

The Relationship Between Secondary Traumatic Stress and Personal Posttraumatic Growth: Personality Factors as Moderators

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Abstract This present study examined the relationship between secondary traumatic stress, personality factors, and personal posttraumatic growth for persons indirectly exposed to traumatic life events. A sample of 162 nurses and physicians completed the self-report measures describing symptoms of secondary traumatic stress, personality factors and vicarious posttraumatic growth. The results indicated that secondary traumatic stress negatively correlated with vicarious posttraumatic growth. Moreover, this relation is moderated by personality factors. A low level of secondary traumatic stress symptoms is associated with a higher level of perceived posttraumatic growth for participants with a high level of openness, agreeability and conscientiousness. These findings emphasize the differences in perceiving posttraumatic growth in the context of secondary exposure to traumatic life events.

Keywords Secondary traumatic stress · Posttraumatic growth · Personality · Moderation

Introduction

During the past three decades, many studies have shown that exposure to traumatic life events experienced by one person may become a traumatizing situation for a second person (see Mealer and Jones 2013, for review). The term secondary

traumatic stress is used to name the responses of avoidance, intrusions, and hyper arousal that might follow indirect traumatic exposure (Figley 1995b). These results can lead to sadness, depression, and fear (Van der Wath et al. 2013).

The occurrence and prevalence of secondary traumatic stress responses has been documented in various professional groups (Duffy et al. 2014; Lee et al. 2015; Yuan et al. 2011). Nevertheless, during recent years researchers have begun to show that trauma exposure can also lead to positive changes (e.g., Calhoun et al. 2010; Shakespeare-Finch and Barrington 2012). Most commonly, such changes are referred to as posttraumatic growth (PTG; Tedeschi and Calhoun 1996), including varying domains of personal change, like perception of the self, interpersonal relationships and philosophy of life. This phenomenon has been observed both in persons directly exposed to trauma (Kilmer and Gil-Rivas 2010; Yu et al. 2010) as well as at persons indirectly exposed to traumatic life events during their daily work (Arnold et al. 2005; Hyatt-Burkhart 2014; Taku 2014). In other words, people who are not directly exposed to traumatic life events but are exposed to others' suffering may also experience posttraumatic growth (Kissil et al. 2010; Loiselle et al. 2011; McCormack et al. 2011). This phenomenon is called vicarious posttraumatic growth (VPTG; Arnold et al. 2005). Although the study of posttraumatic growth has been very intense in the last years (Bostock et al. 2009; Prati and Pietrantoni 2009), little is known about VPTG and the way witnessing others' suffering can lead to personal growth.

The Relation Between Secondary Traumatic Stress and Vicarious Posttraumatic Growth

There are different perspectives regarding the relationship between secondary traumatic stress and vicarious posttraumatic growth. The most influential theory of posttraumatic

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growth proposed by Tedeschi and Calhoun (1996) suggests that the experience of negative outcomes of a trauma is necessary for the reconstruction of disrupted meaning systems. Lending support to this claim are studies showing that PTG increased as PTSD severely increased (Kiran et al. 2010; Jin et al. 2014; Nishi et al. 2010; Pietrzak et al. 2010; Tang 2006; Xu and Liao 2011). Therefore, most highly distressed persons are also likely to show the highest psychological growth. If salutary and pathological outcomes are positively correlated, it means that positive changes are not equivalent to alleviation of symptoms of stress. These results were also confirmed in studies looking at persons indirectly exposed to trauma (e.g., Arnold et al. 2005; Brockhouse et al. 2011; Linley et al. 2003; Tehrani 2007).

