

Rumination and Suppression as Mediators of the Relationship Between Dysfunctional Beliefs and Traumatic Stress

Maria Nicoleta Turliuc and Cornelia Măirean

Alexandru Ioan Cuza University of Iasi

Mihaela Dana Turliuc

Gr. T. Popa University of Medicine and Pharmacy of Iasi

The purpose of this present research is to investigate the role of dysfunctional beliefs in developing intrusive memories, a hallmark symptom of posttraumatic stress disorder (PTSD). Although dysfunctional beliefs have predicted traumatic stress after various types of traumatic events, the mechanisms through which cognitive distortions influence traumatic distress for persons indirectly exposed to traumatic events remain unclear. The high levels of symptom similarity suggest that established vulnerability factors for PTSD in primary victims may also serve as vulnerability factors for traumatic stress symptoms in indirect victims. Therefore, we hypothesized that cognitive processes of rumination and suppression would operate as mediators between dysfunctional beliefs and traumatic distress. A total of 138 medical staff across 3 hospitals in Romania completed measures of dysfunctional beliefs, responses to intrusion, and secondary traumatic stress. The results emphasized the importance of dysfunctional beliefs as predictors of intrusions. Also, our data indicated that rumination and suppression mediated the effects of dysfunctional beliefs about oneself and about the world when it comes to traumatic stress. These results provide insight into a mechanism through which dysfunctional beliefs may affect posttraumatic stress and may highlight the importance of examining multiple vulnerability factors simultaneously in increasing the understanding of the etiology of PTSD.

Keywords: secondary trauma, dysfunctional beliefs, intrusion, rumination, suppression

This article was published Online First May 4, 2015.

Maria Nicoleta Turliuc and Cornelia Măirean, Faculty of Psychology and Education Sciences, Psychology Department, Alexandru Ioan Cuza University of Iasi; Mihaela Dana Turliuc, Faculty of Medicine, Gr. T. Popa University of Medicine and Pharmacy of Iasi.

This work was partially supported by the “Alexandru Ioan Cuza” University of Iasi, under the responsibility of the Project 15/28.11.2014, Internal Grant GI-2014-15: Young researchers’ competition, UAIC.

Correspondence concerning this article should be addressed to Cornelia Măirean, Alexandru Ioan Cuza University of Iasi, Faculty of Psychology and Education Sciences, Psychology Department Toma Cozma 3, Iasi-700554, Romania. E-mail: amariei.cornelia@yahoo.com; cornelia.mairean@psih.uaic.ro

Following exposure to traumatic life events, most people experience one or more of the core symptoms of PTSD, such as intrusions, avoidance, negative cognitions, and hyperarousal (American Psychiatric Association, 2013). Intrusive memories (e.g., flashbacks and nightmares) are uncontrollable, unwanted, and distressing images or thoughts of the traumatic event that repeatedly come into one's consciousness (Grey & Holmes, 2008).

Over the last 20 years researchers have been able to show that indirect exposure to traumatic events, through interactions with the victims of such events in a private or professional context (i.e., vicarious trauma), can lead to symptoms of traumatic stress (Caine & Ter-Bagdasarian, 2003; Figley, 1995; McCann & Pearlman, 1990; Pearlman & Mac Ian, 1995). The *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5)* also maintains that the symptoms of PTSD may develop not only directly, through personal exposure to a traumatic event, but also by repeated or extreme exposure to the painful details of such events (American Psychiatric Association, 2013; Kerasiotis & Motta, 2004). The work related to traumatic stress is particularly interesting because even the quality of professional activities can be negatively affected. In this study we investigated traumatic stress and the variables associated in a sample of Romanian medical personnel.

A number of factors could determine the development and persistence of intrusions in PTSD. For example, disruption of preexisting beliefs about the self and the world following an exposure to critical life events play an important role in the development of traumatic stress symptomatology (e.g., Foa, Ehler, Clark, Tolin, & Orsillo, 1999). According to the constructivist self-development theory (McCann & Pearlman, 1990) there are five areas of beliefs that could become dysfunctional after experiencing a traumatic event. These areas include: safety, trust, esteem, control, and intimacy.

The current study analyzes the impact of dysfunctional beliefs on symptoms of traumatic stress using McCann and Pearlman's (1990) theoretical conceptualization of beliefs. Cognitive coping processes, such as rumination or suppression, also play an important role in modifying symptoms of traumatic stress and in developing interventions to promote healthy behavior (Clohessy & Ehlers, 1999; Garland & Roberts-Lewis, 2013). Consequently, the variables associated with traumatic stress investigated in this study are dysfunctional beliefs, rumination, and suppression.

DYSFUNCTIONAL BELIEFS AND SYMPTOMS OF TRAUMATIC STRESS

Early theorists (Janoff-Bulman, 1992; McCann & Pearlman, 1990) suggested that the experience of a trauma leads one to challenge previous

cognitive schemas, that is, the assumptions, beliefs, and expectations that individuals hold about themselves, others, and the world. Moreover, theoretical frameworks, such as emotional processing theory (Foa & Rothbaum, 1998), maintain that there is a direct relation between increased disruption in cognitive schemas and the development of posttraumatic distress. In other words, the experience of a traumatic event contradicts an individual's pre-existing beliefs related to the self and the world, and the new dysfunctional beliefs are considered important in the development and persistence of PTSD symptoms (Edmondson et al., 2011; Platt & Freyd, 2011; Shiri, Wexler, Schwartz, Kadari, & Kreitler, 2010; Vaile Wright, Collinsworth, & Fitzgerald, 2010). Empirical research has provided support for the assumption that exposure to trauma can lead to cognitive distortions in a number of different domains (Cockram, Drummond, & Lee, 2010; Harding, Burns, & Jackson, 2012; Owens, Pike, & Chard, 2001). Therefore, maladaptive cognitions following trauma are a focus in cognitive-behavioral treatments for PTSD (e.g., Butler, Chapman, Forman, & Beck, 2006).

