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Review Article

Psychophysiological Responses to Childhood Trauma in Adulthood - A Review

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Abstract

Background: In this review, the impacts of childhood trauma are examined, and how they influence the thoughts and behaviors of most adults. Some people are resilient and develop proper coping mechanisms against it with the help of immediate therapeutic counsel. Many indulge in maladaptive coping strategies that do more harm than good. These strategies commonly occur in many anxiety disorders alongside symptoms that fit diagnostic criteria. However, this review will indicate that the impacts of trauma should not be confused with Post Traumatic Stress Disorder.

Methodology: Multiple studies and articles surrounding the topic of trauma and its signs were selected for this review and compiled for a better understanding of the consequences of trauma.

Results: Previous studies have shown that trauma comes in many forms, each damaging to a child's upbringing, from neglect to sexual abuse. There are several types of traumas, each caused by numerous reasons and originating from different backgrounds, but there is a clear distinction between each that is elaborated. Without properly monitoring the conditions, the mental and biological state of the human body can worsen, and the child can develop severe mental illnesses such as depression.

Conclusion: The literature has provided multiple psychotherapies and intervention techniques that would treat various conditions and focus on improving well-being based on their effectiveness and research on evaluating treatment for stress responses. The available literature has been examined, and responses occurring in emotional, physical, cognitive, behavioral, and social categories are delineated. Suggestions for future research are also discussed in this paper.

Keywords

Childhood Trauma, Responses to Trauma, Psychophysiological Responses, Adult Responses.

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Introduction

Childhood trauma has serious outcomes for its sufferer and society. It is interpreted in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V) as an individual exposed to actual or threatened death, serious injury, or sexual violence[1]. The cause of trauma is an intense physical and psychological stress response. Several studies have shown that, including those by Dyregrov and Yule[2], the outcome of trauma has an everlasting effect on the individual's functioning and physical, emotional, social, or spiritual well-being. When the child is a trauma victim, witnesses it, or hears about it happening to a friend or a close relative, it greatly impacts their minds. In toddlers, motor vehicle tragedies, bullying, terrorism, and child maltreatment from physical, sexual, and emotional abuse to domestic and community violence are common childhood traumas that enhance the development of pain disorders and post-traumatic stress disorder (PTSD). Child mistreatment or bullying/ beating will have a greater impact on their adulthood. During childhood, it is important to explore the pattern of interactions between the child and their abuser[3].

Single events or series of events can contribute to trauma, which leads to physical and emotional injury[4, 5]. Trauma is divided into two categories, which can occur in children and adults. Event trauma, or Type I, requires a single unexpected, immediate, or difficult event[6]. Examples of type I trauma can include violence at school, such as school shootings, road accidents, and/or fires. Process trauma or Type II calls for a display to be underway and give way to irritants considered too fearful to anticipate[4, 7]. Process trauma, or Type II trauma, includes years of war, repeated violations in physical, emotional, and sexual abuse, and being a victim of domestic abuse. Some factors that influence trauma are family or outside family members, the relationship between the child and person, or the surrounding environment[4]. For example, parents might cause more trauma to a child because that child witnesses their hostile arguments. Mulvihill[5] suggested that the ongoing parent relationship may also traumatize the child, which starts a fear response due to the violation of trust.

Neglect is the most common form of childhood maltreatment[8]. Neglect means ignorance or failure by parents and caregivers to provide for the psychological or physical needs of the child[8, 9]. Emotional harm involves actions of an adult that harm a child emotionally, psychologically, or spiritually. It involves an attack on the child's sense of self-worth[8]. Physical abuse involves any part of a child’s body by use of excessive force[10]. In accordance with Jack et al.[8,] physical abuse includes shaking, grabbing, biting, kicking, and stabbing. Sexual abuse refers to the non-consensual stroking of a child's private regions, intercourse, inappropriate speech, sex talk, incest, and sexual manipulation. Domestic violence between parental figures and caregivers or other family members. This includes physical injuries or overhearing of violence[8].

