

CH 1

Stress and Trauma



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On successful completion of this chapter you should be able to:

- 1) Define and differentiate the concepts of stress, stressor, and traumatic stress
- 2) Compare and contrast the spectrum of stressors
- 3) Recognize the physiological basis of the stress response
- 4) Identify acute and chronic effects of stress
- 5) Define traumatic reminder

Key Concepts

- Children and adolescents are exposed to various **types of stress and traumatic events** during their developmental years.
- How you **define a situation** determines your emotional response.
- **Primary or acute stressors** are relatively circumscribed in time and space.
- **Secondary or chronic stressors** derive from long-term and continuing exposure.
- A **traumatic event** occurs when an individual experiences, witnesses or is confronted with a situation in which there is a perceived or real threat of bodily injury or a threat to life itself.
- The **acute traumatic moment** for the child is frequently ushered in by the discovery that parents are not able to protect them and there is a sudden awareness of vulnerability in the presence of imminent physical injury or death.
- The **individual response to stress** is shaped by the reality of the impact of the fateful event and by one's subjective appraisal.
- **Traumatic reminders** refer to those events in the aftermath of traumatic exposure which result in the child or adolescent reliving and re-experiencing the trauma as if it was occurring one more time.

Introduction

Throughout the course of the life cycle, all of us are confronted with threats to well-being or even to life itself. Although children are generally exposed to the same spectrum of hazards as adults, they are still maturing physically, emotionally, cognitively and socially. Therefore, the impact of perceived threat, psychological trauma, or overt physical harm may become woven into the tapestry of their emergent personalities and their repertoire of adapting and coping capacities. In this chapter we will define terms essential to understanding the psychological effects of trauma exposure: stress, acute and chronic stressors, primary and secondary stressors, traumatic event, acute traumatic moment, and traumatic reminders.

Stress

Stress is a non-specific response of the body to any demand placed upon the organism. Stress can be defined as a real or imagined threat to the psychological or physical integrity of the self, a threat to one's equilibrium or homeostasis. Stress represents an incongruity between the individual's adaptive capacities and the demands placed on the organism (Taylor & Fraser, 1981). The child's level of emotional and cognitive development greatly influences the psychological response to events in which demands exceed capacities.

It is important to understand the role of subjective appraisal in responding to stress. From a cognitive perspective, stress, like beauty, is often in the eye of the beholder. How one defines a situation determines one's emotional response to it. Indeed, a situation that one person might perceive as stressful may be experienced by another person as an interesting challenge. As John Milton observed, "The mind is a place in and of itself, it can make a heaven of hell or a hell of heaven." If you define something as real, it is real in its consequences.

Stress

- Stress is the subjective experience that occurs when we perceive that the demands of the situation exceed our resources to successfully cope with those demands
- Stress may be in the eye of the beholder

The Spectrum of Stressors

Stressors are events and situations that prompt and provoke the stress response. Stressors will be presented from three vantage points: stressors in the human experience, primary versus secondary stressors, and acute versus chronic stressors.

Stressors in the human experience. From the perspective of the human experience, stressors are intrinsic to important milestones in the life cycle. **Life developmental stressors** include such events as childbirth, birth of a sibling, early parent death, separation from loved ones, family discord, divorce, aging, hospitalization, surgery, and physical illnesses. Children who are exposed to such stressors may exhibit clearly discernable behavior changes. For example, a school-age boy who experiences the sudden unexpected death of his father may resume bedwetting, become afraid to sleep alone and cling to his mother, insisting that he does not want to go to school.

Natural disasters include weather-related events (hurricanes, tornadoes, and floods), seismic events (earthquakes, tsunamis, and volcanoes), droughts and pandemics. **Human-generated disasters** may be subdivided into non-intentional versus intentional events (Shultz et al., 2007). Non-intentional, human-generated incidents include transportation crashes, hazardous materials spills, and structural collapses, reflecting accidental failures of human technologies. In other instances, harm is clearly intended during acts of aggression toward individuals (child maltreatment, assault, rape, torture) and acts of mass violence (war, civil strife, ethnic conflict, and terrorism).