RUMINATION, SUPPRESSION, AND TRAUMATIC STRESS SYMPTOMS

Cognitive models of psychopathology suggest that cognitive processes mediate the relationship between environmental events, beliefs, and subsequent emotional responses (Riskind & Alloy, 2006). Among the cognitive coping strategies, rumination and the efforts to suppress the intrusions were considered to be of particular interest.

Rumination is commonly defined as “a mode of responding to distress that involves repetitively and passively focusing on the possible causes and consequences of negative events” (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008, p. 400). Defined in this way, rumination is considered a maladaptive coping strategy, because it has been shown that people who engage in rumination tend to experience higher levels of traumatic distress following exposure to a trauma (Hu, Koucky, Brown, Bruce, & Sheline, 2014; Meiser-Stedman et al., 2014; Sergerstorm, Tsao, Alden, & Craske, 2000). Moreover, engaging in rumination contributes not only to the development of traumatic stress symptoms but also to the maintenance of these symptoms (Brewin & Holmes, 2003).

Another cognitive coping strategy that seems to lead to similar results is suppression. Multiple studies indicate that the tendency to suppress and avoid unwanted thoughts is related to the presence and severity of posttraumatic stress symptoms (Chung & Hunt, 2014; Elzinga & Bremner, 2002; Tull, Gratz, Salters, & Roemer, 2004). Experimental studies conducted in the

laboratory also tested the role of suppression, showing that deliberate thought suppression determines a higher level of intrusions following exposure to a trauma (Beck, Gudmundsdottir, Palyo, Miller, & Grant, 2006). During the professional confrontation with a traumatic event, the suppression of emotions and cognitions can be important for the worker in order to accomplish his or her tasks, but in the long term this might prevent the recovery process and lead to the development of traumatic stress symptomatology (Clohessy & Ehlers, 1999).

RUMINATION AND SUPPRESSION AS MEDIATORS IN THE RELATIONSHIP BETWEEN DYSFUNCTIONAL BELIEFS AND INTRUSIONS

When preexisting beliefs related to central psychological needs are modified by traumatic events the person is vulnerable to developing PTSD symptomatology. Although previous research has documented the importance of dysfunctional beliefs (Cieslak, Benight, & Caden Lehman, 2008), rumination, and suppression (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008) in the development of intrusions, how these factors work together in accounting for variations in these manifestations was not examined. Therefore, the effect of dysfunctional beliefs on intrusion is not clear, particularly because previous research does not provide evidence for the mechanism that facilitates this relationship.

Although the theoretical approaches described above maintain that dysfunctional beliefs are the most important predictors of posttraumatic stress symptoms, we believe that this relationship is more complex and hypothesize that rumination and suppression mediate the relationship between dysfunctional beliefs and work-related PTSD symptoms. Previous research showing that some cognitive ways of coping (e.g., self-efficacy) mediate the relationship between dysfunctional beliefs and posttraumatic distress (Cieslak et al., 2008) supports this assumption. Different people may be more vulnerable to emotional impairment than others when confronted with unwanted memories and thoughts related to trauma, and this makes them less capable of managing these intrusions (Cieslak et al., 2008). Having dysfunctional beliefs about oneself and the world, an individual might attempt to find meaning for the aversive experience though repetitive thinking about the cause and consequences of that experience (rumination). In contrast, one might attempt to avoid the unwanted intrusion and keep those intrusions away from consciousness, referred to as suppression. According to cognitive models, the use of these cognitive coping strategies interferes with the emotional processing of the traumatic memory and prevents its successful integration into the long-

term memory. Due to this interference, negative coping responses often contribute to the persistence of PTSD (Elzinga & Bremner, 2002; Shalev & Ursano, 2003).

CONTEXTUAL BACKGROUND

Given the unique setting and sociohistorical experiences that have influenced the Romanian culture, it is important to include some contextual background for this study. The Romanian health care system is characterized by a culture of learned helplessness as a consequence of the last two decades of reform (Spănu, Băban, Bria, & Dumitrașcu, 2013). Successive reforms of the health care system have some important consequences. On the one hand, the number of family physicians for primary care is low. On the other hand, in recent years the outpatient medical services were disbanded and patients were directed either to private structures or outpatient medical units integrated into health facilities with beds. As a consequence, units with beds have been overcrowded and medical personnel overloaded. For example, every day a physician tends to 5 to 15 beds in a hospital, and a nurse is responsible for 8 to 12 beds.

Emergency medicine in Romania is organized in emergency departments following the Anglo American model. The prehospital emergency care system allows for the intervention of emergency medical crews (physicians, nurses, paramedics) via mobile intensive care ambulances or helicopters. Health care personnel receive and resolve a growing number of patients—between 40,000 and 90,000 patients per year—in a first level emergency department of a university or county hospital.

Different statistics have shown that Romania has one of the lowest densities of medical professionals in Europe, with fewer than two physicians for 1,000 people, and fewer than four nurses for 1,000 people (Schäfer et al., 2010). Moreover, during the time of data collection, there had been a constant underfinancing of the health care sector, as well as poor planning and poor management of the health workforce, and, recently there has been an accelerating migration of medical professionals (over 14,000 physicians from 2007) to other countries (Bria, Băban, Andreica, & Dumitrașcu, 2013; Vlădescu, Scîntee, Olsavszky, Allin, & Mladovsky, 2008).