For the child experiencing the trauma, a therapist needs to comprehend the complexities of the trauma and the impact it has on the development of the brain. Maturation of the brain will affect several aspects of the child's life, including psychological functioning, behavioral, social, emotional, and cognitive. The structure and development of a child's brain negatively impact while experiencing trauma.

The following section describes the most common responses to trauma in emotional, physical, cognitive, behavioral, and social

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domains. It is important to remember that these responses do not have a direct indication of any underlying mental illness or a disorder. Most survivors are highly resilient to trauma and can develop effective coping strategies against it[11]. Most show minimal distress and recover with time across many stages in life. Even so, individuals will have signs that don't necessarily fulfill the diagnostic criteria for PTSD or acute stress disorder. It is important to acknowledge that these responses are normal but can be distressing.

Table 1: Psychophysiological Responses to Trauma

Psychophysiological responses	Types of Trauma
Emotional responses, such as fight or flight response, stress response, dysregulation of emotion, and numbing	Event trauma, domestic violence, neglect, or emotional abuse
Physical responses, such as somatic complaints, hyperarousal, and poor sleep quality	Process trauma, physical abuse, or sexual abuse
Cognitive responses, such as cognitive errors, guilt, and shame, inaccurate idealizations, rationalizations, or justifications, trauma-induced hallucinations or delusions, and dissociative disorders	Process trauma, event trauma, physical abuse, sexual abuse, or emotional abuse
Behavioral responses, such as self-destructive behaviors, self-harm, re-enacting the event, and avoidance	Event and process trauma, physical abuse, emotional abuse, domestic violence, or neglect
Social responses, such as difficulty maintaining relationships, avoiding support, distrust	Event trauma, neglect, sexual abuse, physical abuse, or emotional abuse

Emotional Responses

Emotional reactions depend significantly on the individual's socio-cultural history, thus allowing them to be either emotionally resilient to trauma or express strongly towards a trigger. Some people learn the ability to move on from dramatic events and face the stressors. Others are unable to handle stressful situations and try to escape or seek support from someone familiar. These stress responses do work in favor of saving us from danger but not so much out of context. It is the way we perceive the situation that determines our responses. The perception is built from childhood, during which culture and parental upbringing have a huge impact. Perception of the stimuli and childhood experiences work together to determine the way a person responds. In the context of trauma, however, each environmental incentive is perceived and reacted to as an element of danger. Therefore, if the situation resembles a past event, the adult survivor will have an adverse stress response. For example, an adult who’s being scolded severely will recall their past abuse and enter a state of anxiety or panic. The fight or flight response is a natural coping strategy against stressful situations that the body aims to protect us from the perceived threat.

The most common emotional reactions are anger, fear, sadness, and shame. Sometimes, people will have difficulties in recognizing their own feelings because of a lack of experience with emotional expression in their family or community. They may associate strong emotions with the trauma that elicits intense emotional responses. If a child witnesses death in the family, as an adult, they may cry in fear of separation from significant others. And then there are those who deny any connection to the past and define their emotions as "numb"[12]. Emotional numbness, in a common perspective, refers to how many people shut off their emotions over a memory that hurts them[13]. They become disconnected from others, isolate themselves, and lose interest in activities they used to enjoy. This often occurs as a coping against death, grief, anxiety, minimizing stress, etc.

Due to childhood traumas, many people are unable to regulate their emotions well. Regulation is defined by how quickly one can return to their original emotional state after facing a stressful situation. A person who had been exposed to an aggressive family environment in their childhood may display more reactive behaviors than those adults who grew up in a stable environment. Such emotional dysregulation does not go on for long but has often led to substance abuse. Survivors may indulge themselves in risky or self-harm behaviors, disordered eating, compulsive behaviors such as gambling, and repression or denial of emotions[14].

Emotional expression of traumatic response can be followed by two extremes: either feeling overwhelmed or feeling numbed[12]. In numbing, the individual will detach all emotions from their memories, thoughts, and behaviours[14]. These limited expressions of emotions are hard to detect during therapy, and the severity of symptoms is difficult to determine.

