
SPOTLIGHT ON THE COMPLEXITY OF TRAUMA

Secondary Traumatic Stress Disorder in War Veterans' Adult Offspring

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The present study focuses on the impact of veteran's traumatic stress and PTSD diagnosis on their offspring's mental and physical health. Results revealed a positive relationship between PTSD in veterans and secondary traumatic stress disorder (STSD) in their offspring. STSD symptoms, psychopathology, physical symptoms and adverse childhood experiences were also positively related, especially, in those with STSD symptoms and STSD diagnosis. Finally, adverse childhood experiences, was not a significant moderator in the relationship between psychopathology and traumatic symptoms. The results support the need for interventions in PTSD war veterans' offspring.

Keywords: STSD, psychopathology, physical symptoms, childhood experiences

INTRODUCTION

Between 1961 and 1974, nearly 1 million young Portuguese men participated in the Colonial War in Africa (Angola, Portuguese Guinea, and Mozambique), equivalent to 10% of the country's population at that time (Aniceto & Gomes, 2000). According to the only Portuguese epidemiological study, there are 140,000 war veterans with psychological disturbances as a direct result of warzone exposure (Albuquerque, 1992).

Traumatic events such as war can affect other family members in addition to the primary victim of trauma (Pereira, 2003); as a result, these people may develop secondary traumatic stress disorder (STSD; Figley, 1998). STSD is therefore an effect and a consequence of trauma that has been found in the offspring and spouses of veterans suffering from post-traumatic stress disorder (PTSD) (Davidson & Mellor, 2001; Harkness, 1993). The basic assumption of STSD is that there is a transmission mechanism for trauma between

the primary victim and other individuals who have meaningful relationships with the victim and who develop similar traumatic responses (Figley, 1998; Harkness, 1993). In fact, STSD is a stress response that may develop as a consequence of caring for or living with someone with PTSD, and is identical to PTSD. In PTSD, the traumatic event has been experienced directly; in STSD, the traumatic event was indirectly experienced by family members as a result of dealing directly with the PTSD primary victim (Figley, 1998; Pereira, 2003). Thus, a close, prolonged contact with a victim of trauma with PTSD may become a chronic stress factor for other members of the family (Solomon et al., 1992). According to Figley (1998), there exists the possibility of "contagion" from the primary victim up to the third generation (Sagi-Schwartz, Ijzendoorn, & Bakermans-Kranenburg, 2008).

However, STSD is controversial because only a few studies show the transgenerational effects of trauma, while others report no evidence of secondary traumatization (Van Ijzendoorn, Bakermans-Kranenburg, & Sagi-Schwartz, 2003; Dekel, Solomon, & Rozen, 2013). Transmission of the psychological effects of trauma from one generation to another was at the core of studies that focused on second-generation survivors of the Holocaust, the most widely studied group in respect to transmission of trauma from parents to offspring. In fact, some studies of Holocaust survivors have found that victims were able to protect their offspring from

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their traumatic experiences. However, this was not true for war veterans, as studies have shown that distress was transmitted from veterans to their offspring. Thus, high levels of psychopathology and behavioral problems among the offspring of war veterans with PTSD have been reported (Beckham et al., 1997). Beckham and colleagues (1997) found that 45% of war veterans' offspring whose fathers had PTSD presented symptoms of traumatic stress on the PTSD scale of the Minnesota Multiphasic Personality Inventory (MMPI). However, the literature includes other controlled studies that did not find higher levels of psychopathology (Van Ijzendoorn et al., 2003) except when veterans' offspring was confronted with life-threatening situations (Baider et al., 2000; Van Ijzendoorn et al., 2003).

In Portugal, few studies have been carried out on STSD, and those published have focused on veterans' spouses. In fact, wives of Portuguese war veterans, particularly special troops, showed symptoms of secondary traumatization, high levels of anxiety, and depression (Lopes Pires et al., 2006; Oliveira, 2008; Pereira & Monteiro-Ferreira, 2006). Oliveira (2008), in particular, did not find STSD symptoms in veterans' offspring but rather in their wives. Therefore, it seems that veterans' wives may act as protectors of their offspring, taking on the role of guardian against the traumatic stress symptoms of the father. Dinshtein, Dekel, and Polliack (2011) found higher levels of stress, greater terror-related stress, and a lower capacity for intimacy in adult offspring of PTSD veterans compared to the offspring of non-PTSD veterans. In this last study, mothers played an important role, as a positive relationship with their mothers moderated the relationships between the adult offspring's capacity for intimacy and psychiatric symptoms.