The characteristics of the Romanian health care system are not unique in comparison with other Eastern European countries that face similar problems. However, there have been few studies conducted among Romanian health care workers and among Eastern European health care professionals, in general. The current study is an attempt to better understand the way the challenges of working with trauma victims add to the challenges of the system described above.

THE CURRENT STUDY

In this study we investigate whether dysfunctional beliefs about the self and the world, as well as rumination and suppression contribute to the development of traumatic stress symptoms in a sample of Romanian medical personnel. There were several reasons underlying this approach. First, we found very few empirical studies on the relationship among dysfunctional beliefs, rumination, suppression and traumatic stress symptoms. Identifying the factors that predispose a person to developing traumatic stress is an important step in developing intervention strategies for the effective management of work-related stress (Litz & Gray, 2004; Ørner et al., 2003). Second, although several studies were carried out to explain the influence of dysfunctional beliefs on traumatic stress symptoms (Brewin & Holmes, 2003; Foa & Rothbaum, 1998), the mediating effect of rumination and suppression has not been investigated. Since the psychological intervention designed to prevent the symptoms of traumatic stress offers advice about enhancing positive coping skills (Bisson & Andrew, 2007), the understanding of coping strategies that facilitate the development of intrusions may be relevant. Third, this present study is one of the few studies conducted in the Romanian context.

According to theoretical framework (constructivist self-development theory, emotional processing theory) and previous research in the field, the hypotheses of our study are:

Hypothesis 1: Dysfunctional beliefs directly relate to intrusion, a core symptom of PTSD.

Hypothesis 2: Rumination and suppression directly relate to intrusion.

Hypothesis 3: Rumination and suppression mediate the relationship between dysfunctional beliefs and intrusions.

METHOD

Participants

The research took place within three hospitals in the city of Iasi, Romania. Participants in this study were made up of 149 medical workers. Those who provided incomplete data were excluded from the analysis. The final sample of 138 participants (see Table 1) consisted of 64.5% nurses and 35.5% physicians from the intensive care (12 physicians, 19 nurses), emer-

Table 1. Demographic and Professional Characteristics of Participants

	<i>n</i>	%	<i>M</i>	<i>SD</i>
Age			39.11	9.48
Experience (years)			10.50	9.68
Gender				
Female	109	79		
Male	29	21		
Profession				
Physicians	49	35.5		
Nurses	89	64.5		
Field of practice				
Intensive care	31	22.46		
Emergency	29	21.01		
Ambulance	19	13.76		
Neurosurgery	36	26.08		
Oncology	23	16.66		

Note. *N* = 138.

gency (6 physicians, 23 nurses), ambulance (6 physicians, 13 nurses), neurosurgery (16 physicians, 20 nurses), and oncology units (9 physicians, 14 nurses). Our research sample largely comprised women (79%). Their ages ranged from 25 to 66, with an average age of 39.11 years (*SD* = 9.48). The participants had considerable experience in the health care field (*M* = 10.50 years, *SD* = 9.68). All of the participants answered a set of questionnaires after signing a confidentiality agreement. The inclusion criteria were related to the units of the hospital where the medical personnel worked. Therefore, we only included workers from units characterized by numerous interactions with patients who had severe or unexpected medical conditions. We excluded participants from hospital laboratories in which workers have minimal or no interaction with patients. There were no other exclusion criteria, including restrictions based on demographic variables.

Measures

The Traumatic Stress Institute Belief Scale (TSI-BLS; Pearlman, 1996) assessed the impact of directly and indirectly experienced trauma. The TSI-BLS has 80 items that were rated on a 6-point Likert scale (1 = *strongly disagree*, 6 = *strongly agree*). Negative items were reversely scored. In particular, the TABS measures disruptions in beliefs related to five areas of needs that are sensitive to the effects of trauma: safety, trust, esteem, intimacy and control. Within each of these areas of needs, separate sets of items tap into the beliefs about oneself and others, yielding subscale scores and a total score. Examples of items of this scale include “I worry a lot about the safety of my loved ones” and “I generally don’t believe the things people

tell me.” For the purposes of this current study, the total score was used; higher scores represent increased disruption in cognitive schemata (Pearlman, 1996). Cronbach’s alpha reliability coefficient for the current sample was .92.

The Secondary Traumatic Stress Scale (STSS; Bride, Robinson, Yegidis, & Figley, 2004), a 17-item scale, measured secondary trauma on three dimensions: intrusion, avoidance and arousal. Using a five-point Likert scale, the respondents indicated their agreement with items that reflected specific responses related to their work with trauma victims. A higher total score indicated higher secondary traumatic stress. The cut-off score for the STSS was 39, meaning that the participants who scored above 39 on the STSS also met the core criteria for PTSD, and those participants with a score of 38 or below did not (Bride, 2007). In our sample, Cronbach’s alpha reliability coefficient for the intrusion subscale (five items) was .77.

The Response to Intrusion Questionnaire (RIQ; Clohessy & Ehlers, 1999; Murray, Ehlers, & Mayou, 2002) assessed cognitive variables associated with the persistence of intrusive memories. Rumination (five items) and suppression (four items) subscales of the RIQ were used in this study. The participants stated how frequently they experienced the items on a Likert scale ranging from 0 (*not at all*) to 3 (*always*). The findings indicated that the RIQ was a strong predictor of PTSD severity, providing support for its predictive validity (e.g., Murray et al., 2002). Cronbach’s alpha coefficients for this current sample were .82 for the rumination subscale and .74 for the suppression subscale.

