

Understanding TRAUMATIC STRESS In Adolescents

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Fact Sheet Series for PROVIDERS treating teens with
EMOTIONAL & SUBSTANCE USE PROBLEMS

NCTSN The National Child
Traumatic Stress Network

 Youth services providers should always be aware of the links between adolescent traumatic stress and substance abuse problems. Carefully assessing for trauma exposure and its possible effects on youth functioning should be an integral part of the services provided by agencies and individuals working with adolescents, particularly in substance abuse treatment programs where youth trauma exposure is very common. Even with all the challenges to delivering integrated services, better care can be achieved through increased communication and coordination among mental health providers and substance abuse providers and through increased awareness about the needs of youth with co-occurring disorders across fields.

In people suffering from traumatic stress and/or substance abuse, particular triggers contribute to dysregulated emotions or behaviors. In traumatized youth, reminders of past traumas or losses can trigger a range of emotional and behavioral problems including physiological hyperarousal, hypervigilance, avoidance, numbing, angry outbursts, and substance craving. When substance abuse providers become more trauma-informed, and mental health providers become more substance abuse-informed, they become better able to reinforce youths' practice and acquisition of more adaptive coping skills to manage distress in the context of either type of problem. Improvements in the ability to manage traumatic stress symptoms, for example, reduce the chances of relapse after substance abuse treatment is completed.



Adolescents in treatment for substance abuse will greatly benefit from receiving care from clinical staff who are also knowledgeable about trauma exposure, trauma-informed treatment, the complex relationship between traumatic stress and substance abuse, and the potential impact of both problems on treatment outcomes.

With the information in this fact sheet providers can broaden their understanding of adolescent traumatic stress and the typical problems that follow trauma exposure in adolescence. A developmental and contextual perspective on youth trauma is presented, with special attention paid to the links between trauma exposure, traumatic stress, and the development of substance abuse problems.

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Maria's Story*

Maria, a 14-year-old girl, has been physically and sexually abused by her 22-year-old stepbrother for five years. The first incident of abuse happened when she and her mother moved in with the new stepfamily, after having been evicted from their old apartment. In addition, Maria has seen her stepfather severely hit her mother several times, and is now constantly worried about her mother's safety. Maria has become withdrawn at school and no longer participates in activities she once enjoyed. Once very popular with her peers, she has isolated herself from many of her friends and spends most of her time alone. She fears that someone will find out about the abuse and that she will be taken away from her mother. The only person that Maria has been spending a lot of time with is her cousin who lives in the neighborhood. Lately, they have been skipping school and experimenting with marijuana and alcohol. Maria used to be an honor roll student, but her grades have been spiraling downward. Her favorite teacher, Ms. Jacobs, is extremely concerned and has been trying to get Maria to talk to her about what is causing such a change.



As you read through the pages that follow, think about cases like Maria's, and consider the following questions:

- **How common is child sexual abuse among adolescent girls? What are the most common forms of trauma exposure among adolescents?**
- **How do these traumatic experiences affect adolescents in the long run?**
- **Are there characteristics that place some youth at greater risk for trauma exposure?**
- **Are there specific developmental effects of early trauma exposure?**
- **How is trauma exposure related to the development of substance abuse problems?**

* "Maria's story" was created by the authors as a composite representation of stories heard from real teenage clients struggling with these issues and provides examples of the challenges that clinicians face in providing care for youth with trauma and substance abuse problems. Models portrayed are not representative of cases described.

Traumatic Exposure in Adolescents

Traumatic events are those that cause overwhelming anxiety or distress and include experiencing, witnessing, or being confronted with physical, verbal, and emotional abuse, or another event that involve actual or threatened death or serious injury to oneself or someone else.

Responses to trauma exposure most often include intense fear, helplessness, or horror (American Psychological Association, 2000; National Child Traumatic Stress Network, 2007). Trauma exposure is a common occurrence among adolescents. It is estimated that approximately 25% of children and adolescents will have experienced at least one traumatic event by age 16 (Costello, Erkanli, Fairbank, & Angold, 2002).