According to Maybery, Ling, Szakacs, and Reupert (2005), 25% to 50% of the children of parents with psychological disturbance are likely to suffer from psychiatric problems, compared to 10% to 20% of the children of parents with no psychological problems. In addition, PTSD is a complex disorder, and about 50% to 90% of the individuals with PTSD report other psychological problems as well, particularly psychological morbidity (Yehuda & Wong, 2002). For this reason, in addition to PTSD symptoms, a transmission of other psychopathological symptoms may occur from parents to offspring.

Exposure to trauma also has a negative effect on physical health, resulting in an increase of health complaints, physical diseases, greater use of health services, and a higher mortality rate (Green & Kimerling, 2004; Wagner, Wolfe, Rotnitsky, Proctor, & Erickson, 2000). The Epidemiological Catchment Area (ECA) Study found that lifelong exposure to trauma was associated with self-reported poor health and a greater number of physical illnesses (Green & Kimerling, 2004).

The Adverse Childhood Experience (ACE) Study found that being exposed to adverse childhood experiences (physical, emotional, and/or sexual abuse, as well as substance abuse, mental illness, and/or violence) was associated with chronic bronchitis, emphysema, stroke, cancer, history of

bone fractures, hepatitis, and, once again, a perception of poor health status in adulthood (Felitti et al., 1998).

The risk of developing several diseases such as ischemic heart disease, cancer, chronic lung disease, liver disease, diabetes, and bone fractures is elevated in individuals with a history of trauma and PTSD (Brown et al., 2010; Felitti et al., 1998). More recently, Dube and colleagues (2009) found that the experience of adverse childhood experiences increased the likelihood of hospitalization due to autoimmune diseases in adulthood (e.g., irritable bowel disease, type 1 diabetes, psoriasis, multiple sclerosis, lupus, rheumatoid arthritis), highlighting the impact of stressful situations experienced in childhood and their subsequent inflammatory response in adulthood (Kendall-Tackett, 2009).

The present study focuses on the impact of veterans' traumatic stress and PTSD diagnosis on their offspring's mental and physical health. The goals of the present study were: (1) to analyze the relationship between PTSD in veterans and STSD in their offspring; (2) to analyze the relationships among secondary traumatic stress symptoms, physical symptoms, psychopathology, and negative childhood family experiences; (3) to analyze differences on psychological variables between veterans' offspring with and without STSD symptoms and with and without STSD diagnosis; (4) to assess the impact of gender, age, and education on psychological variables; and (5) to analyze whether adverse childhood experiences moderated the relationship between psychopathology and traumatic symptoms.

METHOD

Sample and Design

Eighty adults, whose fathers were Portuguese war veterans, participated in this study. The inclusion criteria for participation were being 18 years old and the oldest offspring of a war veteran with traumatic stress symptoms regardless of having a PTSD diagnosis or not. Participants were selected from the Veterans Association, in the north of Portugal, where veterans were enrolled, and invited to participate in the study. The Veterans Association gave permission to conduct the study, and participants were not compensated for their participation. Only the oldest son or daughter was invited, as the oldest offspring had spent more time, and at a younger age, with the veteran, right after his return from the war. Veterans' clinical processes included information regarding the presence/absence of the PTSD diagnosis. This was a cross-sectional study with voluntary participation.

The average age was 32 years old; 38.8% had 12 years of education; and 55% were married. In this sample, 17.5% were receiving psychotherapy or psychiatric help. In the full sample, 66% showed secondary traumatic stress symptoms; from these, 27.5% had been diagnosed with STSD, and 34% showed no symptoms of secondary traumatic stress.

Of the total sample ($N = 80$), 66% showed STSD traumatic symptoms (but not a STSD diagnosis) and 34% did

not reveal any STSD symptoms. Of the 66% with traumatic symptoms, 27.5% presented a STSD diagnosis.