Demographic variables were collected via a questionnaire that covered age, sex, occupation, unit, and work experience.

The authors translated items of the three scales into Romanian. Following the translation, a graduate student who majored in English literature back-translated the scales into English (Beaton, Bombardier, Guillemin, & Ferraz, 2000). Finally, a person whose native language is English compared the back-translated English versions with the original scales and discussed observed discrepancies with the authors of this paper. There were few translation problems. The presented issues were due to linguistic differences; some English words could be readily translated into Romanian or did not have the same meaning for the study population. For example, “client” was translated to “patient” to make the focal person (the patient) more clearly identified for the medical professionals, “jumpy” was changed to “irritable,” which is less colloquial and more true to the concept of interest, a response scale description “never” was changed to “not at all,” because the phrases are not linguistically differentiated in Romanian, and the word “close” was dropped from “close and connected,” because these words are synonymous in Romanian. After discussing the discrepancies, the Romanian version was finalized.

Procedure

As a sampling strategy, we used self-selection sampling where participants volunteered to take part in the research of their own accord. The participants were not remunerated, but they were told that they could be informed about the results of the study. Permission to administer the survey was obtained from the chief physicians of the hospitals, as well as the hospitals’ institutional review boards, and informed consent was obtained from all participants. The research was presented as an exploratory study of the employees’ view regarding confrontation with different traumatic situations.

Volunteer participants in this study were selected during a series of brief oral presentations that a researcher, who was also affiliated with a medical unit in a hospital, delivered within each hospital units. The participants were informed that their participation was voluntary and would not become part of their performance evaluation. Study questionnaires were distributed and participants were asked to return completed questionnaires in a box placed within each unit within one week. The participants completed all measures anonymously to protect their confidentiality. To encourage honest and valid responses, and to prevent participant identification, raw data were processed and analyzed by a researcher who was not affiliated with any medical unit.

RESULTS

Preliminary Analysis

First, to test for a possible bias, we conducted an independent samples *t* test comparing professionals’ (nurses vs. physicians) means on dysfunctional beliefs, rumination, suppression, and intrusions. The results showed no significant differences on any of the aforementioned study variables. Table 2 presents descriptive statistics and correlations of all study variables. Preliminary analyses, using Pearson correlation, demonstrated that dysfunctional

Table 2. Pearson Correlations, Means, Standard Deviations (*SDs*), and Cronbach’s Alphas (in Bold on the Diagonals) of Study Variables

	<i>M</i>	<i>SD</i>	1	2	3	4
1. Dysfunctional beliefs	110.58	16.44	.92			
2. Rumination	7.54	3.03	.33**	.82		
3. Suppression	5.51	2.81	.40**	.51**	.74	
4. Intrusions	11.96	3.27	.44**	.42**	.41**	.77

Note. *N* = 138.

** *p* < .001.

beliefs and intrusions are positively correlated, $r = .44, p < .001$, and that the correlations between dysfunctional beliefs and each of rumination and suppression are also significant ($r_s = .33$ and $.40$, respectively, $p < .001$). Also, intrusions positively correlated with rumination and suppression ($r_s = .42$ and $.41$, respectively, $p < .001$).

Mediation Analyses

Shrout and Bolger’s (2002) bootstrapping method was employed to test whether intrusions could be explained by dysfunctional beliefs (H_1), rumination and suppression (H_2), as well as to test the role of rumination and suppression as mediators in the relationship between dysfunctional beliefs and intrusions (H_3). The bootstrapping method involves taking the original data set of N cases and sampling from it to form a new sample; the present data were sampled 5,000 times. Bootstrapping is more sensitive to detecting a mediated effect because it can detect effects that are not normally distributed. To perform bootstrapping we used a macro developed by Preacher and Hayes (2008).

Job experience was included as a covariate to determine the extent to which it may account for the relationship between dysfunctional beliefs and intrusions over and above the measures of rumination and suppression. Rumination and suppression scores were entered simultaneously as mediator variables of the relationship between dysfunctional beliefs and intrusions. Testing a single multiple mediation model is preferred to separate simple mediation models (Preacher & Hayes, 2008). First, dysfunctional beliefs significantly related to intrusions ($b = .08, p < .001$). Second, dysfunctional beliefs significantly related to rumination ($b = .05, p < .001$), which significantly related to intrusions ($b = .24, p = < .01$). The 95% confidence interval did not contain the value zero (Table 3), indicating that the mediated effect is significant. Suppression was also a mediator of the relationship

Table 3. Mediation of Rumination and Suppression on the Relationship Between Dysfunctional Beliefs and Intrusions

	Bootstrapping					
	Percentile 95% CI		BC 95% CI		BCa 95% CI	
	Lower	Upper	Lower	Upper	Lower	Upper
Rumination	.0030	.0285	.0044	.0303	.0043	.0302
Suppression	.0008	.0318	.0014	.0325	.0013	.0325
Total	.0146	.0473	.0156	.0489	.0156	.0490

Note. BC = bias corrected; BCa = bias corrected and accelerated; 5,000 bootstrap samples; $N = 138$.

between dysfunctional beliefs and intrusions. Dysfunctional beliefs significantly related to suppression ($b = .06, p < .05$), and suppression significantly related to intrusions ($b = .20, p < .001$). Therefore, suppression was a mediator of the relationship between dysfunctional beliefs and intrusions. The 95% confidence interval did not contain the value zero (see Table 3), indicating that the mediated effect is significant. Thus, dysfunctional beliefs accounted for intrusions through its association with rumination and suppression. The relationship between dysfunctional beliefs and intrusions becomes weaker ($b = .05, p < .001$), yet it is still a significant path with the inclusion of the mediation effect. Therefore, rumination and suppression only partially account for the effect of dysfunctional beliefs on intrusions (Figure 1).

