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Summary of thesis

Vicarious trauma – the impact of exposure to traumatic events

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Content

I. Introduction

The idea that providing healthcare and social services can turn into a source of psychological trauma led to the emergence of various concepts, including burnout, vicarious trauma, secondary traumatic stress, compassion fatigue (Figley, 1995; Maslach, Jackson, & Leiter, 1996; McCann & Pearlman, 1990). Despite the overlaps and similarities between these concepts, there are also distinguishing features. Within this research, we decided to approach the indirect exposure to trauma from the perspective of the theoretical framework provided by the proponents of the concept of vicarious trauma. We believe this concept gathers a broader range of both cognitive and emotional manifestations. Our interest in this research field derives from the fact that exposure to various disasters may lead to the emergence of post-traumatic stress and depressive symptoms (McCann & Pearlman, 1990). Moreover, several studies investigating the potential impact of the workplace on the quality of life have shown that, while the estimate of the emergence of post-traumatic stress disorder within the general population varies between 1 and 3%, the incidence of this disorder in the persons working in the field of medical and social services varies between 10 and 21% (Clohessy & Ehlers, 1999).

II. Trauma and post-traumatic events

We began our **first chapter** by presenting the features that characterise an event as traumatising, with a focus on the perspective supported by Fischer and Riedesser (2007). According to these authors, the trauma is a vital experience of discrepancy between threatening situational factors and individual resources, an experience accompanied by feelings of helplessness and abandonment, vulnerability, leading to a long-lasting difficulty to understand oneself and the surrounding world in general. Fu+rthermore, we distinguished between direct and indirect exposure to traumatic events, we presented the main concepts developed within this field and we continued with conceptual delimitations. We concluded the chapter by presenting the unique aspects related to the vicarious trauma. McCann and Pearlman (1990) posit that the vicarious traumatisation is the only one differing from the other constructs due to the fact that it is based on an interactive and constructivist theory of self-development which accounts for the impact of trauma on the psychological development of the individual, his/her adaptation and identity and less on the symptoms, as in the case of other concepts.

III. Vicarious indirect exposure

In the **second chapter**, we presented some general considerations regarding the study of vicarious trauma throughout time, definitions, professional categories studied,

specific manifestations, explanatory theories based on which we approached the concept within this work, as well as a synthesis of the results of the empirical studies carried out in order to identify the protective and vulnerability factors associated with the vicarious trauma. Moreover, we delimited and presented both the negative and the positive implications of exposure to the traumatic events.

Negative implications

Among the manifestations specific to the vicarious trauma, we retained and presented two categories, which are in fact the most representative:

- ***dysfunctional cognitive schemas:*** (cognitive schemas: the basic structural components of the cognitive organisation used in order to denominate, classify, interpret, assess and give meaning to the events experienced/met; Beck, Emery & Greenberg, 2005);
- ***manifestations specific to post-traumatic stress***: re-experiencing, avoidance, hyper-arousal.

As regards these two categories of manifestations, we presented the theoretical models based on which we approached the concept used in the practical part of our research.

Constructivist self-development theory (McCann & Pearlman, 1992):

- stressful and traumatic events can interfere with a person's cognitive schemas regarding one's self as well as the others, schemas reflecting a person's identity, world view and psychological needs;
- the most salient areas in the context of exposure to stress factors are security, confidence, esteem, intimacy and control;
- the manifestations specific to post-traumatic stress are the result of the dysfunctional cognitive schemas and the fact that we integrate the painful stories of those we interact with into our own memory.

Considering the fact that this theory emphasises the importance of cognitive schemas and it is insufficient in explaining the way in which traumatic experiences influence the emergence of post-traumatic stress, we resorted to another explanatory theory in the field of secondary traumatic stress – ***the dual representations theory (Brewin, 2001)***. According to this theory, two memory systems continue to operate in parallel, but one may take precedence over the other at different times:

- ''Verbally accessible memory'' (VAM) system – trauma memory is integrated with other autobiographical

memories and it can be deliberately retrieved as and when required.