Instruments

Post-Traumatic Stress Disorder Scale (PTSDS, McIntyre, 1997). The PTSDS is a Portuguese scale that provides a diagnosis of PTSD according to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)*. The first part is qualitative and descriptive and asks whether the individual was exposed in the past to traumatic events and the emotions associated with them (criteria A). The second part has 17 items that correspond to PTSD symptoms and, according to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR; American Psychiatric Association, 2002)*, they are grouped in three subscales. The first subscale called reexperiencing assesses intrusion symptoms that correspond to criteria B (five items). The second scale called avoidance assesses denial and numbness in line with criteria C (seven items). Finally, the hyperarousal subscale assesses hypervigilance and activation, including all vegetative symptoms, included in criteria D (five items). In order to obtain a diagnosis of PTSD, an individual needs to respond affirmatively to at least one question from the first subscale, three from the second, and at two from the third subscale. For this study, and to assess STSD, the 17 items were adapted to the offspring of the veteran's war experiences. Offspring were instructed to take into account only their fathers' specific war experiences and not any other traumatic events to which they might have been exposed. Thus, in the original scale, item 2: "Have there been many repeated bad dreams or nightmares about your experiences?" Was changed to: "Have you had many bad dreams or nightmares about your father's war experiences?" Internal consistency was .87 for the reexperiencing scale, .86 for the avoidance scale, and .86 for the hyperarousal scale.

Brief Symptoms Inventory (BSI; Derogatis, 1993; Portuguese version of Canavarro, 1999). The BSI is a self-report inventory comprising 53 items assessing psychological symptoms in medical and psychiatric populations. This inventory includes nine dimensions and three global indexes. In this study, only the General Symptom Index (GSI) was used to provide a general measure of psychological symptoms. The Portuguese version showed adequate internal consistency, with an alpha for the total scale of .98.

Health Symptoms Checklist (HSC; Proctor et al., 1998; Portuguese research version of Pereira & Pedras, 2008). The HSC is a reduced version of the original instrument with 24 items assessing physical symptoms. Examples of the questions follow: "Do you suffer from headaches?"; "Do you suffer from arrhythmias?"; "Do you suffer from pain?"; higher scores indicate higher number of physical

symptoms. Cronbach's alpha for the total scale, in this study, was .94.

Adverse Childhood Family Experiences Questionnaire (ACFEQ; Portuguese research version of Pereira & Pedras, 2008). The ACFEQ questionnaire is a self-report inventory composed of 24 items assessing both positive and negative childhood family experiences. Examples of such negative items include "witnessing alcoholism and violence"; "being insulted and humiliated"; "assisting a suicide attempt of a parent"; and positive experiences such as "being praised"; "feeling loved and receiving affection." Higher scores indicate higher number of negative/adverse childhood experiences. Internal consistency of the scale, in this study, was .93.

Data Analysis

To analyze the relationship between PTSD, in veterans, and STSD in offspring. Since categorical variables were used, a X^2 analysis was performed. To assess the relationship among secondary traumatic stress symptoms, psychopathology, physical symptoms, and negative childhood family experiences, a Pearson correlation was used. Nonparametric tests were used in the next two hypotheses since the assumptions to use parametric statistics were not present. To test the differences between offspring with and without STSD symptoms and with and without STSD diagnosis, a Mann Whitney test was used. To test the impact of sex, age, and education on psychological variables, a Kruskal Wallis test was performed.

Finally, a moderation analysis using Baron and Kenny's method (1986) was performed to analyze adverse childhood experiences as a moderating variable between psychopathology and traumatic symptoms.

Relationship between PTSD in veterans and STSD in offspring. Results revealed a positive relationship between PTSD in veterans and STSD in their offspring ($X^2 (1, N = 80) = 7, 586, p = 0,006$). Table 1 shows that 27.5% ($n = 22$) presented a STSD diagnosis. Of these 22, 77.3% ($n = 17$) had parents with a PTSD diagnosis.

TABLE 1
Relationship Between Veterans With PTSD and STSD in the Offspring ($N = 80$)

PTSD diagnosis in veterans	STSD diagnosis in offspring		X^2	p
	Without STSD	With STSD		
Without PTSD ($n = 40$)	35	5		
With PTSD ($n = 40$)	23	17	7.586*	0.006
Total	58	22		

Note. PTSD = Post-traumatic stress disorder; STSD = secondary traumatic stress disorder.