DISCUSSION

In the last two decades, the Romanian health care system has been confronted with a poor management of the health workforce, a shortage of personnel, and, more recently, with an accelerating migration of medical professionals. In this context, the present study aims to investigate the factors associated with traumatic stress symptoms among a sample of Romanian medical personnel. Specifically, this study set out to test and found evidence for the hypothesis that dysfunctional beliefs play an important role in the development of intrusion symptoms (Platt & Freyd, 2011; Shiri et al., 2010; Vaile Wright et al., 2010). Individuals with negative beliefs about themselves and about the world are at a greater risk of developing traumatic stress symptoms (Cockram et al., 2010; Harding et al., 2012). This result can be explained by findings that dysfunctional beliefs are related to anxiety and, hence, the information coming from a traumatic event can evoke even higher anxiety and traumatic stress symptoms (Foa & Rothbaum, 1998). Further-

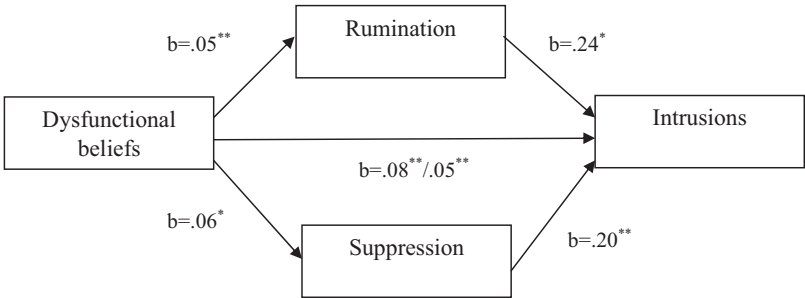


Figure 1. Multiple mediation model depicting relations between dysfunctional beliefs, multiple mediators, and intrusions. Values represent unstandardized regression coefficients. * $p < .05$. ** $p < .001$.

more, dysfunctional beliefs about oneself and about the world may make an individual less capable of managing trauma-related demands, and the feeling of poor performance could exacerbate traumatic stress symptoms, including intrusions.

The study also replicated earlier findings that rumination and efforts to suppress intrusive memories are associated with PTSD symptoms (Chung & Hunt, 2014; Garland & Roberts-Lewis, 2013; Hu et al., 2014; Meiser-Stedman et al., 2014). The role of rumination is consistent with the previous results on the role of worry when it comes to maintaining generalized anxiety. These results showed that the threatening aspects of a traumatic life event remain constant if we think repetitively about the causes and consequences of that event. As a consequence of such rumination, the risk of developing traumatic stress symptoms is greater (see Davey & Tallis, 1994, for a review). Ironically, suppression has similar effects (Beck et al., 2006; Tull et al., 2004) and our results showed that both suppression of intrusive memories and rumination might foster PTSD symptoms by mediating the influence of dysfunctional beliefs on intrusion. The emotional processing theory as applied to PTSD (Foa & Rothbaum, 1998) posits that there is a simple, direct link between dysfunctional beliefs and the recovery or development of posttraumatic distress. Our study provides evidence that the relationship between dysfunctional beliefs and posttraumatic distress is more complex, with suppression and rumination partially mediating this effect.

To summarize, the present research brings evidence about the relation between dysfunctional cognitive assumptions and work-related PTSD symptoms among Romanian medical professionals. Rumination and the suppression of unwanted thoughts also offer a good explanation for this relationship. The results are not surprising, given that the participants in this study are skilled individuals who often work under conditions of extreme stress, witnessing many distressing scenes and whose performance under such conditions may literally be vital in life or death situations. Health care workers are frequently confronted with emotionally loaded situations and human sorrow. Moreover, Romanian medical professionals generally experience a high workload. Dealing with such an emotionally demanding job requires a great deal of energy and may lead to burnout, while in order to reach their professional goals workers may need to suppress their own emotions (van Gelderen, Bakker, Konijn, & Demerouti, 2011). Workers who find it difficult to cope with traumatic memories may need to learn that avoiding unwanted thoughts is counterproductive. First, the suppression of emotions can have physiological consequences such as increased sympathetic activity (i.e., increased skin conductance and finger pulse amplitude; Gross & Levenson, 1997), and a reduced control of cardiac sympathetic activity (Demaree et al., 2006). Second, suppression seems to be cognitively costly

due to the verbal demands in the course of suppressing the unwanted intrusions (Gross, 2002).

We think that the medical staff may need support in dealing with traumatic events witnessed while on duty. Time pressure makes it unlikely that they will find adequate support at work if they experience difficulties. There seems to be a fine line between the professional distance necessary to prevent overwhelming emotions on the job, and emotional detachment and suppression related to PTSD symptoms. Those who suffer from PTSD symptoms may also need help in replacing rumination with imagined exposure to facilitate emotional processing and change in meaning. Intervention protocols for health care workers, including training focusing on particular coping strategies, opportunities for supervision, consultation and the continuous education of staff about vicarious trauma, may prevent posttraumatic distress (Trippany, Kress, & Wilcoxon's, 2004). A therapeutic self-awareness of the risks of working in the field of trauma may play an important role in preventing or reducing the impact of exposure to traumatic life events (Pross, 2006), and in maintaining positive cognition about oneself and about the world; these seem to be protective factors against traumatic stress (Yuan et al., 2011). Specific intervention strategies should help workers to have realistic expectations about what they can fulfill in their professional role (Bell, Kulkarni, & Dalton, 2003). Identifying individuals at particular risk should be the first step in planning and implementing stress management services. To follow this step, it is important to understand what coping strategies are used by health care workers to minimize the emotional impact of critical events in the workplace (Ørner et al., 2003). From this point of view, our study joins previous researchers (Bober & Regehr, 2006) who have found that posttraumatic stress can increase if workers use some particular dysfunctional coping strategies in order to control the unwanted disturbances caused by working with trauma victims.