- ‘‘Situationally accessible memory’’ (SAM) system – contains information that does not receive sufficient attention to be stored in VAM.
- Information in this system can be accessed automatically by exposure to relevant cues and may be spontaneously reexperienced in the form of detailed visual images, affective responses, and emotion-laden flashbacks corresponding to moments of intense arousal during the trauma.
- The SAM system primarily stores sensory information, especially visuospatial information, in the form of images.

Positive implications

Within this section, we presented the concept of ***post-traumatic growth,*** conceptual delimitations against related terms, the main explanatory models and the research data associated to the study of this phenomenon. Post-traumatic personal development represents the experience of a person who not only adjusts to the difficult situations met, but who also transforms them into an opportunity for ongoing personal development (Arnold, Calhoun, Tedeschi şi Cann, 2005). This does not constitute a new field of research, but rather a change of paradigm in the field of direct or indirect exposure to stress factors (Joseph & Linley, 2008). We approached the concept

from the point of view of the ***model provided by Tedeschi and Calhoun***, 2004. According to the model:

- the experience of a trauma may function as a catalyser of positive changes – reconsideration of priorities, spiritual changes, improving the relations with others, appreciation of life and perception of personal power;
- development and stress can coexist, while a certain degree of stress constitutes a necessary element for personal development.

IV. Methodology

IV.1 Objectives

Two research directions, regarding the negative vs. positive post-traumatic changes, have evolved rather independently, so that a group of researchers focused their attention particularly on post-traumatic stress, while another group focused on post-traumatic growth. Within our studies, we approached both the negative and the positive manifestations of the exposure to traumatic events, attempting to carry out an exhaustive approach of the phenomenon.

PART I: Negative/ positive implications of the exposure to traumatic events and associated factors

Study 1:

- identifying the presence of dysfunctional cognitive frames in the persons exposed to traumatic events (in the fields of security, confidence, esteem, intimacy and control);

- studying the factors associated to the changes underwent by the cognitive schemas (personality factors, coping styles, socio-demographic factors);

Study 2:

- assessing the way in which dysfunctional cognitive schemas are associated with manifestations specific to the post-traumatic stress disorder (avoidance, intrusion, hyper-arousal);

Study 3:

- studying the relationship between the post-traumatic stress and post-traumatic personal development;
- identifying the connection between the (negative and positive) indicators of the vicarious trauma and the quality of life indicators (compassion satisfaction and compassion fatigue).

PART II: Ways to mitigate the negative impact of exposure to critical situations

Experiments 1 and 2

- studying the processes underlying the emergence of intrusive images that could justify why some people are more vulnerable than others to developing symptoms of post-traumatic stress, while exposed to similar life events;
- identifying the ways in which we can prevent the formation of intrusive images associated to the traumatic events encountered.

IV.2 Target population: medical staff (reasoning)

- ***Constructivist self-development theory:*** The vicarious trauma represents the *cumulated effect* of the interaction with suffering persons (Pearlman şi Saakvitne,1995);

- ***Hypothesis of sensitiveness to stress***: *repeated exposure* to situations with a traumatic potential increases the likelihood of post-traumatic responses, responses that do not occur following the exposure to an isolated traumatic event;

- ***Empirical data:*** the incidence of the post-traumatic symptoms in the persons working in the medical and social services is several times higher than in direct victims of traumatic events (Richmond et al, 2009; Kira, 2011).

IV.3 Part I

IV.3.1 Study 1 *- Vulnerability factors and protective factors of the changes underwent by cognitive frames following the indirect exposure to traumatic events*

Method

Participants: 187 medical workers from the Emergency and the Intensive Care units, and a comparison group (employees working in medical laboratories)

Instruments: *The Traumatic Stress Institute Belief Scale* (TSI) *Revision* (Pearlman, 1996); *Inner Experience Questionnaire* (Pearlman, 1995)*; Five Factor Model Rating Form* (Mullins-Sweatt, Jamerson, Samuel, Olson, & Widiger, 2006); *The Carver COPE Scale* (Carver, Scheier, &

Weintraub, 1989); *Life Events Checklist* (Blake, Weathers, Nagy, Kaloupek, Charney, & Keane, 1995)

Procedure: Before beginning the experiment, the participants were presented the aim of the study and asked to consent to participate in the research. They were also guaranteed that the answers would remain anonymous and confidential, as well as the fact that the data provided would be used exclusively for research purposes. The tools used for assessing personality traits, coping styles, cognitive schemas and personal capacities were applied simultaneously. Additionally, the participants have also completed an assessment scale regarding their own exposure to traumatic situations, as well as demographic data (workplace, department, profession, age, gender and professional experience). The questionnaires were gathered after completion, to an extent of 80%.