Cognitive behavioral therapy (CBT) and Acceptance and Commitment Therapy (ACT) have been seen as effective in treating emotional dysregulation and numbing. Cognitive behavioral therapy grants expression and understanding of emotions, while empowering clients to turn their thoughts of hopelessness into emotional strength[15]. Acceptance and Commitment Therapy teaches mindfulness and helps direct attention to living a meaningful life[16].

Physical Responses

These symptoms include somatic complaints, hyperarousal, and poor sleep quality[11]. Somatization refers to emotional distress concerning one's own bodily symptoms. Specifically when psychological symptoms convert into physical concerns. For example, stress causes weakness, headaches, stomach aches, and nausea. These are usual signs that typically last for a short while and do not lead to greater health problems. However, it becomes a matter of concern when there is a prolonged and increased amount of stress[18]. Sometimes, clients will focus primarily on their physical symptoms and ignore all medical evaluations that fail to confirm their ailments. These somatic complaints are more prone to occur in those people who have trauma. There is no observable cause because the stress is heavily exaggerating their physical complaints, and neither are the people faking it[18]. Intervention is still required to address their concerns, such as mindfulness-based interventions and relaxation therapy[19]. Each treatment is designed to reduce mental and physical tension with a combination of techniques, like special breathing or progressive muscle relaxation exercises.

Hyper-arousal is a state of extreme alertness caused by the amygdala[20], epinephrine, and elevated levels of CRH. These are part of the

diagnostic criteria of Post Traumatic Stress Disorder, characterized by signs of sleep disturbances, muscle tension, and startled responses[12, 21]. This system may serve to fight the trauma, but it also does not give enough time to properly assess and respond to a stressor. Hyperarousal may prepare the body against a life-threatening stimulus, but it is also unnecessary when the situation is actually safe. Excessive hyperarousal may also increase the chances of stroke[22].

Sleep disturbances are also seen constantly occurring in the form of nightmares, insomnia, difficulty falling asleep, early awakening, and restless sleep[23,24,25]. The quality of sleep is interrupted when stressful thoughts and memories enter the unconscious. Other responses include gastrointestinal, cardiovascular, neurological, musculoskeletal, respiratory, dermatological, urological, and substance use disorders[11]. These symptoms normally do not go away and remain even after therapeutic intervention. This happens because of relapse, a condition in which medical symptoms appear again after treatment. Oftentimes, clients will stop the treatment once the symptoms go away, which causes the relapse to happen. A triggering event or stress may force the individual to return to their old behavior, and then they relapse[26].

Cognitive Responses

When core beliefs and normal life assumptions are challenged by dramatic incidents, they induce a change in thought processing and affect daily life functioning. Some examples include cognitive errors, inappropriate guilt and shame[27], inaccurate idealizations, rationalizations, or justifications, and trauma-induced hallucinations or delusions[11, 28]. These ways of thought instruct decision-making and contribute to certain behaviors. People who have made mistakes in the past and have been shamed will feel immeasurable guilt and will often find themselves apologizing numerous times for every little detail. The degradation of self is a cognitive error, alongside rationalizations that involve justifying behavior or attitude with reasoning, even if it's already not appropriate.

To understand how cognition is altered, Beck and colleagues' cognitive triad model (1979)[29] is applied. It states only three styles of cognitions: thoughts about the self, about the world, and the future. In keeping with the model, a series of thoughts circulate these factors, and an event acts as an influence on thought patterns. For instance, trauma can make individuals feel vulnerable about themselves, see the world as dangerous, and assume the future as uncertain. Witnessing violence or assault can change assumptions that an individual keeps of themselves, others, and the universe. Depending on whatever the set of cognitions is, it influences the individual's ability to use internal and external resources effectively. Consequently, cognitions also have the capacity to develop depressive and anxiety symptoms after trauma[21].