Even though the Tedeschi and Calhoun's (1996) post-traumatic growth perspective implies a positive relationship between traumatic stress and positive posttrauma outcomes, there are many conflicting results in the empirical literature regarding the relationship between traumatic stress and posttraumatic growth. If several researchers found that people with greater traumatic distress report greater posttraumatic growth, other researchers found an inverse relation between these variables (Park et al. 1996; Ssenyonga et al. 2013); still others found no relation (Boals et al. 2010; Kunst 2010; Zoellner and Maercker 2006; Zoellner et al. 2008). This lack of consistency is specific both to persons directly exposed, as well as indirectly exposed to traumatic life events. Although less widely examined, studies have shown that vicarious posttraumatic growth correlates positively with traumatic stress symptoms (Abel et al. 2014; Brockhouse et al. 2011; Linley and Joseph 2006; Shoji et al. 2014), while other studies deny the assumption that greater exposure would produce more growth (Linley and Joseph 2007). Therefore, regardless of the type of exposure to trauma, these studies may suggest that some other factors may moderate the relation between psychological distress and personal growth after exposure to trauma.

The Relation Between Personality and Posttraumatic Growth

A direction when it comes to studying posttraumatic growth consists of finding its personality determinants. The most popular theoretical framework to examine personality is the Big Five model that is comprised of five main dimensions, highly replicable across cultures (Rossier et al. 2005): neuroticism (being anxious, insecure, unstable, and depressed), extraversion (being assertive, active, energetic, and sociable), openness (being imaginative, independent-minded, curious, and autonomous), agreeableness (being cooperative, trusting, and caring), and conscientiousness (being responsible, self-disciplined, dependable, persistent,

and organized) (Digman 1990; Judge et al. 1999). Many studies confirm the protective role of extraversion, agreeableness, or conscientiousness for preventing posttraumatic stress symptoms (Chung et al. 2007; Merecz et al. 2012). However, little research has been conducted to explore the relation between personality factors and positive posttraumatic outcomes. Studies that do exist confirm the role of the personality factors in predicting positive outcome. For example, Tedeschi and Calhoun (1996) found significant correlations between personality traits and an overall measure of PTG as well as the scores of particular domains of PTG. Specifically, extraversion that implies being assertive, energetic, and sociable is positively related to PTG. The same pattern of result was observed when analyzing the relation among posttraumatic growth and other personality factors, such as openness to experience, agreeableness, and conscientiousness. Other studies confirmed these results, particularly underlining the positive role of extraversion (Sheikh 2004; Val and Linley 2006) and conscientiousness (Campbell-Sills et al. 2006; Lockenhoff et al. 2009). These variables are associated with a more favorable trajectory of mental health, probably because they influence how well people cope with different types of stressors (Jonsson and Segesten 2004). Regarding the relation between neuroticism and positive posttraumatic outcomes, some studies have reported a negative correlation (Campbell-Sills et al. 2006; Garnefski et al. 2008), while others, quite unexpectedly, found no significant correlations (Helgeson et al. 2006; Jaarsma et al. 2006; Tedeschi and Calhoun 1996). Similar results were observed and regarding the relation between openness and posttraumatic growth, some studies reported positive correlations (Affleck and Tennen 1996; Tedeschi and Calhoun 1996), while others found no significant correlations between PTG and this personality factor (Zoellner et al. 2008). According to our knowledge, there were no research on core personality dimensions and personal growth in the context of indirect exposure to stress and trauma.

The Present Study

This study aims to investigate the relation between traumatic stress and positive posttraumatic outcomes at persons indirectly exposed to traumatic life events and whether this relation is moderated by interindividual differences. We used a sample of Romanian medical staff working in hospital care. Nurses and physicians are exposed to numerous potentially traumatic situations as a part of their daily duties, including taking care of victims and sick people, seeing patients die and being exposed to patients who have open wounds (Mealer et al. 2007). Moreover, the Romanian health care system is characterized by a constant underfinancing and an accelerating migration of medical

professionals to other countries (Bria et al. 2013). As a consequence, in Romania there is one of the lowest densities of medical professionals in Europe (Schäfer et al. 2010). This fact can lead to overloading and further to traumatic stress. These particularities are also specific to other Eastern European countries that face similar problems.

