = 3.10, p = .048$; $F(2, 143) = 9.61, p < .001$), but only between

physicians and nurses, with nurses having higher scores ($M_{STS} = 42.77$, $SD = 11.07$; $M_{VPTG} = 70.33$, $SD = 17.44$) than physicians ($M_{STS} = 37.97$, $SD = 11.11$; $M_{VPTG} = 55.15$, $SD = 23.22$). As for gender, we have found differences only for VPTG ($t(144) = -3.50$, $p = .001$) with women having higher scores ($M_w = 65.17$, $SD = 19.08$; $M_m = 47.03$, $SD = 27.09$).

As for the correlational analyses, the relationship between the variables included in the mediation models were all significant (see Table no. 1).

Table no. 1.
Correlations, means and standard deviations for the study variables

Variables	M	SD	1	2	3	4
1.Secondary traumatic stress	39.69	11.42	-			
2, Intrusive rumination	12.50	6.74	.670***	-		
3. Deliberate rumination	14.46	6.91	.587***	.656***	-	
4. Vicarious posttraumatic growth	61.32	22.21	.249**	.312***	.513***	-

Note. ** $p < .010$; *** $p < .001$

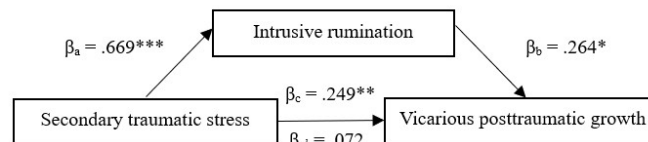
We have observed a significant positive relationship between STS and VPTG ($r = .249$, $p = .002$). A significant positive was also observed between STS and four domains of VPTG: relating to others ($r = .210$, $p = .011$), new possibilities ($r = .294$, $p < .001$), spiritual change ($r = .174$, $p = .035$) and appreciation of life ($r = .321$, $p < .001$). We did not find a significant relationship between STS and personal strength ($r = .096$, $p = .247$). VPTG had also a significant positive association with all dimensions of STS: intrusion ($r = .320$, $p < .001$), avoidance ($r = .175$, $p = .035$) and arousal ($r = .207$, $p = .012$).

3.2. MEDIATION ANALYSES

We first wanted to verify if intrusive rumination acts as a mediator for the relationship between STS and VPTG (see Figure 1). The indirect effect was significant ($\beta_{ab} = .177$, 95% CI [0.007; 0.347]). The total effect was significant ($\beta_c = .249$, $p = .002$, 95% CI [0.173; 0.794]), while the direct effect was not significant ($\beta_{c'} = .072$, $p = .501$, 95% CI [-0.270; 0.550]), which shows that intrusive rumination fully mediates this relationship.

In the second model, deliberate rumination was the mediator (see Figure 2). The indirect effect was significant ($\beta_{ab} = .328$, 95% CI [0.235; 0.427]). The total effect was significant ($\beta_c = .249$, $p = .002$, 95% CI [0.173; 0.794]), while the direct effect was no longer significant ($\beta_{c'} = -.079$, $p = .368$, 95% CI [-0.494; 0.184]), which shows that deliberate rumination fully mediates the relationship between STS and VPTG.

Figure 1.
Intrusive rumination as a mediator



Note. * $p < .050$; ** $p < .010$; *** $p < .001$

4. DISCUSSION

This study aimed to investigate the relationship between STS and VPTG in health professionals, as well as the role of intrusive and deliberate rumination in this association. This was important because even though there is evidence for this relationship, the number of studies is still small and the results are heterogeneous.

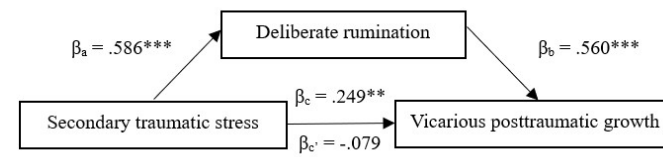
Over half of our sample presented moderate to severe levels of STS, and the majority had moderate levels of VPTG. Our results also confirm the idea that women experience higher VPTG, and nurses, higher STS and VPTG (Hamama-Raz *et al.*, 2020; Taubman-Ben-Ari & Weintraub, 2008). It is possible that because women tend to have more emotional responses, it also gives them the opportunities to engage in the cognitive processing of the event, which favors VPTG (Hamama-Raz *et al.*, 2020). As for the professional category, nurses usually spend more time with their patients and tend more to their needs, which increases the risk for STS. Yet, they have more support available and more opportunities for self-disclosure (Duffy *et al.*, 2015), two elements that were shown to promote changes in one's perspective and finding new meanings for the events (Tedeschi *et al.*, 2018).