* $p < 0,05$.

TABLE 2
Correlations Between Secondary Traumatic Stress Symptoms, Psychopathology, Health Symptoms, and Adverse Childhood Experiences (n = 53)

	1	2	3	4
Secondary traumatic stress symptoms	—	.630**	.703**	.718**
Adverse childhood experiences	.630**	—	.552**	.501**
Psychopathology	.703**	.552**	—	.831**
Health symptoms	.718**	.501**	.831**	—

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

Relationship between secondary traumatic stress symptoms, psychopathology, physical symptoms, and adverse childhood experiences. Results showed that secondary traumatic stress symptoms, psychopathology, physical symptoms, and adverse childhood experiences were positively related (Table 2).

Differences in psychopathology, physical symptoms, and adverse childhood experiences in adult offspring with and without secondary traumatic stress symptoms. Results showed veterans' offspring to have more adverse childhood experiences, physical symptoms, and psychopathology compared to those with no secondary traumatic symptoms, as shown in Table 3.

Differences in psychopathology, physical symptoms, and adverse childhood experiences in adult offspring with and without STSD. Results showed that veterans' offspring with STSD had significantly more adverse childhood experiences, physical symptoms and psychopathology compared to those with no STSD, as shown in Table 4.

Impact of education, sex, and age on psychopathology, physical symptoms, and adverse childhood experiences in adult offspring. Veterans' offspring with less education presented more psychopathology symptoms ($Q_i^2 = 7.032; p = .30$) and more physical symptoms ($Q_i^2 = 8.286; p = .16$). On the other hand, older veterans' offspring showed more adverse childhood experiences ($Q_i^2 = 7.421; p = .24$). There were no differences according to gender.

Adverse childhood experiences as moderator in the relationship between psychopathology and traumatic symptoms. Adverse childhood experiences was not a significant moderator in the relationship between psychopathology and traumatic symptoms ($\beta = .639; p = .127$).

DISCUSSION

Beckham and colleagues (1997) found that 45% of Vietnam veterans' offspring had traumatic symptoms. In the present study, 66% of the sample showed secondary traumatic stress symptoms and, from these, 27% showed STSD. In fact, children may develop trauma symptoms after being exposed to a trauma involving their family (Pynoos & Eth, 1985, cited in Steinberg, 1998) or having the knowledge that a family member was exposed to a traumatic incident (Blom, 1986, cited in Steinberg, 1998). STSD develops when a person deals closely with a PTSD victim or is very attached to the primary victim (Figley, 1998). Symptoms of intrusion, hyperactivation, and behaviors similar to those of their parents have been described in children of parents with PTSD, emphasizing the contagious effect of trauma (Steinberg, 1998). For this reason, Figley (1998) believes that family members need to be considered victims of trauma regardless of whether they have witnessed the event. It is important to point out that, in this study, secondary traumatic symptoms of offspring were assessed, taking into account only the fathers' war experiences and not other lifelong traumatic experiences. In Portuguese families, the second generation has been affected by the impact that war had on their parents because of the reported trauma symptoms, as a result of their parents' war experience. Interestingly, some studies suggest that the effects of trauma transmission become visible only in the context of adversity. In a study of women who are second-generation Holocaust survivors and diagnosed with breast cancer, Baider and colleagues (2000) found higher rates of posttraumatic symptoms and related distress (e.g., depression, anxiety). Thus, the second generation is likely to respond with more vulnerability to a life-threatening stressor. Indeed, in this sample, negative family experiences in childhood may have caused a psychological vulnerability to secondary traumatic stress related to their fathers' war experience.

TABLE 3
Differences on Psychological Variables Between Offspring With and Without Secondary Traumatic Stress Symptoms

	With secondary traumatic stress symptoms (n = 53)	Without secondary traumatic stress symptoms (n = 27)	U
Adverse childhood experiences	46.54	28.65	-3.258**
Psychopathology	49.91	22.04	-5.074***
Health symptoms	48.42	24.96	-4.271***

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

TABLE 4
Differences Between Offspring With and Without
Secondary Traumatic Stress Disorder

	With STSD diagnosis (<i>n</i> = 22)	Without STSD diagnosis (<i>n</i> = 31)	<i>U</i>
Adverse childhood experiences	35.36	21.06	-3.323***
Psychopathology	36.84	20.02	-3.909***
Health symptoms	36.52	20.24	-3.785***

Note. STSD = secondary traumatic stress disorder.