Severe childhood trauma is also closely associated as the cause of dissociative disorders[30]. Dissociation is a mental process of detachment from the external world and divulging only in the internal world. It occurs usually in the form of distraction, daydreaming, fantasy, and avoidance. And in extreme cases, depersonalization, fainting, and catatonia could rarely occur. This appears as a common ability to lose track of a particular action at a specific point in time, but for those with severe trauma, it acts as a protective element[28]. Dissociation creates a distortion of time and space, a reduced perception of pain, and the sense that whatever is happening is not real. The individual will enter the space to escape the

trauma and stress, for example, mentally teleporting to a different place[30]. Dissociation may also relate to mental disorders such as dissociative identity disorder (DID), formerly known as multiple personality disorder. Severe childhood trauma has been seen to be closely associated as the cause of dissociative disorders[30], alongside damage to the hippocampus.

Behavioral Responses

Behavioral reactions towards a traumatic experience vary from person to person, but they all work similarly, with the aim of managing the distress caused by it. Stress management depends upon the individual's way of coping, and there are many techniques that people follow, such as avoiding the problem altogether or playing a game that distracts them. In severe cases, however, some people will reduce their stress by either substance abuse, compulsive, impulsive, or self-harm behaviors. Sometimes, others try to be aggressive and gain control over their experiences or re-enact the entire event. Behavioral reactions may be learned from the past or act as consequences of the past. For example, when a situation has gotten out of hand, they decide not to make any decisions at all (learned helplessness).

Behavioral responses mainly fall under two categories: reenactment reenactment and avoidance[21, 31]. ReenactmentReenactment is the act of relieving the traumatic experience by recreating it repetitively in their present lives[31]. It is common among children who play mimicry of what happened during the trauma. Whatever they witness, they tend to act it out during playtime and express the experience with their friends without the use of words. For example, if a child witnesses divorce, they may later play a game related to marriage and re-enact arguments between the couples in role play. Another similar case in adults can be isolation due to experiences of neglect or from overprotective parents. There are many reasons as to why survivors do this, one being that perhaps they want to master them. Examples of reenactment reenactment include self-harm behaviors or self-destructive behaviors. Self-harm is an act of intentionally bringing injury to oneself or a way of coping with overwhelming physical distress and helplessness[31]. Those who have experienced repeated childhood trauma are highly prone to develop self-injury as a maladaptive coping mechanism. It is commonly associated with eating disorders and substance abuse. Self-mutilation also occurs in a number of personality disorders (DID, histrionic, and borderline), depression, and schizophrenia. Fortunately, most people who commit self-harm do not actually have the intention to kill themselves[32]. However, it can escalate very quickly if therapeutic intervention does not occur. Self-destructive behaviors, such as substance abuse or reckless driving[33], do not necessarily impact the individual nor get the individual killed on purpose. Many studies have shown that substance abuse significantly increases after the trauma and has a higher chance of relapse because of withdrawal symptoms and dependency[34]. The use of substances depends on many factors, such as the prominent trauma symptoms of the individual and the individual's access to specific substances like cigarettes or cocaine. The substances give them quick relief and comfort from the unresolved trauma, so they avoid difficult emotions to face[14]. Stressors trigger substance abuse and self-harm. To ensure that trauma-induced stress does not occur, trauma-informed care has been seen as a useful approach. It is a service based on the knowledge and comprehension of trauma affecting lives[35]. Actively recording behavior and body language, taking note of triggers, and making sure the trauma does not resurface through any type of interaction. It focuses on building strength and providing

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care, support, safety, and empowerment to patients[36]. Its key elements include realizing how the trauma is affecting the environment, recognizing the signs of trauma from the past and the present, and responding to individual needs. However, this approach may not be widely researched or implemented[36].