Table 1.1 Stressors in the Human Experience

Life/Developmental Stressors	Disasters and Acts of Violence	
	Natural Disasters	Human-generated Events
<ul style="list-style-type: none"> • Childbirth • Birth of a sibling • Early parent death • Separation from loved ones • Family discord • Accidents • Financial problems • Divorce • Hospitalization • Surgery • Physical illness • Unemployment • Aging 	<ul style="list-style-type: none"> • Hurricanes • Tornadoes • Earthquakes • Floods • Pandemics • Tsunamis • Wildfires 	<p>Unintentional events</p> <ul style="list-style-type: none"> • Transportation and industrial disasters • Hazardous materials events <p>Intentional events</p> <ul style="list-style-type: none"> • Terrorism • War • Civil or ethnic conflict • Sexual abuse • Child maltreatment • Torture • Aggressive assaults

Primary stressors are associated with acute threats to well-being, physical harm or life-threat to self or loved ones. Primary stressors are associated with direct exposure to the forces of harm during an episode of interpersonal violence or during the period of disaster impact. **Secondary stressors** occur subsequent to a primary stressor as a cluster of consequences or adversities encountered in the aftermath of a traumatic event.

For example, a child who is accidentally burned by scalding water (**primary stressor**) may experience a multiplicity of **secondary stressors** including hospitalization, severe pain, surgical procedures, debridement, scarring and disfigurement, separation from parents, interruption of school attendance, and disruption of daily routines including play activities and socialization.

At the community level, the coastal landfall of a strong hurricane will subject the population in the impact zone to such **primary stressors** as ravaging winds, storm surge, and torrential rainfall. While the impact phase of the hurricane is brief (hours to days), the storm's aftermath may produce a succession of **secondary stressors** including disruption of power and utilities, shortages of basic necessities, damage to home, displacement, repair delays, loss of

valued possessions, school closures, and disruption of health care services, unemployment, and economic crisis. Following Hurricane Andrew, 25 percent of families moved out of the impact zone. Many children discovered that their schools were closed and some of their closest friends had moved away (Shaw et al., 1995). Similarly, Hurricane Katrina was associated with massive displacement and out-migration from New Orleans.

Acute and chronic stressors. An **acute stressor** refers to an event which is circumscribed in time and space. The ground-shaking of an earthquake, the touchdown of a tornado, a terrorist event involving conventional explosives, or the violence of a physical assault provide examples of **acute stressors**. Each has a well-defined onset and endpoint. The 1995 bombing of the Alfred P. Murrah Federal Building in Oklahoma City exemplifies an acute stressor. Forty percent of middle school and high school students in Oklahoma City knew someone who was injured and one-third knew someone who was killed (Pfefferbaum et al., 1999). A **chronic stressor** is characterized by ongoing exposure to continuous and unrelenting adversities, such as child maltreatment, war-related trauma, and kidnapping; or episodic, repetitive exposures as occur with periodic terrorist attacks. Children exposed to chronic stressors

Table 1.2 Primary and Secondary Stressors

Primary	Secondary
Scalding	<ul style="list-style-type: none"> • Hospitalization • Surgery • Debridement • Separation from parents • Loss of routines
Hurricane impact, winds, storm surge, tornadoes, floods	<ul style="list-style-type: none"> • Loss of shelter • School closure • Damaged worksites • Unemployment • Loss of power • Gasoline shortage • Evacuation • Loss of valued possessions • Separation from loved ones
Explosion of nuclear reactor	<ul style="list-style-type: none"> • Stigmatization of the area • Unemployment • Loss of community • Closing of businesses and schools • Displacement • Fear of cancer risk • Long-term health effects

may experience a gradual loss of resiliency and adaptive coping skills. Cumulative stress is associated with both immediate and long-term neurobiological changes (Cooper et al., 2007).