If repeated exposure to such events can have detrimental effects on the mental health of medical staff, including the development of secondary traumatic stress (Mealer and Jones 2013; O'Connor and Jeavons 2003; Von Rueden et al. 2010, review), it is possible that such vicarious exposure to trauma can also have positive consequences. However, there is a paucity of studies on the relationships between secondary traumatic stress and posttraumatic growth among workers vicariously exposed to trauma. Considering previous research, there are several reasons for conducting this study. First, although PTG has been studied with various kinds of traumatic events, a relatively small number of studies have been conducted on vicarious exposure to trauma in general and the medical staff in particular. Secondly, as there are no doubts that helping people in difficulty can lead to the development of secondary traumatic stress (Shoji et al. 2014), the relation between negative and positive posttraumatic outcomes is controversial. Therefore, it is important to know what psychological variables may be involved in translating the negative outcomes (secondary traumatic stress) into positive ones (vicarious posttraumatic growth). Thirdly, according to our knowledge, there were no research on core personality dimensions as moderators of the relation between secondary traumatic stress and vicarious posttraumatic growth.

Based on theoretical and empirical evidence presented above, we hypothesized that: (1) VPTG should be correlated with secondary traumatic stress. Because previous studies have been inconsistent on whether traumatic stress is positively or negatively related to positive outcomes, such as posttraumatic growth, we cannot anticipate the direction of the relationship. (2) Personality factors will moderate the relation between secondary traumatic stress on VPTG.

Method

Participants

We recruited participants from three hospitals in a metropolitan area in Romania. The sample consisted of medical staff (physicians and nurses). The participants who provided incomplete data were excluded from the analysis. The final sample of 162 participants consisted of 66.9 %

nurses and 33.1 % physicians, from the Intensive Care, Emergency, Neurosurgery, Cardiology, and Oncology units. The ages ranged from 20 to 65 years old ($M = 32.02$; $SD = 10.69$). From the total sample, 87 % were female and 13 % percents were male. The inclusion criterion was at least one year of work experience in healthcare setting. The experience in the healthcare field ranges from one to 40 years ($M = 7.34$ years, $SD = 6.91$), and the mean number of hours of working with patients per week is 33.31 ($SD = 8.90$). There were no other exclusion criteria including restrictions based on demographic variables. As a sampling strategy, we used self-selection sampling where the participants volunteered to take part in the research of their own accord.

Measures

The *Secondary Traumatic Stress Scale* (STSS; Bride et al. 2004) is a 17-item scale designed to measure secondary trauma on three dimensions: intrusion (e.g., *My heart started pounding when I thought about my work with patients.*), avoidance (e.g., *I avoided people, places, or things that reminded me of my work with clients.*), and arousal (e.g., *I had trouble sleeping.*). On a five-point Likert scale, the respondents indicate their agreement with items that reflect specific responses related to their work with victims of trauma. A higher total score indicates a higher secondary traumatic stress. In our sample, only the total score was used, and the Cronbach alpha was .90.

Posttraumatic growth Inventory (PTGI; Tedeschi and Calhoun 1996) was used to assess perceived psychological growth. It consist of 21-items, rated from 1 (strongly disagree) to 5 (strongly agree). In particular, the items measure posttraumatic growth in five areas: interpersonal relationships (e.g., *I have more compassion for others.*), new possibilities (e.g., *New opportunities are available which wouldn't have been otherwise.*), personal strength (e.g., *I discovered that I'm stronger than I thought I was.*), spiritual changes (e.g., *I have a better understanding of spiritual matters.*), and appreciation of life (e.g., *I can better appreciate each day.*). This current study modified the instructions and asked the participants to indicate the degree to which each change occurred as a result of their professional experience as a physician/nurse. For the purposes of this current study, the total score was used; higher scores represent a greater perceived posttraumatic growth. Cronbach alpha for the current sample was .91.

Five Factor Model Rating Form (FFMRF; Mullins-Sweatt et al. 2006) is a brief instrument for collecting ratings of the Five Factor Model domains and the 30 facets proposed by Costa and McCrae via the NEO Personality Inventory—Revised. Each of the 30 facets is assessed by a single item that is anchored at both the low and high ends

by a set of 2–3 adjectives. The 30 items measure five major areas of personality: Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. Cronbach alphas for the current sample ranged between 0.71 and 0.78, for the five scales.