The first three studies are based on the same procedure, and thus, do not require further explanation.

Main results and discussions

Hypothesis 1: There are significant differences between the medical staff and the employees working in medical laboratories, as far as the manifestations associated to vicarious trauma are concerned (Independent samples t test)

✓ From the point of view of all the fields of manifestation, cognitive beliefs are more dysfunctional in the participants

with a high level of exposure to traumatic events, compared to the control sample.

- The result can also be explained by the specificity of the work environment that allows for a very short time span for processing the emotional reactions (Dickson-Swift, James, Kippen & Liamputtong, 2008) and for satisfying personal needs, because of the rapid work pace (Dane & Chachkes, 2001).

Hypothesis 2: *There are significant differences between doctors and nurses, as regards the manifestations of vicarious trauma.* (Independent samples t test)

✓ The results indicate the fact that differences only regard the cognitive beliefs in the field of personal intimacy, which are more dysfunctional within the group composed of nurses.

Hypothesis 3: There is a connection between age, professional experience, and personal exposure to traumatic situation, personality traits and the manifestations specific to the vicarious trauma.

✓ Professional experience correlates positively with the presence of dysfunctional frames in the field of the others' safety.

- Given the specificity of the professional activities of the participants in the study (they constantly face situations threatening the safety of others), our result is not surprising.

- Empirical studies show that the cognitive schemas regarding safety are the first and most deeply disrupted following both the direct and indirect trauma (Pearlman & Saakvitne, 1995; Varra, Pearlman, Brock, Hodgson 2008).
- An event cannot be considered traumatic without being accompanied by a sense of threat to personal safety and the safety of the others (Varra, Pearlman, Brock, & Hodgson, 2008).

✓ Neuroticism is positively correlated, whereas extroversion, agreeableness and conscientiousness are negatively correlated with dysfunctional cognitive schemas.

- Neuroticism is associated with the emergence of dysfunctional cognitive schemas since this factor involves negative affectivity and physiological reactivity to stress (McCrae & John, 1992, Connor-Smith & Flachsbart, 2007).

Hypothesis 4: There is a connection between particular coping styles and the manifestations specific to the vicarious trauma (Pearson Correlation)

✓ positive correlations with dysfunctional cognitive schemas: seeking social support, denial, religion, venting emotions, mental and behavioural non-involvement (the more we resort to these strategies, the more dysfunctional cognitive schemas we present); negative correlations with dysfunctional cognitive schemas: active coping, positive reinterpretation, acceptance;

✓ active coping strategies – the most widely used; passive coping strategies – the least widely used.

- The active coping strategies are used when the situation causing stress is perceived as controllable, whereas the passive coping strategies are used when the stressful situations are considered as uncontrollable or unavoidable (Linley & Iosif, 2004); this result could point to the fact that the situations encountered are perceived by the medical staff as controllable.

Hypothesis 5: The personality traits (predictor variables) predict cognitive beliefs (criterion variables) indirectly by means of the coping strategies used (Regression analysis by means of the bootstrapping method; Baron and Kenny, 1986)

✓ Positive reinterpretation, venting emotions, mental and behavioural non-involvement mediate the relationship between personality factors and dysfunctional cognitive beliefs; these results show that, irrespective of their personality structure, a more frequent use of the positive reinterpretation of the situation, that is, giving a meaning to the events encountered, in association with the less frequent use of emotion venting/ suppression and the non-involvement determines a lower level of dysfunction of the cognitive schemas.