A **distant stressor** refers to a traumatic stimulus experienced from a remote and physically safe distance away from the impact zone. A distant stressor may be encountered repetitively through the media or interpersonal interactions. Television networks repeatedly broadcast images of the explosive destruction of the Space Shuttle Challenger (1986); the Oklahoma City bombing and the fiery collision of civilian airliners striking the World Trade Center towers on September 11, 2001. These traumatic stimuli were viewed time and again by children throughout the United States and around the globe. A structured interview that was conducted with children who had viewed the Challenger explosion on television found that 60 percent experienced specific fears related to death, fires, airplanes and taking risks (Terr et al., 1999). A national survey conducted 3-5 days after the September 11, 2001 attack revealed that children watched an average of three hours of television coverage of the event. One-third of the children had stress symptoms and 47 percent were concerned about their own safety (Schuster et al., 2001).

Table 1.3 Acute and Chronic Stressors

	Acute Stressors	Chronic Stressors
Life/developmental stressors	<ul style="list-style-type: none"> • Motor vehicle accident • Surgery • Acute illness 	<ul style="list-style-type: none"> • Family discord • Prolonged separation from loved ones • Chronic illness
Natural disasters	<ul style="list-style-type: none"> • Earthquake • Hurricane • Tornado 	<ul style="list-style-type: none"> • Pandemic
Human-generated acts of violence	<ul style="list-style-type: none"> • Single terrorist attack • Rape • Mugging 	<ul style="list-style-type: none"> • War • Torture • Child maltreatment

The Stress Response

Acute Stress Response. Direct exposure to a stressor activates the acute stress response, a state of physiological “hyperarousal” frequently described as the “fight-flight-or-freeze” response. Encountering a stressor disturbs the body’s biological and psychological equilibrium. The stressor is interpreted as a potentially-threatening change in the environment instantaneously activating the **hypothalamic-pituitary-adrenal** (HPA) axis at the base of the brain. The activated HPA axis signals the release of adrenocorticotrophic hormone (ACTH) that stimulates the endocrine system and the adrenal cortex which produces **cortisol**. Cortisol has essential and beneficial effects in the short term (restoring depleted energy by increasing glucose availability) but detrimental effects in the long term (Perry et al., 1995; McEwen, 2004; Yehuda, 2002). This alarm reaction simultaneously stimulates the sympathetic nervous system which results in the release of **epinephrine** (adrenaline) from the inner part of the adrenal glands, the **medulla**, which prepares the individual for a “fight-or-flight” response. Epinephrine increases heart rate, blood pressure and respiration and is accompanied by a sharp spike in glucose which is released into the blood stream as an energy source, priming the body for rapid action. Simultaneously, quantities of endorphins, the body’s natural painkillers, are secreted.

This adaptive response acts to restore the individual to a more optimal level of function. Regardless of whether the stressor is a minor daily hassle, a bout of the “common cold,” a “fender-bender” motor vehicle accident or an overt threat to life itself, human neurobiology responds in an attempt to restore order and homeostasis. It is assumed that there is a natural impetus to recover and that with sufficient infusion of resources and the passage of time, recovery is the expected outcome to an acute stressor (Watson and Shalev, 2005).