Demographic variables were collected via a questionnaire that covered age, gender, occupation, hospital unit, number of hours of work with patients per week, and work experience.

The Romanian version of the items of the three scales was obtained by using the back-translation method. After translating the items into Romanian, another certified professional translated them back into English. There were no major dissimilarities as compared to the English form.

Procedure

Informed consent was obtained from all the participants. The research was presented as an exploration study of the employers' perception about positive and negative consequences of working in the healthcare field. The participants were informed that their participation was voluntary, and that the information would be kept confidential and would not become part of their evaluation. Because the workload in the workplace is very high, each respondent was asked to fill in their questionnaire individually in his/her leisure time. The participants completed all measures anonymously to protect their confidentiality. The importance of answering truthfully was emphasized. No incentives were offered to the participants in this study.

Results

Preliminary Analysis

Means, standard deviations, and correlation coefficients for all scales are reported in Table 1. Neuroticism negatively correlated with vicarious posttraumatic growth, ($r = -.18$; $p = .024$), while extraversion ($r = .29$; $p < .001$), openness ($r = .32$; $p < .001$), agreeableness ($r = .20$; $p < .001$), and conscientiousness ($r = .34$; $p < .001$) positively correlated with vicarious posttraumatic growth. The results also showed that professional experience negatively correlated with secondary traumatic stress ($r = -.16$; $p = .047$) and positively correlated with vicarious posttraumatic growth ($r = .21$; $p = .007$). There were no significant associations between hours of work with patients per week and all the studied variables, for the exception of conscientiousness ($r = .18$; $p = .023$). None of the correlation coefficients for the relations among the variables exceeded 0.80, suggesting no problems with multicollinearity (Tabachnick and Fidell 2007).

Correlation Between Secondary Traumatic Stress and Vicarious Posttraumatic Growth

In this study, secondary traumatic stress was negatively related to vicarious posttraumatic growth ($r = -.19$; $p = .019$).

Testing for Moderation

We conducted hierarchical regression models for vicarious posttraumatic growth outcome, with professional experience and number of hours per week as covariates in step one, secondary traumatic stress, neuroticism, extraversion, openness, agreeableness, and conscientiousness main effects in step two; interaction between secondary traumatic stress and personality factors were entered in the final step. The main and interaction effects were centered to minimize multicollinearity. The results are depicted in Table 2.

Openness and conscientiousness were significant predictors of vicarious posttraumatic growth. The STS \times Openness and STS \times agreeableness were significant in predicting vicarious posttraumatic growth. Also the STS \times Conscientiousness interaction was marginally significant. The nature of these interactions is illustrated in Figs. 1, 2, and 3. We explored the moderating effect of the personality factors by calculating mean growth values for low, medium, and high levels of personality factors and secondary traumatic stress. Medium values are based on the mean, and low and high levels of the variable are one standard deviation below and above the mean, respectively (Aiken and West 1991).

Discussion

The first aim of this study was to explore the nature of relation between secondary traumatic stress and vicarious posttraumatic growth. The results of the study confirm that people who experience a low level of secondary traumatic stress may experience a high level of vicarious posttraumatic growth. There is no agreement on the relation between traumatic stress and posttraumatic growth in previous research, but in a few studies a negative association was revealed (Ssenyonga et al. 2013). Although we do not have strong theoretical support for these findings, we consider them relevant in the context of constantly indirect exposure to trauma.