- On the short term, the benefits of non-involvement for the persons with high neuroticism are likely to amplify these persons tendency towards non-involvement, explaining why

the persons with a high level of neuroticism continue to make use of strategies that produce poor results on the long term (McCrae & John, 1992).

IV.3.2 Study 2 – *Cognitive processes involved in assessing traumatic events. The connection between cognition and emotion.*

Method

Participants: 138 medical workers from the Emergency, the Intensive Care units, Ambulance service, Neurosurgery, and Oncology.

Instruments: *The Traumatic Stress Institute Belief Scale (TSI) Revision* (Pearlman, 1996); *Secondary Traumatic Stress Scale* (Bride, Robinson, Yegidis, & Figley, 2004); *Responses to Intrusions Questionnaire* (Clohessy & Ehlers, 1999)

Results and discussion

Hypothesis 1: The cognitive schemas predict the presence of post-traumatic stress symptoms – confirmed hypothesis (Canonical correlation)

✓ a higher level of dysfunctional cognitive beliefs is associated with high levels of intrusion and avoidance symptoms;

- We could explain these results by the fact that the dysfunctional cognitive schemas are associated with anxiety whereas the information resulting from a traumatic event could evoke even more anxiety, which lies at the basis of the post-

traumatic stress disorder development (Dudek & Szymczak, 2011).

✓ The schemas on self-confidence are the most important predictors for traumatic symptoms.

- The cognitive models of the post-traumatic stress disorder are explicitly focused on the cognitive themes of safety and confidence (Resick şi Schnicke 1993; Lumley şi Harkness, 2007).

Hypothesis 2: Cognitive coping strategies (repetitive thinking and suppression) mediates the relationship between the dysfunctional cognitive schemas and the post-traumatic stress symptoms – confirmed hypothesis (Structural equations modelling)

✓ Suppression mediates the relation between the dysfunctional cognitive schemas and all the post-traumatic stress indicators considered in this study (intrusions, avoidance, and hyper-arousal). The repetitive thinking mediates the relation between the dysfunctional cognitive schemas and the re-experiencing symptoms (intrusions). Mediation effects are partial.

- Thoughts suppression and persistent thinking hinders the emotional processing of the traumatic event and the successful integration of the traumatic thoughts into the long-term memory (Ehlers & Steil, 1995);
- previous empirical studies have shown that the more frequent use of these strategies increases the risk of emergence

of intrusive, avoidance and hyper-arousal symptoms (Tull, Gratz, Salters, & Roemer, 2004; Elzinga & Bremner, 2002; Garland & Robert-Lewis, 2013);

- The role of persistent thoughts is consistent with the role of the concern to preserve generalised anxiety (Davey & Tallis, 1994), leading to the perception of threat and, thus, to preserving the traumatic stress symptoms (Ehlers & Clark, 2000).
- The role of suppression is explained within Wagner's ironical process theory (1994): the attempts to suppress unwanted thoughts are usually prone to failure since, later on, they come back even stronger in the consciousness.

IV.3.3 Study 3 *– Study of the vicarious post-traumatic development phenomenon*

Method

Participants: 138 medical workers from the Emergency, the Intensive Care units, Ambulance service, Neurosurgery, and Oncology.

Instruments: *The Traumatic Stress Institute Belief Scale (TSI) Revision* (Pearlman, 1996); *Secondary Traumatic Stress Scale* (Bride, Robinson, Yegidis, & Figley, 2004); *The Posttraumatic Growth Inventory* (Tedeschi & Calhoun, 1996); *Professional Quality of Life Scale* (Stamm, 2010)

Results and discussion

Hypothesis 1: There is a positive correlation between the post-traumatic stress symptoms and the post-traumatic development dimensions – confirmed hypothesis (Pearson Correlation)

- The post-traumatic development emerges when the trauma is intense enough in order to promote involvement in the search for a meaning, but not too overwhelming so as to become uncontrollable; therefore, a certain amount of stress is required in order to talk about post-traumatic personal development (Tedeschi & Calhoun, 2004).