Signs of Acute Stress

- Hyperarousal
- Pounding heart
- Trembling and shaking
- Sweating
- Shortness of breath
- Nausea
- Feeling dizzy or lightheaded
- Difficulty thinking and concentrating
- Vague bodily symptoms

Chronic Stress Response. In some instances, the traumatic situation is prolonged. Continuing exposure to chronic stressors creates long-term effects on the organism’s psychological and physiological well-being. When the stress response system remains in “overdrive”, high levels of epinephrine and cortisol are continuously released. Maintaining the stress response on “high alert” leads to wear and tear on organ systems and increases the risk for a number of psychobiological symptoms. These include anxiety, depressed mood, sleep and appetite disturbances, interpersonal and social problems, and diminished performance either at school or work. Bodily symptoms such as gastric ulcers, headaches, or irritable bowel syndrome may ensue. When stress and physiological “hyperarousal” continue unabated, cortisol remains elevated with possible detrimental effects on immune function and increased risk for chronic conditions such as cardiovascular disease, obesity, depression, hyperthyroidism, diabetes, and even anatomical changes in the brain (Perry et al., 1995; McEwen, 2004). In some instances, the individual’s stress response is insufficient to meet the crisis. In situations of inadequate neuroendocrine response, insufficient production of adrenal stress response hormones and low levels of cortisol may elevate risks for fibromyalgia, hypothyroidism or chronic fatigue syndrome (McEwen, 2004).

Chronic Stress: Long-Term Consequences

- Sleep and appetite disturbances
- Bodily symptoms such as gastrointestinal problems, chronic pain
- Interpersonal, social and performance problems at school or work
- Trauma-specific mental disorders (acute stress disorder--ASD, post-traumatic stress disorder--PTSD)
- Anxiety and mood disorders
- Autoimmune diseases or flare-ups of these conditions (asthma, endocrine disorders)
- Cardiovascular illness

Psychobiological Responses to Chronic Stress in Children

Exposure to ongoing and repetitive traumatic experiences results in profound and reverberating effects on personality structure, psychological symptoms and developing neurobiological structures. When children remain suspended in a constant state of fearful expectation, their capacities to use cognitive, social and emotional experiences to develop solutions to problems are impaired. Moreover, continuing exposure to stress negatively impacts attachment behaviors, behavioral controls, cognition, psychobiology, self-regulation and interpersonal relationships in children. It is estimated that up to 80 percent of children who experience chronic stress (such as child victims of aggression and maltreatment by caretakers) will exhibit one or more stress-related disturbances (Kendall-Tackett et al., 1991; Hadi & Llabre, 1998; Bayer et al., 2007).

Disturbance in behavioral controls may appear as impulsivity, aggression, sleep and appetite disturbances, eating disorders, oppositional behavior, substance abuse and suicidal behaviors.

Disturbances in relationships may present as attachment disorders, social estrangement, overestimation of danger

and adversity, problems with boundaries, distrust of others, a belief that intimate relations are dangerous, and avoidance of intimacy.

Negative self-attributions may occur in which the individual internalizes negative self-judgments regarding self-efficacy, competency and self-worth and a readiness for self-blame, shame, guilt, feelings of helplessness and self-loathing.

Affect dysregulation may be manifested by depression, anxiety, mood swings, emotional instability (rage, anger, and despair), suicidal thoughts or actions, impulsivity, hyperarousal, hyperactivity and substance abuse. Children may experience difficulties in identifying and describing emotions or even knowing what they feel.

Emotional/behavioral problems may include post-traumatic stress symptoms, mood and other anxiety symptoms, dissociative disorders, severe personality disturbances, and behavioral problems.

Disturbances in cognition may appear as inattention, learning difficulties, problems with information processing, distorted social judgment and inability to interpret the intentions of others. There may be disturbances in thinking as evidenced by memory deficits, denial, repression, suppression, minimization, amnesia, and academic difficulties.

The **biological effects** of chronic stress exposure are directly related to the intensity, duration and degree of impact of stressors on bodily integrity, the stress response system and physiological systems critical for sustaining life. Abuse and neglect affect brain development. The more prolonged the maltreatment, the greater the residual effects. Exposure to intense acute and chronic stressors during the developmental years has enduring neurobiological effects on the stress response, neurotransmitter systems and anatomical structures. Children who have been physically and sexually abused have decreased brain volumes (decreased size of the cerebrum and the corpus callosum) and poor regulation of the stress response (DeBellis et al., 1999a,b).