Avoidance behaviors are done to preclude anxiety. Individuals will avoid people, places, or situations to avoid unpleasant memories, circumstances, and emotions[21]. It is the sense of escaping the problem. Many people have not learned the ways to deal openly with stress or any stressful situation because no one has been taught how. This consistent behavioral pattern increases the likelihood of avoidance more and more often until it becomes problematic. The individual tries to avoid traumatic stressors or memories in whatever way possible, in the hopes that the issue will either go away or someone else will resolve it. There are some people, though, who face their memories and stress (if not immediately) because they have the belief that they need to deal with the issue one way or another. These kinds of people would be considered resilient and are able to handle stress.

Social Responses

Social or interpersonal relationships are protective factors for traumatized children and adults alike[1]. It is important that a stable and appropriate support system is established in order to help them cope. In general, friends and family are important for every person's well-being. However, trauma also affects relationships. They are built on an emotional exchange, which means that those with a close connection to the individual with a traumatic past will directly experience the survivor's traumatic stress response[37], i.e., anger outbursts or too much emotional reactivity.

Survivors are encouraged to seek support from their friends and family, but sometimes their own negative perceptions cause them to avoid support[12]. Either because they think that nobody is trustworthy or that they are a burden to others. Survivors may become more emotionally withdrawn because of their intense emotional and physical reactions and to protect others and themselves from harm. They feel shame and guilt for the way they react, and for the way they are, which further reduces the chance of them using support systems and resources[12]. The act of seeking support also means surrendering control to someone else. In the past, they might have been hurt or lost something due to a mistake, thus losing control over a situation. No individual wants to submit themselves to someone because they are uncertain of their own safety and want to take no risk of getting hurt again[38]. There is also the lack of awareness to seek support, or people are not taught to find consolation from a good company, such as men not seeking social support from their friend group because they do not practice an intimate relationship, as compared to women.

A final reason why survivors have difficulties in maintaining relationships is betrayal. Their own trusted caregivers or family members were the ones who committed the abuse. This creates a sense of distrust and causes difficulties in connecting with others. They are more cautious and observant of others, constantly in fear of being harmed again. Betrayal can affect the ability to form attachments, yet supportive relationships are necessary to recover from trauma[11, 37]. The first step is to tackle the fear against it and show them the benefits of therapy. Providing proper guidance and unconditional support should help them gain insight and encourage them to seek support from family and friends.

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Conclusion

There are several adaptive behaviors in response to trauma and as a way to cope with terrible past events. Emotional reactions range from stress responses to severely disturbed states of mind, such as numbing, regression, denial of emotion, or gambling. These emotional responses depend on the individual's resilience to trauma or how they express themselves toward a trigger. Regulation and knowing how to regulate strong emotions attached to traumatic memories are important for the safety of mental health and good coping. Physical responses include somatic complaints, extreme hyperarousal, and medical conditions that require professional attention and counseling. Sleep disturbances are also seen in individuals with trauma, and they suffer from a multitude of problems related to it. Due to the trauma, our cognitions are greatly impaired, not only developing depression but also mental issues such as dissociation, guilt, shame, and other cognitive impairments. Behavioral reactions work towards reducing the stress by either avoiding the situation that might remind them of the trauma or conducting self-injurious behaviors such as drug abuse or self-mutilation. Survivors will re-enact the trauma as a way of coping. The support of family and friends can act as protective factors for these victims, but sometimes, there are boundaries that keep them from recovering. They lose trust in others or believe they are a burden, thus rendering themselves helpless or hopeless.

There are many people who do not go to therapy. Culturally speaking, people may not seek help due to doubt and stigma against it. Most people have a hard time admitting that they need help, and stereotypes against therapy only make them less likely to consider taking it. The more people know that therapy will do no harm to them, the better. Educational campaigns, mental health camps, and guidance should be employed to ensure people become more ready to seek therapy. Patients need trauma-informed care that should be applied to schools, hospitals, and other institutions. All therapists and psychologists should seek training in trauma-informed care.

Future researchers can explore how different gender experiences trauma, even when they experience similar trauma, and how trauma impacts attachment styles differently. Future researchers should also explore the factors that are associated with childhood trauma and adult violent behaviors.

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