Hypothesis 2: The symptoms of post-traumatic stress mediate the relationship between the dysfunctional cognitive schemes and post-traumatic development – rejected hypothesis (Regression analysis by means of bootstraping regression)

✓ cognitive beliefs do not represent significant predictors for the post-tramatic development dimensions

Hypothesis 3: Traumatic stress and the dimensions of post-traumatic development are associated with compassion satisfaction and professional fatigue – confirmed hypothesis (Pearson correlation)

✓ the post-traumatic development dimensions are positively associated with compassion satisfaction, but there is no significant correlation between development and professional fatigue; traumatic stress manifestations are positively associated with both dimensions of professional fatigue

(exhaustion and compassion fatigue); compassion satisfaction is not associated with compassion fatigue, which suggests that the two dimensions are interdependent and can coexist; compassion satisfaction is negatively associated with the professional fatigue phenomenon (caused by direct confrontation with unpleasant, difficult situations, conflicts at the workplace).

- The presence of development does not involve mitigation of the negative effects that traumatic stress might have on the quality of professional life, but it allows for a sense of professional satisfaction despite the fatigue inherent at the workplace. Compassion satisfaction can be the most powerful force in ongoing motivation even in the presence of the nursing "costs" (Stamm, 2010).

IV.3.4 ***Study 4:*** *Implications and reactions to research participation*

Method

Participants and procedure: For the purpose of our study, we analysed the results reported by the participants involved in studies 2 and 3 previously discussed. As part of their involvement in the research, after filling in the set of questionnaires, the participants were asked to assess their reactions and opinions regarding their experience as participants in the research.

Instruments: *Reactions to Research Participation Questionnaire Revised* (Newman, Willard, Sinclair, and Kaloupek, 2001); *The Traumatic Stress Institute Belief Scale (TSI) Revision* (Pearlman, 1996); *Secondary Traumatic Stress Scale* (Bride, Robinson, Yegidis, & Figley, 2004);.

Results

✓ ***Motivation to participate:*** they didn't want to say no (36,6%); out of curiosity (30,4%); to help (26,7%); felt they had to (11,1%); to help themselves (10,4%); other (7,4%); they don't know (3%);

✓ ***Personal Benefits****:* participants gained insight about personal experiences through research participation, they found participating in this study personally meaningful (30,4%);

✓ ***Emotional negative reactions,*** during the research session and/or parts of the study, because the research made them think about things they didn't want to think about. (23,9%);

✓ ***Perceived Drawbacks:*** had they known in advance what participating would be like they would not have agreed to participate, the participants found the questions too personal and the participating boring or they believe that the study procedures took too long (40,1%);

✓ Dysfunctional cognitive schemas and posttraumatic stress symptoms are positively related with negative emotional reactions and personal drawbacks.

Research ethics	desagreement	neutral	agreemen
I trust that my replies will be kept private.	6,8%	19,5%	73,7%
I was treated with respect.	4,5%	13,5%	82%
I like the idea that I contributed to science.	11,4%	15,2%	73,5%
I felt I could stop participating at any time	14,9%	17,9%	62,7%
Participation was a choice I freely made.	9,2%	7,6%	83,2%
I understood the consent form.	3,0%	7,6%	89,4%

IV.4 PART II

Intrusive memory are a hallmark symptom of posttraumatic stress disorder and are are mostly visual in nature (Krans et al., 2010; Stuart et al., 2006). Intrusive and distressing images of the traumatic event are uncontrollable, rich in sensory detail (Brewin & Holmes, 2003) and repeatedly come into consciousness (Grey & Holmes, 2008). Our hypothesis was that cognitive processes, such as those that occur during encoding of the traumatic experience (i.e., peritraumatically), are crucial in understanding intrusive memories. As it is difficult to conduct research at the time of real trauma, analog experimental methods, for example using a trauma film, provide a useful tool (Holmes, Brewin & Hennessy, 2004). In our studies, we used this paradigme based on previous studies that suggest its ecological validity (Holmes, Creswell, & O'Connor, 2004).

The literature highlights the role of dissociation in developing the vizual intrusive memories. The relationship between trait dissociation and posttraumatic stress could be mediated by state dissociation, as long as the state seems to be the best predictor for posttraumatic stress (Brewin et al., 2000), and the trait is associated with a higher level of state dissociation (Zoellner et al., 2007). A goal of our study was to test this assumption.

