

Building traumainformed worshipping communities Trauma-Informed Theology

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# The Trauma Brain

An informative booklet explaining simplistically how trauma affects the psychological processes of the brain



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## What is Trauma?

The term 'trauma' originates from a Greek word meaning to wound, tear, or rupture. Initially, it was associated with physical injuries, until the 1970s, when after the Vietnam War, the diagnosis of post-traumatic stress disorder (PTSD) emerged. Today, trauma encompasses any experience that has inflicted psychological and/or physical wounds on the survivor.

Defining psychological trauma has been a challenging task, given its intricate nature. Psychological trauma involves experiencing a mental injury that influences an individual's cognitive processes, memory retention, and thought patterns. This injury typically results from a sudden and profound shock or threat, leaving a lasting and profound effect on the survivor.

Every individual will encounter challenging and painful experiences at some stage in their lives, which may be hard to understand or recover from. It's essential to differentiate between suffering and trauma. Suffering refers to enduring painful situations which might in themselves be traumatic experiences, while trauma relates to the lasting wounds that these experiences can inflict on survivors. Essentially, suffering is the cause of trauma not the trauma itself.

We often associate traumatic experiences with dramatic events like childhood abuse, natural disasters, domestic violence, and interpersonal conflicts. However, it's crucial to recognize that not all psychological wounds stem from obvious or dramatic incidents. Sometimes, the subtle experiences that cause psychological trauma for a survivor are related to what was quietly absent in their childhood care, rather than what was directly done to them.

How the human brain responds to, processes and deals with the traumatic suffering experiences both while they are occurring and even many years afterwards is the wounding of trauma.

## The Triune Brain

The human brain, a marvel of divine creation, boasts a sophisticated design aimed at ensuring survival. Operating via an intricate array of interconnected neurons and brain regions, it empowers individuals to survive, function and flourish.

When it comes to processing, storing, and forgetting memories, the human brain operates using three components referred to as the triune brain. These consist of the reptilian brain, the limbic system, and the pre-frontal cortex.

- The reptilian brain, responsible for regulating basic bodily functions like breathing, sleeping, eating, and more, is fully active from birth.
- The limbic system, comprising the thalamus, hippocampus, and hypothalamus, begins functioning around the age of two years old. Among other things it processes all new inputting information and experience and determines if they are safe or not.

 The pre-frontal cortex is the part of the brain which deals with intellect, language, vocabulary, cognition, reasoning and rational.



All triune brain must function harmoniously to evaluate, process, and retain our memories and experiences effectively. This is especially crucial when dealing with painful, distressing suffering or situations.

The thalamus comprehensively perceives the experience. Subsequently, the amygdala, commonly referred to as the fear center, analyzes whether the experience is safe. If it is deemed safe, the information is then relayed to the prefrontal cortex. Here, the experience is interpreted, assigned meaning, articulated in language, and stored in long-term memory.



## <u>The Trauma Brain</u>

When the amygdala senses an unsafe experience, the brain doesn't process it normally, delaying its transfer to the prefrontal cortex. Instead, the hypothalamus triggers the release of cortisol, a stress hormone affecting the entire body. This leads to the activation of one or more of the six danger responses: fight, flight, freeze, flop, faint, or fawn (see page 5 for more details). Any distressing or painful experience automatically triggers these responses. Once the danger passes, cortisol stops releasing, restoring the connection with the prefrontal cortex. This allows the painful experience to be understood and processed in the brain, shifting the memory from short-term to long-term memory. Some of these experiences may require talking therapy or counselling for healing, but they do not necessarily constitute trauma.

When an individual undergoes numerous painful experiences, particularly at a young age, or encounters a highly complex and distressing event that overwhelms the mind, the final phase of processing these experiences may not fully occur. Continual release of cortisol by the body and the failure of the pre-frontal cortex to fully engage with the experience prevent complete processing. Consequently, the painful event is not comprehensively understood and fails to transition into long-term memory, remaining stored in short-term memory instead. This can trigger one or more of the six danger responses, keeping the person in a state of heightened alertness. The brain then begins to interpret all new experiences as potential threats, leading to a trauma response where the individual continuously activates one or more of the six danger responses in the face of challenges, difficulties, or perceived threats. This is what should be understood as the psychological wounding of trauma.



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## The Trauma Brain Diagram





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### The Six Danger Responses

### WHAT ARE THE SIX TRAUMA RESPONSES? When the brain senses danger an

immediate whole-body danger response is set off and a stress hormone is released. This forces the connection with the rational, cognitive part of the brain to shut down, blocking the experience from being given cognitive meaning. This process then triggers one, or more, of the six

FLIGHT

primitive and subconscious survival mechanisms to deal with the danger.

### FRIGHT

acutely aware of surroundings. The person is often attuned to the subtleties of body language causes panic attacks and severe anxiety and makes people highly reactive to a

# functions where the person faints, blackout or has a seizure in response to extreme form, the flp state by giving in

### **FLOP** FAWN masks and hides the

in danger by putting

doing what they are

A trauma wounding occurs when the survivor has had to endure suffering experiences which were far too painful to endure. This leads survivors trapped in a continuous cycle of the reactivation of one or more of these responses even many years after the danger has passed.

### FIGHT



### FREEZE

person stopping all activities and having the inability to move, like playing dead. This may also manifest







### The Somatic Effect of Trauma

Due to the psychological impact of trauma, its effects are often retained in the body rather than in the brain's cognitive language center. Consequently, conventional talk therapy can be difficult and ineffective, particularly at the initial stages. The body holds the six danger responses, leading not only to emotional dysregulation but also physical dysregulation. Trauma affects the autonomic nervous system causing involuntarily influence on the heart rate, blood pressure, and bodily functions like bowel movements, bladder control, gut reflexes, stomach reactions, headaches, muscle tension and joint pain to name but a few.

### The Window of Tolerance

Each individual has a unique psychological pain threshold, known as the window of tolerance. This means that an experience that may be traumatic for one person, causing psychological wounds, may not be traumatic for another. It is crucial not to compare one person's traumatic experiences with another's. Providing validation and empowerment to all survivors and their feelings and experiences is essential during such times.



As a practising Christian and having overcome her own trauma-related mental health issues Joanna Naomi Douglas is passionate about trauma-informed theology and building trauma-informed worshipping communities.

Joanna is a qualified teacher working with students living with complex social, emotional, educational, and trauma-related mental health needs. Alongside her teaching role, Joanna is currently pursuing a PhD in trauma-informed theology having previously gained a Master degree in this field. The aim of this informational booklet is to enlighten readers on how experiences of trauma can influence and alter the brain's functioning and development. Additionally, this booklet expands on how this effect can shape the survivor's perception, experiences, and comprehension of the world.