

Trauma



IMPACT ON THE DEVELOPING BRAIN

Introductions



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Definition of Trauma



- Trauma is a psychological distressing event that is outside the range of usual human experience. (Perry, 2002)
- Trauma is an unusually severe stressor or event that causes or is capable of causing death, injury, or threat to physical integrity of self or others. (Baggerly, 2008)
- Trauma is accompanied by intense feelings of horror, terror or helplessness. (Baggerly, 2008)

Trauma Defined



- **Seriously threatens the health or survival of the individual**
- **Renders the individual powerless in the face of overwhelming fear or arousal**
- **Overwhelms the individuals coping capacity**
- **Violates the basic assumptions about the safety of the environment and trust of others. (Forrest-Perkins, 2011)**

Childhood Trauma and Maltreatment



- ❖ 71 % percent of US children are exposed to at least 1 potentially traumatic event in the past year. (Baggerly, 2008)
- ❖ Child protection services in the United States receive approximately **3 million referrals** each year, representing **5.5 million children**. (Barnett E.R. and Hamblen, J 2009)
- ❖ The rates of injury and death as a result of maltreatment occur most frequently in the first year of life, and **77% of children killed due to maltreatment are under the age of 3 years**. (Barnett E.R. and Hamblen J. 2009)

Childhood Trauma and Maltreatment



- **Researchers estimate that two-thirds of maltreatment cases are unreported.**
- **Of 3.3 million cases referred to Child Protection in the USA, about 30% are substantiated, and occur in the following frequencies:**
 - **65% neglect**
 - **18% physical abuse**
 - **10% sexual abuse**
 - **7% psychological abuse**
- **In addition, anywhere from 3 to 10 million children are exposed to domestic violence each year, 40-60% of which cases also involve child physical abuse. (Barnett, E.R. and Hablen J. (2009)).**

Trauma further defined



➤ Type I Trauma

- A Single incident of trauma
- Examples of a Type I trauma would include, experiencing a natural disaster, a house fire, a one time violent crime.

➤ Type II Trauma

- A prolonged or repeated trauma.
- Examples of a type II trauma would be repeated bullying, sexual abuse, harassment or witnessing repeated domestic violence.
- Repeated combat in war. (Baggerly J. & Exum H.A. 2008)

Childhood Trauma



- A terrified three year old child huddles, sobbing, in a dark corner of his room after being beaten by a drunken parent for spilling milk.
- A colicky infant cries for eight hours, left alone, soiled and hungry, by an immature, impaired other.
- A seven-year old boy watches his father beat his mother in a constant chaotic violent household.
(Perry B., 2011)

Brain Development



- A newborn baby houses over one hundred billion neurons that will chart paths and make connections based on the social experiences he/she encounters.
- By age 2 and $\frac{1}{2}$, approximately 85% of the baby's neurological growth is complete; meaning the foundation of the brain's capacity is in place.
- By the age of 3, the child's brain is 90% of its completed adult size. (Forrest-Perkins, K., 2011)

Cycle of Stimulus and Response



- Vision, smell, touch, hearing and taste activate and organize the neural cells that make up tissue and determine the brain's capacity to process, retain, and respond to information.
- “If a baby is not fed consistent, predictable messages of love and communication, then those areas of the brain shut down and the child's capacity to function later in life is compromise.” Dr. Bruce Perry.

Omnipresent Fear



- Millions of children around the globe each year have tiny pieces of potential chipped away by fear.
- When fear is omnipresent, it changes the child, changes the brain, inhibits exploration, inhibits learning, and inhibits opportunity. (Perry, B. 2011)

Impact of Trauma on Children



- Living in an environment of persistent threat will alter the baseline state of arousal and internal calm of a child is rarely obtained.
- The child will have an “sensitized” alarm response, over-reading verbal and non-verbal cues as threatening. A seemingly minor stressor can result in dramatic changes or can instigate fear.
- Increased **baseline level of arousal and increased reactivity in response to a perceived threat** plays a major role in the various behavioral and cognitive problems associated with traumatized children. (Perry B. 2011)

Trauma and Brain Development



- Delicate balance of neurotransmitter chemicals important to emotional regulation.
- Maladjustment of chemical balance due to constant presence of stress hormone and natural opiates.
- Infusion of Cortisol occurs with trauma and paralyzes frontal lobe activities.
- After trauma, cortisol returns to sub-standard level resulting in depressive episodes and feelings of powerlessness, and loss of hope. (Perry B., 2011)

Functions of the Brain



- **Left Hemisphere of the brain**
Logical and Narrative
- **Right Hemisphere of the brain**
Memory and Vision
- **Healthy functioning requires an integrated right and left hemisphere. (Baggerly J., and Exum H. A. 2008)**

Trauma effects on the Brain



- Neurophysiologic brain function in specific ways during and after an experience of trauma.
- Left Hemisphere which functions in narrative memory shuts down during a trauma. The Phrase “Sacred Speechless”, can be taken in a literal manner as the left side of the brain which stores speech shuts down. The victim may not be able to talk.
- Right Hemisphere which stores visual images may become distorted. The appropriate recall of the trauma may not be able to be accessed accurately. (Baggerly, J. 2008)

The Highway for Connections



- An integrated brain requires connections between the hemispheres.
- A substantial amount of these connections and brain cells form during the first year of life.
- The **Corpus Callosum** is the membrane that wraps the lobes of left and right hemisphere and creates a highway system for neural connections to pass messages back and forth. (Forrest-Perkins, K 2011)

Defective Highway System



- Abused and neglected children have a disrupted/delayed/damaged development in this membrane and as a result have poorly integrated cerebral hemispheres.
- Victims of trauma adapt by attempting to avoid talking about it.
- They may mimic the symptoms of depression with avoidance and arousal which may look like ADHD. (Forrest-Perkins, K., 2011)

Conclusions



- It is increasingly clear that experiences in childhood has a relatively more impact on the developing child than experiences latter in life.
- By shaping the developing brain, experiences of childhood define the adult.
- Children reflect the world in which they are raised.
(Perry B., 2011)

Goals of Therapy and Intervention



- **The goal of therapy when working with traumatized children and adults is to restore the integral functions of the left and right hemisphere restore gaps in memory function. (Baggerly, J. 2008)**
- **Goals include establishing safety, stabilizing the child, normalizing reactions, correcting misattributions, teaching positive coping strategies, decreasing hype-arousal intrusive memories, and unhealthy avoidance. (Kottman, T. 2001)**

Protective Factors



- **Children's social and emotional development**
- **Knowledge of parenting and child/adolescent development**
- **Parental resilience**
- **Social Connections**
- **Concrete supports for parents in times of need.
(Strengthening Families and Communities, 2011)**