IV.4.1 Experiment 1 *– Developing intrusive images based on a visual material*

Method

Participants: The final dataset contained 89 students at the Al. I. Cuza University of Iasi in exchange for course credit.

Materials

A 4-min *trauma video* of real-life footage (compiled by Peter Watkins-Hughes, 2009) was used. It consisted of scenes of horrific content, live footage from the aftermath of road traffic accidents. The film used does fulfill *DSM–IV* (American Psychiatric Association, 1994) diagnostic criterion A1 for a traumatic event, in that participants witnessed actual death and suffering. It was rated as stressful and led to negative mood changes.

Dissociative Experiences Scale, revised (DES-II; Bernstein & Putnam, 1986)*; The Positive and Negative Affect Schedule (PANAS)* (Watson, Clark, & Tellegen, 1988*);*

Dissociative States Scale (DSS; Bremner et al., 1998)*; Anxiety Symptom Scale (Bech, 2012); An intrusion provocation task* (Lang, Moulds, & Holmes, 2009)*; Posttraumatic Cognitions Inventory* (PTCI; Foa, Ehlers, Clark, Tolin, & Orsillo, 1999*; The Impact of Event Scale* (IES; Horowitz, Wilner, & Alvarez, 1980)

Attention for the film was rated on an 11-point scale from 0 (not at all) to 10 (completely). *Memory* of the film was rated using two dimensions: cued-recall memory and recognition memory.

Experimental task – Visuospatial tapping task

Participants were told that during the video they would be required to tap a specified sequence of five keys continuously, on a keyboard concealed from view. They were given 1 min to practice tapping the sequence *JYPVA* (an irregular pattern; Holmes et al., 2004) using their dominant hand. Only at this stage were they able to look at the keyboard. The keyboard was then concealed from view. Immediately prior to the film starting, instructions reminded participants of the sequence to tap

Procedure:

- All participants received information about the experiment and gave their written informed consent to taking part.
- Then they filled in the DES-II, STAI-S, DSS și PANAS.
- All participants then watched the trauma film.

- Participants were instructed according to experimental condition (the visuospatial tapping condition and the no-task, control, condition). Participants from these conditions watched the film in different rooms.
- After the report, participants filled the mood questionnaire, STAI-S, DSS, and attention rating.

*Follow-up session (*after one week*)*

- The intrusion provocation task was performed and participants filled in the cued-recall and recognition memory test, the IES, PTCI. They also evaluated the difficulty of watching the film and the regret of accepted the articipation.

Results and discussion

✓ Watching the film was assessed as equally difficult by the participants in both conditions, while the images were considered equally tough irrespective of the experimental condition; the 2x2 Anova repeated measures identified an increase in the intensity of the negative emotional state, anxiety and dissociation following the film watching;

Hypothesis 1: Reporting intrusive images is less frequent in the experimental condition, when the participants have to accomplish a visual-spatial concurrent task, compared to the control condition – confirmed hypothesis (Independent samples T Test)

- the result confirms the theory of dual representations – interferences occurring in the information integration stages

within the SAM system by means of the visual-spatial concurrent task introduced, lead to a decrease in the number of intrusive images reported in the following period.

✓ The reduction in the number of intrusions does not mean that the task had a protective role against the negative emotional state or the discomfort caused by the film.

Hypothesis 2: In both experimental conditions, the relation between dissociation as a trait and the intrusive images reported is mediated by the dissociation state reported immediately after the exposure to the traumatic material – rejected hypothesis (Linear Regression, bootstrapping methode; Baron and Kenny, 1986)

✓ trait dissociation is a significant positive predictor for the dissociation state, but it does not predict the frequency of the intrusive images reported;

✓ a spontaneous increase in the dissociation state after watching the film was associated with an increased number of intrusive images in the control condition only.