Certain limitations should be noted. First, our research did not cover a broad spectrum of dysfunctional beliefs that may appear in the context of indirect exposure to traumatic events. Future research should analyze the mediating role of rumination and suppression for a wide range of cognitive predictors of posttraumatic distress. Second, the variables that could moderate the effects of coping (e.g., social support) should also be considered to fully understand the mechanism through which dysfunctional beliefs, rumination, and suppression interact in predicting intrusions. Third, future studies should take into consideration the distinction between adaptive (reflection) and maladaptive forms (brooding) of cognitive processing of traumatic information. Fourth, our sample is mainly comprised of women. For this reason the generalization of our results is limited. To mitigate this limitation, future studies should consider larger samples that comprise both men and

women. Finally, we should also mention that the cross-sectional design of our study does not allow for the formulation of causal relationships conclusions.

Nevertheless, our results confirm the previous literature by demonstrating an underlying factor related to distress, and by supporting a general cognitive model for work-related PTSD. Our study adds to current literature by addressing the phenomena of vicarious trauma on Romanian medical staff, a sample of particular interest due to very high workloads and emotionally loaded situations encountered in the workplace. Second, we investigated the mediating role of rumination and suppression in the relationship between dysfunctional beliefs and intrusions. Previous studies have partially explored the relationships between these variables. By examining the relationship among dysfunctional beliefs, rumination, suppression, and intrusions, this current study provided some insights into the relationship between these variables, which can help us better understand the ways in which coping, especially cognitive coping, could influence the development of intrusions, a hallmark symptom of posttraumatic stress.

REFERENCES

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.
- Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*, 25, 3186–3191. <http://dx.doi.org/10.1097/00007632-200012150-00014>
- Beck, J. G., Gudmundsdottir, B., Palyo, S. A., Miller, L. M., & Grant, D. M. (2006). Rebound effects following deliberate thought suppression: Does PTSD make a difference? *Behavior Therapy*, 37, 170–180. <http://dx.doi.org/10.1016/j.beth.2005.11.002>
- Bell, H., Kulkarni, S., & Dalton, L. (2003). Organizational prevention of vicarious trauma. *Families in Society*, 84, 463–470. <http://dx.doi.org/10.1606/1044-3894.131>
- Bisson, J., & Andrew, M. (2007). Psychological treatment of post-traumatic stress disorder (PTSD). *Cochrane Database of Systematic Reviews*, 3, CD003388. <http://dx.doi.org/10.1002/14651858.CD003388.pub3>
- Bober, T., & Regehr, C. (2006). Strategies for reducing secondary or vicarious trauma: Do they work? *Brief Treatment and Crisis Intervention*, 6, 1–9. <http://dx.doi.org/10.1093/brief-treatment/mhj001>
- Brewin, C. R., & Holmes, E. A. (2003). Psychological theories of posttraumatic stress disorder. *Clinical Psychology Review*, 23, 339–376. [http://dx.doi.org/10.1016/S0272-7358\(03\)00033-3](http://dx.doi.org/10.1016/S0272-7358(03)00033-3)
- Bria, M., Băban, A., Andreica, S., & Dumitrașcu, D. (2013). Burnout and turnover intentions among Romanian ambulance personnel. *Procedia: Social and Behavioral Sciences*, 84, 801–805. <http://dx.doi.org/10.1016/j.sbspro.2013.06.650>
- Bride, B. E. (2007). Prevalence of secondary traumatic stress among social workers. *Social Work*, 52, 63–70. <http://dx.doi.org/10.1093/sw/52.1.63>
- Bride, B. E., Robinson, M. M., Yegidis, B., & Figley, C. R. (2004). Development and validation of the Secondary Traumatic Stress Scale. *Research on Social Work Practice*, 13, 490–502.
- Butler, A. C., Chapman, J. E., Forman, E. M., & Beck, A. T. (2006). The empirical status of cognitive-behavioral therapy: A review of meta-analyses. *Clinical Psychology Review*, 26, 17–31. <http://dx.doi.org/10.1016/j.cpr.2005.07.003>

