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# Possible outcomes of cumulative trauma in mental-health: a case report

*Possíveis desfechos para trauma cumulativo na saúde mental: um relato de caso*

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## ABSTRACT

To discuss the resilience factors that may have prevented a patient from developing post-traumatic stress disorder (PTSD) after exposure to a variety of severe potentially traumatic events. A thirty-eight-year-old civilian has been exposed to at least ten dramatic situations of violence in his work and personal life. He developed only a few mild post-traumatic symptoms after being exposed to a particularly gruesome incident during work. Even though the number and severity of potentially traumatic events may be alarming, this does not determine that the patient will inexorably develop PTSD, or other disorders. The study of protective factors is mandatory so that we can acknowledge and develop more effective ways to prevent and treat disorders.

## KEYWORDS

PTSD, posttraumatic stress disorder, resilience factors, cumulative trauma, case report.

## RESUMO

Discutir fatores de resiliência que podem ter prevenido que um paciente desenvolvesse transtorno do estresse pós-traumático (TEPT) após a exposição a uma variedade de eventos potencialmente traumáticos severos. Um civil de 38 anos que foi exposto a, ao menos, 10 situações dramáticas de violência em seu trabalho e vida pessoal. Ele desenvolveu apenas alguns sintomas leves após o trauma de ter sido exposto a um evento particularmente desconcertante durante seu trabalho. Apesar de o número e a severidade dos eventos potencialmente traumáticos serem alarmantes, isso não determina que o paciente invariavelmente apresentará o TEPT ou outros transtornos. O estudo dos fatores protetivos é essencial para que possamos reconhecer e desenvolver maneiras efetivas de prevenir e tratar os transtornos mentais.

## PALAVRAS-CHAVE

TEPT, transtorno do estresse pós-traumático, fatores de resiliência, trauma cumulativo, relato de caso.

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Posttraumatic stress disorder is considered the most common and severe reaction to traumatic events<sup>1-3</sup>. Potentially traumatic events (PTEs) occur to 70% to 90% of people worldwide during their lives. Remarkably, four or more potentially traumatic events strike 30.5% of the general population<sup>4,5</sup>. Once exposed to such PTEs, one may show four different outcomes: 1. acute distress and non-recovery from the impact of the event (PTSD development), 2. moderate impact with recovery, 3. delayed development of a disorder due to the event, and finally 4. non-development of a mental disorder<sup>6</sup>. Those who do not develop a mental disorder are considered resilient. Resilience is the ability to bounce back from exposure to traumatic events. Although most of us are resilient when exposed to a potentially traumatic event, the cumulative exposure to such events may overcome our resilience, leading to PTSD.

There is a dose-response relationship between the exposure to potentially traumatic events and the development and severity of PTSD<sup>7-10</sup>. However, there is a gap in the literature regarding the resilience process that contributes to whether or not some individuals will develop PTSD after being exposed to multiple severe potentially traumatic events. Therefore, we present the case report of a 38-year-old man who has been exposed to at least ten potentially traumatic events, developing other mental disorders rather than PTSD. We also conducted a brief narrative review of the literature to better understand which factors lead him not to develop PTSD, in spite of facing several PTEs.

Case report based on the information provided by a patient assisted for 2 years at the PTSD outpatient clinic of the *Instituto de Psiquiatria da Universidade Federal do Rio de Janeiro* (IPUB/UFRJ). All patients treated by this service voluntarily sign an informed consent agreeing to have their information anonymously shared for research purposes. The patient's name was altered to assure his privacy.

Mr. Silva is a 38-year-old married male that has been working as an intercity bus service supervisor for ten years. The main part of his job was to be on the road checking the tickets on each bus. However, there were times when he would visit the spots of accidents involving the company's buses, provide support to the victims, passengers, bus drivers and others involved in the accident, and photograph the accident scene. The patient informed that he and his colleagues did not receive any training before tackling the accident occurrences.

In a working night of August 2012, Mr. Silva was called by his boss to attend to a road accident, who provided no details of the scene to be found. When he got to the accident spot he learned that a car had hit a woman who had been crossing the highway, got out of its lane and hit the bus on the other side of the road, ending up under it. After the car stopped, it caught fire. When crossing the plant-filled ditch

between the lanes, Mr. Silva's foot got stuck on something. He used his flashlight and discovered he had been stepping on the hit woman's exposed guts. The patient described he felt heat coming up his legs and that he could not move, as if they were frozen, for about three minutes. After that time, he said the feeling went away and he could get back to his duty with no other feeling of fear or despair.

A few days later, he started to present repeated episodes of heart palpitation, increased sweating, and body tremors. The patient exhibited doctor-shopping behavior and saw five different cardiologists, being referred to a variety of medical exams to check his health conditions. However, nothing unusual was detected, and the physicians could not diagnose any physical disease. The fifth physician suggested that the symptoms could be caused by anxiety and referred him to a psychiatrist. In addition, this physician prescribed him venlafaxine 75 mg/day. Aside from these physical symptoms, Mr. Silva also presented sadness, difficulties in concentration and recollection of events. He reported having mild nightmares related to the event, which caused him no special disturbance. Mr. Silva sought treatment at the PTSD outpatient clinic of the *Universidade Federal do Rio de Janeiro*.