- the results point to the fact that the state of dissociation can be a good predictor of traumatic stress (Ozer et al., 2003), compared to the more general dissociative answers (Brewin, Andrews, Rose & Kirk, 1999). The results have shown that even the dissociation state experienced and assessed following the exposure to the traumatic material, not during exposure, is associated with the frequency of the intrusive recollections,

although the presence of dissociative symptoms occurring after – rather than during the traumatic experience – is presumably not as constantly associated with a high risk of traumatic stress symptoms occurrence (Brewin et al., 1999).

Alternative explanations for the results obtained

✓ The two conditions were comparable in terms of remembering details, recognising details and the attention paid to the content of the film; details recollection does not correlate with the frequency of the intrusive visual recollections in any experimental condition (T test for independent samples). These results suggest the fact that the task determined a decrease in the intrusive images, as a result of its visual-spatial nature, not of the fact it diminished the attention degree assigned to the film.

IV.4.1 Experiment 2 *– Developing intrusive images based on a written material*

Method

Participants: Seventy eight students at the Al. I. Cuza University of Iasi participated in the study in exchange for course credit.

Instruments: the same as that used in Experiment 1 and *Spontaneous Use of Imagery Scale* (SUIS; Reisberg, Pearson, & Kosslyn, 2003)

Procedure

- Like in previous study

Follow-up session (after one week) – via email.

- The intrusion provocation task was performed, related to trauma verbal report, and the participants filled in the cued-recall and recognition memory test, and ratings about the perceived goal of the study.
- Finally, participants were debriefed and thanked for their involvement.

Results and discussion

✓ The 2x2 Anova repeated measures identified an intensity increase in the negative emotional state after reading the text, but it did not identify an increase in anxiety and dissociation state.

Visual and spatial interference during information integration reduces the development of intrusive recollections compared to the control condition – confirmed hypothesis (Mann Whitney Test for non-parametric data)

Alternative explanations for the results obtained

Memory: there are no significant differences between the two experimental conditions regarding the recollection or recognition of details (T Test for independent samples)

The aim of the study: the participants' reports regarding the aim of the study did not indicate the real purpose (almost unanimously, the participants considered that the aim of the study consisted in acknowledging the consequences of careless

driving); guessing the aim of the test does not account for the results obtained.

V. Conclusions

The research confirms the presence of the negative implications for the employees within the healthcare system exposed to critical situations (dysfunctional cognitive schemas and symptoms specific to post-traumatic stress). Moreover, we have shown that, when discussing exposure to traumatic events, we can also discuss positive effects and personal transformations. It is equally interesting to point out the fact that this exposure is associated with a high level of post-traumatic development only when manifestations of post-traumatic stress are present. Another result of our research consists in the fact that compassion satisfaction and compassion fatigue are independent aspects that can coexist. Thus, the positive implications of exposure to critical situations contribute to maintaining compassion satisfaction, although it does not contribute to reducing compassion fatigue. Within the two experiments carried out, we started from the premise that a visual-spatial task would determine the creation of SAM representations (situational memory) that are poorer in terms of content, leading to the integration of fewer perceptual details. Therefore, there are fewer chances that the formed representations be accessed by different clues recalling traumatic events and thus determining the occurence of

intrusive images. Both experiments provide evidence supporting this assumption. Moreover, we could conclude that exposure to the visual details involved by a traumatic situation is more unpleasant compared with the exposure to the description of such a situation.

Implications of the studies

Theoretical implications: validation of the constructivist theory of self-development within a lass approached group; confirmation of the positive implications of the exposure to traumatic situations (limitation of the theory mentioned).

Practical implications: the persons working with persons exposed to various traumas could benefit from carrying out a dual task, when they are exposed to highly emotional situations; note-taking in case of therapists, while listening to the situations described by the clients, visualising the next step to be taken, in case of other professional categories; generally, any action involving the persons' visual and spatial resources could lead to diminishing the negative effects of the exposure to the others' traumas, according to the results of the two studies;

The relevance of our experimental findings is not limited to the field of traumatology; intrusive images may occur in various fields, including after positive experiences and, therefore, their content is not necessarily specific to the diagnosis of post-traumatic stress disorder (Hackmann & Holmes, 2004).

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