Theories of positive changes after trauma suggest that some level of distress is necessary in order to develop positive posttrauma outcomes (Tedeschi and Calhoun 2004). Although our results do not deny the fact that a traumatic experience is essential to develop posttraumatic growth (Tedeschi and Calhoun 2004), they do not sustain

Table 1 Means, standard deviations, and bivariate correlations for all study variables

	1	2	3	4	5	6	7	8	9
1. STS	1								
2. VPTG	-.19*	1							
3. N	.56***	-.18*	1						
4. E	-.24**	.29***	-.27***	1					
5. O	-.19*	.32***	-.19*	.22**	1				
6. A	-.36***	.20***	-.32***	.28***	.31***	1			
7. C	-.46***	.34***	-.54***	.44***	.35***	.46***	1		
8. Experience	-.16*	.21**	-.03	.08	.03	.01	.07	1	
9. HW	-.09	.07	-.03	.04	.05	.09	.18*	.18*	1
M	36.53	78.89	22.26	23.61	25.20	34.12	48.33	7.34	33.31
SD	11.90	15.57	5.56	3.51	3.92	4.33	6.26	6.91	8.90

STS secondary traumatic stress, VPTG vicarious posttraumatic growth, N neuroticism, E extraversion, O openness, A agreeableness, C consciousness, HW hours per week, N = 162

* $p < .05$; ** $p < .01$; *** $p < .001$

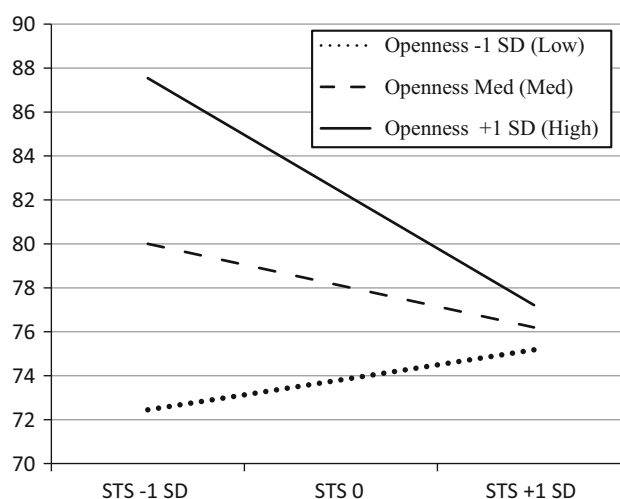
Table 2 Hierarchical regression models of secondary traumatic stress and personality factors on vicarious posttraumatic growth

	Vicarious posttraumatic growth			
	β	t	ΔR^2	ΔF
<i>Step 1</i>			0.03*	3.87*
Professional experience	0.18*	2.42		
Hour per week	-0.01	-0.09		
<i>Step 2</i>			0.17***	5.42***
STS	-0.04*	0.04		
Neuroticism	0.02	0.20		
Extraversion	0.14	1.70		
Openness	0.22**	2.76		
Agreeability	0.02	0.17		
Consciousness	0.20*	2.05		
<i>Step 3</i>			0.24**	3.54***
STS \times Neuroticism	-0.10	-0.90		
STS \times Extraversion	0.16	1.91		
STS \times Openness	-0.16*	-2.00		
STS \times Agreeability	-0.26***	-2.60		
STS \times Consciousness	-0.06†	-0.53		

STS secondary traumatic stress, N = 162

* $p < .05$, ** $p < .01$, *** $p < .001$

the fact that more severe traumatic stress symptoms makes posttraumatic growth more probable to appear. This fact may be specific only for persons directly exposed to an isolated traumatic event. When someone is exposed daily to other trauma, the cumulative situations encountered can become very overwhelming. This traumatic stress that has its roots in daily interaction with victims of trauma can hinder the process of personal development. By contrast, a low level of stress can promote awareness of personal strength, new possibilities in life, and can lead to improving

**Fig. 1** Presence of vicarious posttraumatic growth as a function of secondary traumatic stress and Openness. Notes: STS secondary traumatic stress. Simple effects were represented with secondary traumatic stress symptoms and openness defined as at least +1 and -1 standard deviations from the mean, respectively

interpersonal relationships, spiritual changes as well as appreciation of life. Therefore, the result in this current study is consistent with one possible mode of the association between traumatic stress and posttraumatic growth, that is, the lower the distress, the more the growth (Ssenyonga et al. 2013).