During the treatment, Mr. Silva reported been exposed to a variety of severe potentially traumatic events throughout his life. He suffered physical abuse as a child (was repeatedly hit with a stick and belt), was struck by lightning at the age of 16, was shot in the head during armed robbery at the age of 23 (the bullet still rests in his skull), witnessed his father's death after a car accident at the age of 25, was submitted to a child's body recognition after a road accident at the age of 31, had to hide not to be lynched because a colleague driver from the same bus company hit and killed a person (this event took place at the age of 33), his life was threatened with fire weapons by the members of his neighborhood outlaw militia when he was 36, also he stood in the woods for five hours guarding a dead body while waiting for the coroners more than once (as part of his job's protocol towards road accidents), among others. As part of the psychiatric outpatient clinic protocol of investigation, he filled in standard validated instruments to screen for exposure to potentially traumatic events during life span, childhood traumas, in addition to PTSD, depression, and anxiety symptoms (LEC-5, CTQ, PCL-C IV, and V, BDI, BAI). Also, the patient answered to the Structured Clinical Interview for DSM-IV (SCID-IV) and to the Clinician-Administered PTSD Scale for DSM-IV (CAPS-IV). The scales results indicated the patient was suffering from Panic Disorder with Agoraphobia – experiencing tachycardia and dyspnea, which were not triggered by traumatic memories –, Depressive Disorder – characterized by a single episode, severe with psychotic features, hearing his name being called at the front door, worsened mood in the morning, sadness and anhedonia – and Adjustment Disorder (presenting symptoms that were not explained by anxiety disorders, nor depression).

In this report, we present a case of a patient who had been exposed to cumulative PTEs, in addition to presenting other risk factor for developing PTSD. The appeal of this case stems from the fact that he did not develop PTSD even having faced a variety of dramatic potentially traumatic events of violence and mayhem in his work and his personal life.

It is certain that developing PTSD is not the only possible outcome of experiencing a PTE. However, Mr. Silva had an extremely high risk of developing PTSD, since he had been exposed to multiple potentially traumatic events, presented an episode of peritraumatic tonic immobility<sup>11,12</sup>, exposure to interpersonal violence and childhood trauma<sup>4,13</sup>.

Experiencing cumulative trauma establishes a dose-response between the number of potentially traumatic events and the risk of developing PTSD<sup>9,14,15</sup>. Re-experiencing traumatic events can cause a kindling effect, in which repetitive subliminal stimuli may increase the sensitivity towards negative effects from future exposures<sup>16-18</sup>. Despite that, Mr. Silva did not develop PTSD. It is worthy to speculate which are the mechanisms that promoted such resistance to PTSD, but not to other diagnosis.

A possibly involved mechanism is the non-consolidation of traumatic memories – a process involving the amygdala, hippocampus, prefrontal cortex, and hypothalamic-pituitary-adrenal axis. Concerning this, the prefrontal cortex could have exerted a potent negative feedback on the amygdala, interrupting the consolidation of the traumatic memories and avoiding the development of PTSD<sup>19</sup>.

The mechanisms involved in fear extinction learning and safety clues recognition probably also played an important role. Failure in fear extinction learning, a distinctive hallmark of PTSD, facilitates symptoms to be triggered by threat clues that merely resemble the index trauma<sup>20,21</sup>. Also, it has been marked that reduced activation in the hippocampus accompanies the failure to retain extinction memory. The combination of enhanced activity in both the hippocampus and VMC has been found to predict a better outcome for memory extinction<sup>22</sup>.

As we have pointed out, his process was of a resistance to PTSD. However, Mr. Silva has presented other diagnosis, namely depression and panic disorder. This reinforces the many possible outcomes one may face after experiencing a potentially traumatic event.

Health care professionals should not assume the diagnosis of PTSD based only on the type and severity of trauma exposure. The existence of actual psychiatric symptoms (as described in the DSM-5) should be carefully scrutinized before assuming that a patient has PTSD (or any other mental disorder). The nature, magnitude, and number of traumatic events are influential factors, but they do not determine inexorably the development of psychiatric disorders. Further knowledge of the pathways for developing a certain disorder and protective factors towards this

development helps the identification of feasible prevention and treatment measures.

## INDIVIDUAL CONTRIBUTIONS

**Cheyenne von Arcosy** – Conception and design of the article.  
**Liliane Maria Pereira Vilete** – Design and critical revision of the article content.

**Carla Marques-Portella** – Design and critical revision of the article content.

**Mauro Vitor Mendlowicz** – Design and critical revision of the article content.

**Mariana Pires Luz** – Design and critical revision of the article content.

**Ivan Figueira** – Design and critical revision of the article content.

**William Berger** – Design, critical review and final approval for publication.

## CONFLICT OF INTERESTS

The authors declare having no conflicts of interest to disclose.

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