Estimates of trauma exposure among children and adolescents vary widely by cultural and social background. Consider the following facts:

- **Inner-city children and adolescents are more likely to encounter community violence (Lipschitz, Rasmusson, Anywan, Cromwell, & Southwick, 2000).**
- **African-American, Pacific Islander, and American Indian/Alaska Native children and youth have higher rates of substantiated child maltreatment compared to their white (Hispanic and non-Hispanic) peers (U.S. Department of Health and Human Services, Children's Bureau, 2006).**
- **Refugee children and adolescents are more likely to have experienced war trauma and displacement (National Child Traumatic Stress Network, 2007).**
- **Homeless youth are particularly vulnerable to a wide range of traumatic exposure including sexual assault and being beaten or attacked with a weapon resulting in serious injury (Unger, Kipke, Simon, Montgomery, & Johnson, 1997).**
- **Maltreatment of children and adolescents with disabilities occurs 1.5 to 10 times more often than among children and adolescents without disabilities.**
- **Lesbian, gay, bisexual, and transgender (LGBT) youth experience increased rates of physical harassment, assault, and injury at school (Kosciw & Diaz, 2006; Goodenow, Szalacha, & Westheimer, 2006).**

The Body's Acute Response to Trauma

In the face of potentially dangerous or threatening situations, the body's natural response is to try to evaluate the level of danger and respond as quickly as possible. During times of danger, the body's alarm response ("fight, flight, or freeze") is activated to help the body's organs react better to threat.

Physical Response

When fight, flight or freeze reactions are set in motion, the body prepares to respond to threat by sending more resources (e.g., blood and oxygen) to vital organs and conserving resources in others. See the boxes below for a list of some of the physical sensations that occur at this time:

- **Heart pounding, palpitations, fast pulse**

- **Difficulty swallowing**

- **Nausea**

- **Sweating, clammy feeling**

- **Knot in stomach**

- **Cold hands**

- **Dry mouth and throat**

- **Pale face and skin**

- **Feeling detached from self or surroundings**

- **Blurred vision, light seems brighter**

- **Feeling frozen or immobile**

- **Feeling spaced out or in another world**

Mental Response

When exposed to dangerous or threatening situations, the mental mechanisms that help us make everyday decisions temporarily shut down. This response enables us to make more primitive responses and take quick action rather than to think carefully about the situation at hand.

Long-lasting Problems

While these responses are important and vital for survival, prolonged exposure to threatening situations, or exposure to threat in situations where a protective response is inhibited (such as sexual abuse), can result in lasting physical and emotional problems.

When trauma leads to emotional and behavioral problems...

Individuals who experience trauma early in their lives usually develop a number of difficulties (Briere & Spinazzolla, 2005; APA, 2000; National Child Traumatic Stress Network, 2007; Strand, Sarmiento, & Pasquale, 2005) including:

Post Traumatic Stress Disorder:

PTSD is characterized by symptoms that are clustered into three broad categories:

1. Reexperiencing the traumatic event through intrusive thoughts or dreams of the event, or intense psychological distress when exposed to reminders of the event;
2. Persistent avoidance of thoughts, feelings, images, or locations that remind the adolescent of or are associated with the traumatic event;
3. Increased arousal such as hypervigilance, irritability, exaggerated startle response, and sleeping difficulties (American Psychological Association, 2000).

Although exposure to traumatic events does not always lead to PTSD, traumatized individuals often experience some PTSD symptoms. They may report ongoing fear of the event occurring again, persistent flashbacks and nightmares, avoidance of things that remind them of the event, being on edge all the time, or having trouble sleeping.

How Common Is PTSD?

- An epidemiologic study (Kilpatrick, Ruggiero, Acierno, Saunders, Resnick, & Best, 2003) of adolescents using a national sample found that 3.7% of males and 6.3% of females met diagnostic criteria for PTSD. Another epidemiologic study of older adolescents and young adults (aged 16–22) found prevalence rates for PTSD to be 1% in males and 3% in females (Cuffe, Addy, Garrison, Waller, Jackson, McKeown, et al., 1998).

- PTSD appears to be a fairly common diagnosis among adolescents seeking treatment. A study of adolescents treated in a psychiatric inpatient unit found that 42% of the overall sample (47.4% of females, 34.2% of males) met diagnostic criteria for PTSD (Koltek, Wilkes, & Atkinson, 1998). One study examined female juvenile offenders and a control sample matched on age and socioeconomic status (SES). Rates of PTSD were significantly different between the two groups, with 37% of offenders and 4% of controls meeting diagnostic criteria for PTSD (Dixon, Howie, & Starling, 2004).

Avoidance Activities:

The intense flood of negative emotions that often accompany traumatic stress can lead individuals to rely on (or overrely on) potentially problematic ways of avoiding trauma-related distress. Some examples of such avoidance activities include:

- Dissociation: Among the common types of dissociation that traumatized individuals may experience are depersonalization, derealization (feelings of unreality), fugue states, and dissociative identity disorder.
-  • Substance abuse: Individuals with complex and chronic trauma histories are more likely to use drugs and alcohol. Research studies suggest that among individuals with PTSD and substance use disorders, drug cravings increase with exposure to trauma reminders, suggesting that substance abuse for these individuals is an automatic avoidant response to prevent the onset of distressing emotions (Coffey, Saladin, Drobles, Brady, Dansky, & Kilpatrick, 2002; Saladin, Drobles, Coffey, Dansky, Brady, & Kilpatrick, 2003).
- Tension reduction activities: Compulsive sexual behavior, bingeing and purging, self-mutilation, and suicidality are also common among individuals exposed to early trauma.