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

Results showed that secondary traumatic stress symptoms, psychopathology, physical symptoms, and adverse childhood experiences were positively related. In fact, Beckham and colleagues (1997) found high levels of psychopathology and behavioral problems in children of war veterans, emphasizing the fact that symptoms of trauma are rarely present without psychological morbidity (Yehuda & Wong, 2002). Stress can be seen as a precipitating factor or a consequence of associated psychopathology (Pettit, Grover, & Lewinsohn, 2007); and in the study of Felitti and colleagues (1998), being exposed to adversity in childhood was associated with illness, self-reports of poor health, and physical complaints in adulthood. This finding highlights the negative effects on physical health as a result of exposure to trauma (Green & Kimerling, 2004; Wagner et al., 2000). In terms of adverse childhood experiences, studies suggest that veterans' offspring, during their childhood, had a poor relationship with these veterans due to the absence of the fathers' roles and positive emotional expressions of affection (Galovski & Lyons, 2004).

The present study showed that veterans' offspring with secondary traumatic stress symptoms and STSD showed more psychopathology symptoms, physical symptoms, and adverse experiences in childhood. In fact, according to the literature, PTSD veterans' offspring present lower psychological adjustment; more symptoms of stress, anxiety, depression, schizoid behavior, and somatic manifestations; and development/behavior problems (Beckham et al., 1997; Davidson & Mellor, 2001; Harkness, 1993). Other studies suggest that vulnerability to PTSD is genetic (True et al., 1993), and children of PTSD parents are at a greater risk of developing STSD in response to stressful events compared to children of parents without traumatic symptoms (True et al., 1993). However, other authors suggest this vulnerability may not be genetic but rather the result of living or having been exposed to stressful events, such as living with PTSD (Ozer, Best, Lipsey, & Weiss, 2003).

Veterans' offspring with a lower education level presented more psychopathology and physical symptoms. This result emphasizes the protective role of education. In fact, individuals with more education have easier access to resources to understand disease symptoms and, as a result, may adapt more effectively to disease demands (Yen & Moss, 1999).

The literature also shows a positive relationship between education and the perception of health status (Regidor et al., 1999). Older veterans' offspring showed a greater number of adverse childhood experiences. This result is intuitive, as older children most likely experienced for a longer time period "combat stress reactions" from their veteran fathers (Solomon et al., 1992).

CONCLUSION

The results of this study support the need for interventions in PTSD war veterans' offspring with symptoms of secondary traumatization. Learning to cope with these symptoms is associated with appropriately managing the effects of trauma. In fact, it is fundamental to screen adult offspring of PTSD veterans with psychopathology and emotional difficulties early on, to provide timely therapeutic interventions and, therefore, avoid the development of STSD later on (Dekel & Monson, 2010).

Furthermore, this study also emphasizes the importance of psychological interventions for Portuguese war veterans with PTSD, as 38 years have passed since the end of the Colonial War, and there is still the possibility of "contagion" of the veterans' PTSD symptoms by their family members (i.e., spouse and offspring). Therefore, it is important to assess PTSD in war veterans' family members, particularly their offspring. Appropriate health professionals, when possible, should evaluate early adverse childhood experiences to prevent physical and mental problems in adult offspring.

In future studies, PTSD features that interfere with the parent/child relationship need to be a focus of research. In other words, variables related to family functioning should be included to better understand the mechanisms of transmission of trauma from veterans to offspring.

Several methodological limitations of the current study should be noted. In fact, participants were the oldest sons or daughters of war veterans, and therefore younger children were excluded; the sample was collected from a single Veterans Association (although the most representative one); and only self-report measures were used. No information regarding whether participants had received psychological treatment was controlled for. Future studies should include younger offspring and spouses to achieve a multiperspective assessment of family functioning. Also, it is important to assess whether mothers play a moderating role in the relationship between psychopathology and symptoms of secondary traumatic stress in offspring.

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