The second aim of this present study was to explore the moderating role of personality factors in the relation between secondary traumatic stress and vicarious posttraumatic growth. As we expected, openness, agreeability, and consciousness moderated the relation between negative and positive posttrauma outcomes. Specifically our result showed that the participants with a low level of secondary

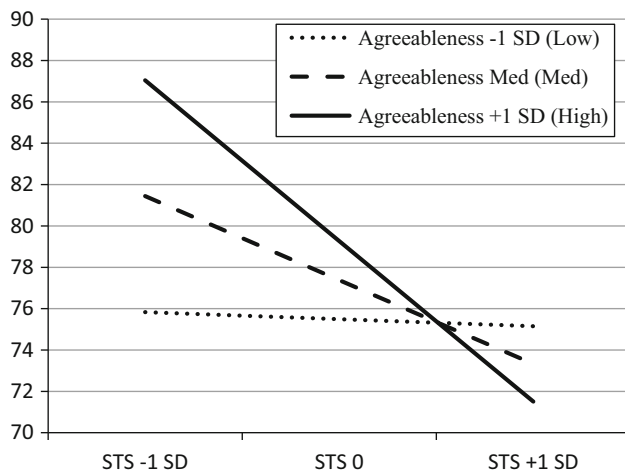


Fig. 2 Presence of vicarious posttraumatic growth as a function of secondary traumatic stress and Agreeableness. *Notes:* STS secondary traumatic stress. Simple effects were represented with secondary traumatic stress symptoms and agreeableness defined as at least +1 and -1 standard deviations from the mean, respectively

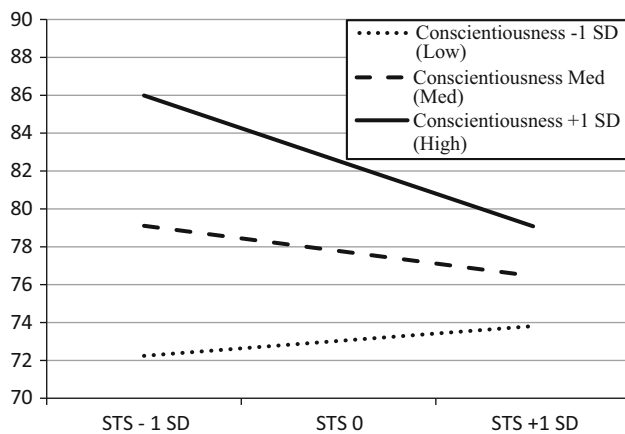


Fig. 3 Presence of vicarious posttraumatic growth as a function of secondary traumatic stress and Conscientiousness. *Notes:* STS secondary traumatic stress. Simple effects were represented with secondary traumatic stress symptoms and conscientiousness defined as at least +1 and -1 standard deviations from the mean, respectively

traumatic stress report a higher level of growth when they also present a high level of openness. This result is not surprising given the fact that openness is defined as the tendency to be interested in new situation and new experiences (Costa and McCrae 1985). Other researchers also found significant positive associations between openness and posttraumatic growth (Tedeschi and Calhoun 1996), although the moderating role of openness has not been studied before. Because persons with a high level of openness have the ability to develop with change rather than work against it (Merecz et al. 2012), these persons are more prone to gain benefits from adversity (Tedeschi and Calhoun 1996). Moreover, openness has a cognitive facet

(openness to new ideas) that can be essential in developing growth, since the literature on growth emphasizes cognitive processing of traumatic situations as an important factor in the emergence of posttraumatic growth. We should also point to the fact that for a person with a high level of secondary traumatic stress, the level of vicarious posttraumatic growth does not change as a function of openness. Therefore, a high level of secondary traumatic stress may inhibit the ability to think deliberately about the impact of the traumatic situations encountered.