4.1. THE RELATIONSHIP BETWEEN STS AND VPTG

The first hypothesis was confirmed, STS and VPTG having a significant positive association, so a high level of STS is associated with high VPTG and vice-versa. It is in accord with the Theoretical Model of Posttraumatic Growth (Tedeschi & Calhoun, 1995; Tedeschi *et al.*, 2018), and solidify the idea that the presence of VPTG is not equal to the absence of distress. They should be seen as independent constructs that can co-exist, because for growth to occur, it is necessary to first experience enough distress to trigger the cognitive processing of the event (Tedeschi *et al.*, 2018). Also, the idea of growth assumes the fact that the individuals, as they are no longer able to return to their pre-crisis functioning, need to find new benefits in order to develop (Zoellner & Maercker, 2006).

A significant positive association was observed between STS and all domains of VPTG, except personal strength. Thus, some of the changes that might appear can be observed in the nature and quality of the individuals' relations with others, with them finding a new value for these interactions, especially if they perceived that they had support and acceptance in their pathway to growth (Calhoun & Tedeschi, 2006). As a result, they tend to be more compassionate, to re-evaluate all of their relations and to be more inclined to express their struggles (Tedeschi *et al.*, 2018). These changes could also have a positive impact in the relations between the medical staff and their patients, with them being more attentive to their needs, which could bring more satisfaction. Simultaneously, it could facilitate the creation or strengthening of support systems that improve future exposure to patients' trauma and it could encourage professionals to be more open to accept help.

Figure 2.
Deliberate rumination as a mediator



Note. ** $p < .010$; *** $p < .001$

The changes in appreciation of life may be favored by the context in which professionals work. As they are exposed to a variety of trauma and some of them care for persons with long term or terminal illnesses, they might make the decision to appreciate what each day can bring, including ordinary things and to live as their patients would have done. These interactions could also help them identify new opportunities and encourage them to involve in more beneficial activities, which may be related to the domain of new possibilities (Tedeschi & Calhoun, 2004). Furthermore, seeing the experiences that their patients go through is possible to make them reflect on existential problems and questions, as well as to focus on matters regarding faith, specific to the spiritual change (Tedeschi *et al.*, 2018).

As for personal strength, the changes could be more regarding recognizing that there are situations in which medical workers are limited in what they can do, and that is important to do the best that they can within their limits, as well as the accumulation of new information that could help them in future interactions, which could explain the absence of an association with STS (Beaune *et al.*, 2018).

A positive relation was also found among all dimensions of STS and VPTG. This is in line with the idea that intrusion and avoidance thoughts are related to the processing of the event and benefit detection, and arousal is related especially to changes visible at a behavioral level (Helgeson *et al.*, 2006; Taku *et al.*, 2007).

4.2. RUMINATION, STS AND VPTG

Our second and third hypothesis were confirmed, intrusive and deliberate rumination acting as mediators for the relationship between STS and VPTG. As for the relation with STS, and VPTG, there was a significant positive association with the both types of rumination, which is in line with some of the previous research (Ogińska-Bulik, 2016; Ogińska-Bulik & Juczyński, 2015; Portoghese *et al.*, 2021). Although both types of ruminations are positively related with STS, we have observed a stronger relationship in the case of intrusive rumination. This is to be expected, because, even though intrusive thoughts can have both a positive and a negative valence, in the case of trauma, they are maladaptive (Cann *et al.*, 2011). As for the fact that the relationship remains positive even when the rumination becomes more reflexive, a possible explanation is that it is necessary to still experience distress in order to have the base for working towards finding a perspective that is more appropriate for the new reality and to identify a meaning in the negative exposure that shattered the individuals' beliefs (Calhoun *et al.*, 2010).