The Traumatic Event

A **traumatic event** occurs when an individual experiences, witnesses, or is confronted with an event that involves death, serious injury, or threats to the physical integrity of the self or others (APA, 1994). Exposure to trauma may occur from direct physical impact, visual exposure, media presentation, or through interpersonal relationships with disaster survivors. Experiencing multiple types of trauma exposure increases the risk of psychological consequences.

The essence of the traumatic situation is embodied in feelings of helplessness and fears of imminent death (Shaw, 1987). Trauma may lead to a perceived sense that life has lost its intrinsic meaning and predictability and may never be the same again. The individual grapples with the need to accept and assimilate what has happened and to ultimately find new meaning and purpose (Doctors Without Borders, 2005). The adolescent may be left with a sense of a “foreshortened future” and take flight into pleasure-seeking or risk-taking activities.

Trauma invariably impacts not only the individual, but also the family and social system within which the individual lives. The impact of trauma in children is modulated by the fact that the child has limited life experience. The child is still developing cognitively and emotionally and may be struggling with such issues as separation, individuation, and identity formation. Children typically exhibit immature adaptive and coping strategies. When exposed to trauma, children rarely describe such emotions as fear and helplessness; rather, they may respond with disorganized or agitated behavior.

The Traumatic Event

A traumatic event is stated to have occurred when the person experiences, witnesses, or is confronted with an event that involves actual or threatened death or serious injury, or a threat to the physical integrity of the self or others often associated with fear, helplessness, or terror. Children rarely will describe such emotions and may respond with disorganized or agitated behavior.

Source: American Psychiatric Association, 1994

The Acute Traumatic Moment

The **acute traumatic moment** is defined as the sudden, conscious awareness of vulnerability in the presence of imminent physical injury or death. For children it is often the sudden awareness that parents are unable to protect and provide for them in their hour of need that ushers in and exacerbates the traumatic moment. The illusion of safety is shattered. The traumatic moment may be associated with feelings of helplessness and anxiety (Shaw, 1987).

A distinguishing feature of the traumatic moment is the central role of anxiety and its management. Most commonly, the brief traumatic moment, with its experience of anxiety and helplessness, is followed by rapid remobilization and reintegration of developmentally-appropriate coping and adaptive strategies. The child who is able to successfully adapt will restore normal developmental progression with age-appropriate self-direction, academic performance, and peer and family relations. In some instances, distress persists and there is a failure of reparative defenses leading to a sustained traumatic experience. This may precipitate various degrees of regression with loss of developmental achievements and psychosocial gains as well as various symptoms of somatic illness, anxiety, mood and behavioral disturbances (Shaw, 2000).

Traumatic Reminders

In the aftermath of an acute trauma, the survivor may experience “flashbacks”, in which they vividly relive the traumatic moment over and over again. “Flashbacks” are frequently triggered by “**traumatic reminders**”, external or internal cues that suddenly make the individual feel as if the traumatic event was happening again. For example, sudden exposure to strong winds, torrential rains, thunder and lightning may bring back all the emotions, fears, and cognitions associated with living through a hurricane. A child who was once painfully injured in a bicycle accident may re-experience all the emotions, ideations and physical sensations of that event when exposed to the cue of seeing another child’s mangled bicycle.

Summary

Children and adolescents are exposed to various types of stress and traumatic events during their developmental years. The individual response to stress is shaped both by the reality of the impact of the fateful event and by one's subjective appraisal. How you define a situation determines your emotional response. Stressors may be acute or chronic. A traumatic event occurs when an individual experiences a situation in which there is a perceived or real threat of bodily injury or death. The acute traumatic moment for the child involves a sudden awareness of vulnerability in the presence of probable physical harm or death. Traumatic reminders refer to those events in the aftermath of traumatic exposure that result in the child or adolescent reliving and re-experiencing the trauma as if it was truly recurring at that moment.