Another important result of this present study is the fact that agreeableness has proven to be a significant moderator of the relationship between secondary traumatic stress and posttraumatic growth. Specifically, the level of agreeableness did not influence the level of growth for persons with a high level of traumatic stress symptoms but determined a high level of growth for persons with a low level of secondary traumatic stress. The inverse relation between posttraumatic growth and secondary trauma is observable only for high and medium levels of agreeableness. Therefore, a low level of perceived secondary traumatic stress is not enough to develop posttraumatic growth. The traits that characterized persons with a high level of agreeableness can explain these results. Agreeable people are more friendly, helpful, trustworthy, and caring (Costa and McCrae 1992). These traits may facilitate the establishment of social relationships that may result in a larger network of support as well as perceiving others as more supportive (Wehrli 2008).

Although the interaction between secondary traumatic stress and conscientiousness in predicting posttraumatic growth is marginally significant, we choose to represent it, since conscientiousness is considered to be of particular interest in the context of workplace outcomes. The graphical representation of this relation revealed some interesting results. Persons of low level of secondary traumatic stress were perceived to have a high level of growth compared with persons with a high level of secondary traumatic stress, when they also reported a high level of conscientiousness. For a medium level of conscientiousness, the differences between a low and high level of secondary traumatic stress regarding posttraumatic growth are less evident, whereas for a low level of conscientiousness, the relation changed. That is, for these persons, a high level of growth was perceived by those with a high level of secondary traumatic stress. It seems that higher distress is associated with higher growth but only for persons with a low level of conscientiousness. This personality factor refers to responsibility, self-control, self-discipline, persistence, need for achievement, and the ability to solve problems successfully (Judge et al. 1999). Due to these characteristics, conscientiousness has also been conceptualized as an indirect measure of emotional regulation,

which is believed to play an important role in moderating responses to traumatic stressors. Those aspects of conscientiousness that are particularly relevant for traumatic exposure may be helpful in PTG development (Garnefski et al. 2008).

Limitation and Conclusions

Several limitations should be mentioned. The first limitation concerns the cross-sectional nature of this study that does not entitle for formulation of cause–effect conclusions. A second limitation of this study is the fact that subjects can differ in terms of exposure to trauma, since they are from different hospital units. Although we monitored for the influence of hours of work per week, we could not control the nature of encountered trauma. This is why we decided to present our data as a single sample. Moreover, the sample size was too small to consider the data separately provided by the participants from different units. Third, the majority of the physicians and nurses in our sample were female; therefore, the results of our study are most applicable to women. We can explain this by the fact that the majority of professionals in the nursing profession are female. Since our sample is mainly comprised of nurses, there are not important differences between our sample and the target population, regarding gender. Nevertheless, further work is needed to replicate these findings in still larger samples, more similar regarding the work environment. Additional research should also be done to explore the differences between posttraumatic growth reported by persons directly exposed to trauma (e.g., patients) and posttraumatic growth reported by persons indirectly exposed to the same traumatic events (e.g., medical staff). It is possible that posttraumatic growth and vicarious posttraumatic growth are similar phenomena, since they have the same theoretical background, but it is also possible to be important differences between the relation of these positive changes and other variables (e.g., traumatic stress).

Despite the aforementioned limitations of this present study, it is worth underlining that it is one of rarest studies exploring the relation between traumatic stress and personal posttraumatic growth at persons indirectly exposed to traumatic life events. Our results support the fact that traumatic stress symptoms and vicarious posttraumatic growth are negatively related. Moreover, this relation is moderated by personality factors, such as openness, agreeability, and consciousness. These findings are novel and can have important implications for training and supervision. Firstly, the importance of being imaginative, independent-minded, cooperative, trusting, caring, responsible, self-disciplined, and organized should be highlighted in training. Secondly, screening and mentoring of high-risk

individuals should be considered, particularly following a major traumatic event or cumulative exposure to extreme trauma (Healy and Tyrrell 2011). Thirdly, the findings presented here can contribute to the theoretical framework of vicarious posttraumatic growth, and they may be useful in developing interventions aimed at preventing secondary traumatic stress and promoting psychological growth.

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