- Caine, R. M., & Ter-Bagdasarian, L. (2003). Early identification and management of critical incident stress. *Critical Care Nurse*, 23, 59–65.
- Chung, M. C., & Hunt, L. J. (2014). Posttraumatic stress symptoms and well-being following relationship dissolution: Past trauma, alexithymia, suppression. *Psychiatric Quarterly*, 85, 155–176. <http://dx.doi.org/10.1007/s1126-013-9280-4>
- Cieslak, R., Benight, C. C., & Caden Lehman, V. (2008). Coping self-efficacy mediates the effects of negative cognitions on posttraumatic distress. *Behaviour Research and Therapy*, 46, 788–798. <http://dx.doi.org/10.1016/j.brat.2008.03.007>
- Clohesy, S., & Ehlers, A. (1999). PTSD symptoms, response to intrusive memories and coping in ambulance service workers. *British Journal of Clinical Psychology*, 38, 251–265. <http://dx.doi.org/10.1348/014466599162836>
- Cockram, D. M., Drummond, P. D., & Lee, C. W. (2010). Role and treatment of early maladaptive schemas in Vietnam Veterans with PTSD. *Clinical Psychology & Psychotherapy*, 17, 165–182.
- Davey, G. C. L., & Tallis, F. (1994). *Worrying: Perspectives on theory, assessment and treatment*. Chichester, UK: Wiley.
- Demaree, H. A., Schmeichel, B. J., Robinson, J. L., Pu, J., Everhart, D. E., & Berntson, G. G. (2006). Up- and down-regulating facial disgust: Affective, vagal, sympathetic, and respiratory consequences. *Biological Psychology*, 71, 90–99. <http://dx.doi.org/10.1016/j.biopsycho.2005.02.006>
- Edmondson, D., Chaudoir, S. R., Mills, M. A., Park, C. L., Holub, J., & Bartkowiak, J. M. (2011). From shattered assumptions to weakened worldviews: Trauma symptoms signal anxiety buffer disruption. *Journal of Loss and Trauma*, 16, 358–385. <http://dx.doi.org/10.1080/15325024.2011.572030>
- Elzinga, B. M., & Bremner, J. D. (2002). Are the neural substrates of memory the final common pathway in posttraumatic stress disorder (PTSD)? *Journal of Affective Disorders*, 70, 1–17. [http://dx.doi.org/10.1016/S0165-0327\(01\)00351-2](http://dx.doi.org/10.1016/S0165-0327(01)00351-2)
- Figley, C. R. (1995). Compassion fatigue as secondary traumatic stress disorder: An overview. In C. R. Figley (Ed.), *Compassion fatigue* (pp. 1–20). New York, NY: Brunner/Mazel.
- Foa, E. B., Ehlers, A., Clark, D. M., Tolin, D. F., & Orsillo, S. M. (1999). The posttraumatic cognitions inventory (PTCI): Development and validation. *Psychological Assessment*, 11, 303–314. <http://dx.doi.org/10.1037/1040-3590.11.3.303>
- Foa, E. B., & Rothbaum, B. A. (1998). *Treating the trauma of rape: Cognitive behavioral therapy for PTSD*. New York, NY: Guilford Press.
- Garland, E. L., & Roberts-Lewis, A. (2013). Differential roles of thought suppression and dispositional mindfulness in posttraumatic stress symptoms and craving. *Addictive Behaviors*, 38, 1555–1562. <http://dx.doi.org/10.1016/j.addbeh.2012.02.004>
- Grey, N., & Holmes, E. A. (2008). “Hotspots” in trauma memories in the treatment of post-traumatic stress disorder: A replication. *Memory*, 16, 788–796. <http://dx.doi.org/10.1080/09658210802266446>
- Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology*, 39, 281–291. <http://dx.doi.org/10.1017/S0048577201393198>
- Gross, J. J., & Levenson, R. W. (1997). Hiding feelings: The acute effects of inhibiting negative and positive emotion. *Journal of Abnormal Psychology*, 106, 95–103. <http://dx.doi.org/10.1037/0021-843X.106.1.95>
- Harding, H. G., Burns, E. E., & Jackson, J. L. (2012). Identification of child sexual abuse survivor subgroups based on early maladaptive schemas: Implications for understanding differences in posttraumatic stress disorder symptom severity. *Cognitive Therapy and Research*, 36, 560–575. <http://dx.doi.org/10.1007/s10608-011-9385-8>
- Hu, E., Koucky, E. M., Brown, W. J., Bruce, S. E., & Sheline, Y. I. (2014). The role of rumination in elevating perceived stress in posttraumatic stress disorder. *Journal of Interpersonal Violence*, 29, 1953–1962. <http://dx.doi.org/10.1177/0886260513511697>
- Janoff-Bulman, R. (1992). *Shattered assumptions: Toward a new psychology of trauma*. New York, NY: Free Press.
- Kerasiotis, B., & Motta, R. W. (2004). Assessment of PTSD symptoms in emergency room, intensive care unit, and general floor nurses. *International Journal of Emergency Mental Health*, 6, 121–133.