For VPTG, the stronger association was with deliberate rumination, in line with the Theoretical Model of Posttraumatic Growth (Tedeschi & Calhoun, 1995; Tedeschi *et al.*, 2018). This is because if the event is not processed at the cognitive level, and the assumptions, beliefs and goals of the individuals are not revised, or in some cases, rebuild, a more meaningful outlook on life and ultimately, growth cannot be achieved (Tedeschi *et al.*, 2018). As for the positive relationship with intrusive rumination, although intrusive thoughts generate more distress, these

types of thoughts are normal and anticipated after experiencing events that are perceived as traumatic (Cann *et al.*, 2011). They are part of the cognitive struggle and the cognitive work that foster the path to growth (Calhoun *et al.*, 2010). In the immediate aftermath of trauma, we will observe the presence of intrusive thoughts, which in time, are accompanied by a more reflexive type of processing, which is the catalyst for positive changes in different domains of life (Cann *et al.*, 2011).

Thus, both intrusive and deliberate rumination are important components that could lead help the individuals solve their crises and facilitate growth as an outcome (Tedeschi *et al.*, 2018). In the case of medical staff, there is a possibility that in the process of finding meaning to their experiences, besides the changes in the domains specific to growth, they will end up discovering that these hardships brought them a new found set of knowledge, a sense of competence, more confidence in their decisions and a stronger professional identity (Cui *et al.*, 2021; Tedeschi *et al.*, 2018). These aspects can help them in future situations where they will come into contact with patients who have gone through traumatic experiences.

4.3. LIMITATIONS

The current study has a few limitations. The first one is that our sample is predominantly composed of women, which makes it difficult to generalize the results. The second one is that we did not have control over the completion of the form, with the research being online and that this was a convenience sample. The third one, is that the study is cross-sectional. A longitudinal study could offer us more information regarding the actual steps in the trajectory of growth.

4.4. CLINICAL IMPLICATION

Our results highlight the importance of cognitive processing in the road to growth, as well as the fact that STS and VPTG co-exist (Tedeschi *et al.*, 2018). Thereby, even though prevention is still the most appropriate solution, there are also some directions we could take in order to promote growth, even after experiencing STS symptoms. Organization should offer education regarding the impact that working with people exposed to trauma can have on professionals, and a guideline to recognizing the first signs of STS and the typical responses that could appear. They should also encourage self-disclosure, offer support groups and teach techniques in order to manage the distress that comes from these interactions.

4.5. CONCLUSION

This study further expended the research on the type of association between STS and VPTG in the case of health professionals. Our results showed that there is a significant positive association between STS and VPTG, and that both intrusive and deliberate rumination act as mediators. Thus, there is the possibility of growth

even after experiencing STS and rumination is one of the cognitive responses that could encourage growth, if appropriate coping strategies are used.

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REZUMAT

Prin natura muncii lor, cadrele medicale au un risc mai mare de a experimenta stres traumatic secundar (STS). Cu toate acestea, există dovezi care arată că încă pot să apară schimbări pozitive, sub forma dezvoltării posttraumatice vicariante (VPTG). Scopul acestui studiu a fost de a investiga relația dintre STS și VPTG la cadrele medicale, atât pentru scorurile globale, cât și pentru dimensiuni. Am testat de asemenea și dacă ruminarea intruzivă și cea deliberată joacă rolul unor mediatori în această relație. Lotul a fost format din 146 de cadre medicale. Rezultatele arată faptul că între STS și VPTG este o relație

semnificativă pozitivă, ceea ce confirmă ideea că este necesar să ai un anumit nivel de stres pentru ca dezvoltarea să reprezinte o posibilă urmare. Mai mult decât atât, atât ruminarea intruzivă, cât și cea deliberată au mediat total această relație. Aceste rezultate ar putea să ne ofere anumite informații în ceea ce privește procesul prin care anumite persoane reușesc să se dezvolte în diverse domenii din viața lor după expunerea la un eveniment traumatic. Prin urmare, este important pentru organizații să ia atât măsuri preventive, cât și protective, să ofere educație și grupuri de suport pentru a încuraja autodezvoltările și procesarea cognitivă a evenimentului.