- Litz, B. T., & Gray, M. J. (2004). Early intervention for trauma in adults. In B. Litz (Ed.), *Early intervention for trauma and traumatic loss* (pp. 87–111). New York, NY: Guilford Press Publications.
- McCann, I. L., & Pearlman, L. A. (1990). Vicarious traumatization: A framework for understanding the psychological effects of working with victims. *Journal of Traumatic Stress*, 3, 131–149. <http://dx.doi.org/10.1007/BF00975140>
- Meiser-Stedman, R., Shepperd, A., Glucksman, E., Dalgleish, T., Yule, W., & Smith, P. (2014). Thought control strategies and rumination in youth with acute stress disorder and post-traumatic stress disorder following single-event trauma. *Journal of Child and Adolescent Psychopharmacology*, 24, 47–51. <http://dx.doi.org/10.1089/cap.2013.0052>
- Murray, J., Ehlers, A., & Mayou, R. A. (2002). Dissociation and post-traumatic stress disorder: Two prospective studies of road traffic accident survivors. *The British Journal of Psychiatry*, 180, 363–368. <http://dx.doi.org/10.1192/bjp.180.4.363>
- Nolen-Hoeksema, S., Wisco, B. E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives on Psychological Science*, 3, 400–424. <http://dx.doi.org/10.1111/j.1745-6924.2008.00088.x>
- Ørner, R. J., King, S., Avery, A., Bretherton, R., Stolz, P., & Ormerod, J. (2003). Coping and adjustment strategies used by emergency services staff after traumatic incidents: Implications for psychological debriefing, reconstructed early intervention and psychological first aid. *Australasian Journal of Disaster and Trauma Studies*, 2003-1. Retrieved from <http://www.massey.ac.nz/~trauma/issues/2003-1/orner.htm>
- Owens, G. P., Pike, J. L., & Chard, K. M. (2001). Treatment effects of cognitive processing therapy on cognitive distortions of female child sexual abuse survivors. *Behavior Therapy*, 32, 413–424. [http://dx.doi.org/10.1016/S0005-7894\(01\)80028-9](http://dx.doi.org/10.1016/S0005-7894(01)80028-9)
- Pearlman, L. A. (1996). Psychometric review of TSI Belief Scale, Revision L. In B. H. Stamm (Ed.), *Measurement of stress, trauma and adaptation* (pp. 415–418). Lutherville, MD: Sidron Press.
- Pearlman, L. A., & Mac Ian, P. S. (1995). Vicarious traumatization: An empirical study of the effects of trauma work on trauma therapists. *Professional Psychology: Research and Practice*, 26, 558–565. <http://dx.doi.org/10.1037/0735-7028.26.6.558>
- Platt, M., & Freyd, J. J. (2011). The role of negative underlying assumptions and trauma history in shame: An exploratory study. *Psychological Trauma, Theory, Research. Policy & Practice*, 4, 370–378.
- Preacher, K. J., & Hayes, A. F. (2008). Contemporary approaches to assessing mediation in communication research. In A. F. Hayes, M. D. Slater, & L. B. Snyder (Eds.), *The Sage sourcebook of advanced data analysis methods for communication research* (pp. 13–54). Thousand Oaks, CA: Sage. <http://dx.doi.org/10.4135/9781452272054.n2>
- Pross, C. (2006). Burnout, vicarious traumatization and its prevention. *Torture*, 16, 1–9.
- Riskind, J. H., & Alloy, L. B. (2006). Cognitive vulnerability to psychological disorders: Theory, design, and methods. *Journal of Social and Clinical Psychology*, 25, 705–725. <http://dx.doi.org/10.1521/jscp.2006.25.7.705>
- Schäfer, W., Kroneman, M., Boerma, W., van den Berg, M., Westert, G., . . . van Ginneken, E. (2010). The Netherlands: Health system review. *Health Systems in Transition*, 12(1), 1–228.
- Segerstrom, S. C., Tsao, J. C. I., Alden, L. E., & Craske, M. G. (2000). Worry and rumination: Repetitive thought as a concomitant and predictor of negative mood. *Cognitive Therapy and Research*, 24, 671–688. <http://dx.doi.org/10.1023/A:1005587311498>
- Shalev, A., & Ursano, R. (2003). Mapping the multidimensional picture of acute responses to traumatic stress. In R. J. Ørner & U. Schnyder (Eds.), *Reconstructing early intervention after trauma* (pp. 129–137). New York, NY: Oxford University Press.
- Shiri, S., Wexler, I. D., Schwartz, I., Kadari, M., & Kreitler, S. (2010). The association between reality-based beliefs and indirectly experienced traumatization. *International Journal of Psychology*, 45, 469–476. <http://dx.doi.org/10.1080/00207594.2010.503759>
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, 7, 422–445. <http://dx.doi.org/10.1037/1082-989X.7.4.422>

- Spănu, F., Băban, A., Bria, M., & Dumitrașcu, D. L. (2013). What happens to health professionals when the ill patient is the health care system? Understanding the experience of practising medicine in the Romanian socio-cultural context. *British Journal of Health Psychology, 18*, 663–679. <http://dx.doi.org/10.1111/bjhp.12010>
- Trippany, R. L., Kress, V. E. W., & Wilcoxon, S. A. (2004). Preventing vicarious trauma: What counselors should know when working with trauma survivors. *Journal of Counseling & Development, 82*, 31–37. <http://dx.doi.org/10.1002/j.1556-6678.2004.tb00283.x>
- Tull, M. T., Gratz, K. L., Salters, K., & Roemer, L. (2004). The role of experiential avoidance in posttraumatic stress symptoms and symptoms of depression, anxiety, and somatization. *Journal of Nervous and Mental Disease, 192*, 754–761. <http://dx.doi.org/10.1097/01.nmd.0000144694.30121.89>
- Vaile Wright, C., Collinsworth, L. L., & Fitzgerald, L. F. (2010). Why did this happen to me? Cognitive schema disruption and posttraumatic stress disorder in victims of sexual trauma. *Journal of Interpersonal Violence, 25*, 1801–1814. <http://dx.doi.org/10.1177/0886260509354500>
- van Gelderen, B. R., Bakker, A. B., Konijn, E. A., & Demerouti, E. (2011). Daily suppression of discrete emotions during the work of police service workers and criminal investigation officers. *Anxiety, Stress & Coping: An International Journal, 24*, 515–537. <http://dx.doi.org/10.1080/10615806.2011.560665>
- Vlădescu, C., Scîntee, G., Olsavszky, V., Allin, S., & Mladovsky, P. (2008). Romania: Health system review. *Health Systems in Transition, 10*(3), 1–172.
- Yuan, C., Wang, Z., Inslicht, S. S., McCaslin, S. E., Metzler, T. J., Henn-Haase, C., . . . Marmar, C. R. (2011). Protective factors for posttraumatic stress disorder symptoms in a prospective study of police officers. *Psychiatry Research, 188*, 45–50. <http://dx.doi.org/10.1016/j.psychres.2010.10.034>

Received September 24, 2013

Revision received March 6, 2015

Accepted March 9, 2015 ■

E-Mail Notification of Your Latest Issue Online!

Would you like to know when the next issue of your favorite APA journal will be available online? This service is now available to you. Sign up at <http://notify.apa.org/> and you will be notified by e-mail when issues of interest to you become available!