Anxiety and Mood Problems:

Exposure to trauma can result in symptoms or disorders involving anxiety and depression. Anxious youth can appear very worried, nervous, or fearful, and may refuse to participate in daily activities such as school or social events. Depressed youth can display deep sadness, constant crying, trouble concentrating, irritability, feelings of guilt, and thoughts of wanting to die. Dysregulated emotional states can also be characterized by intense anger, leading youth to display aggressive or disruptive behavior.

Negative perceptions about oneself and the world:

Individuals who have experienced trauma and adverse life events often suffer from low self-esteem, self-blame, helplessness, hopelessness, expectations of rejection and loss, an overestimation of the amount of danger in the world, and/or expectations of maltreatment or abandonment by others.

Somatiform Symptoms:

This refers to bodily distress or dysfunction that arises from (or is significantly intensified by) psychological phenomena. Traumatized youth may report ongoing physical complaints and have difficulty meeting academic or social responsibilities.

Interpersonal Difficulties:

Youth who have been hurt by loved ones often develop a loss of trust or withdrawal and isolation from others, which can lead to ongoing conflict and social problems.

Youth Responses to Different Traumatic Events

Traumatic stress reactions for children and adolescents can also vary by type of trauma. Below are some highlights from the relevant research on this area.

Physical, Sexual, and Emotional abuse

It is often hard to imagine the extent of the impact on children and adolescents of experiencing physical, sexual, or emotional abuse by a loved or trusted one. Research studies in this area have demonstrated a range of resulting problems including psychological distress, behavioral difficulties, and social problems (Porter, Lawson, & Bigler, 2005). Specifically, physically abused and neglected children demonstrate increased risk for difficulties in language development and school readiness. Children with histories of physical abuse show deficits in verbal and memory skills. Research on girls indicates that those who have been sexually abused display lower cognitive abilities and academic achievement (Spaccarelli & Fuchs, 1997).



An association has been found between childhood sexual abuse and earlier onset of alcohol disorders, the co-occurrence of more psychiatric conditions as adults, and more social problems (Zlotnick, Johnson, Stout, Zywiak, Johnson, & Schneider, 2006). The same study found that childhood physical abuse was related to greater drinking problems in adulthood, social and psychiatric dysfunction, and the co-occurrence of more psychiatric conditions.

Interpersonal Violence and Victimization

Interpersonal violence such as physical or sexual assault or witnessed violence has been shown to increase the risk of PTSD, depression, and substance abuse or dependence among adolescents, even after controlling for demographic factors and family substance use problems (Kilpatrick, et al., 2003). Many characteristics of interpersonal abuse can have an impact on how children who experience abuse respond. For example, the identity of the perpetrator, the type of abuse, its frequency, and whether force was used can all have a specific impact on an individual's response to the trauma.

Exposure to Community Violence

Exposure to community violence can have a serious psychosocial impact in children and adolescents. For example, a study of youth aged 12–17 found that exposure to community violence was often associated with conduct disorder and externalizing problems two years later (McCabe, Lucchini, Hough, Yeh, & Hazen, 2005). In another study, African American adolescents aged 10–18 exposed to community violence reported more depressive symptoms, after controlling for gender and age (Fitzpatrick, Piko, Wright, & LaGory, 2005). Interestingly, in this same study, social capital (personal and social resources) was shown to be inversely related to adolescent depression.

Natural Disaster/Terrorism

The impact of trauma due to natural disasters or terrorism can also be great for adolescents. Traumatic grief reactions to tragic losses suffered as a result of the attack on the World Trade Center on September 11, 2001, included symptoms of PTSD, anxiety, depression, poor coping responses, and secondary adversities resulting from the event (Brown & Goodman, 2005). In a study of Nicaraguan youth who had experienced Hurricane Mitch (Goenjian, Molina, Steinberg, Fairbanks, Alvarez, Goenjian, & Pynoos, 2001), researchers found that posttraumatic stress symptom severity was associated with the level of impact and devastation and the presence of thoughts of revenge. Depressive symptoms were associated with severity of the posttraumatic stress reactions, the death of a family member, and being female.

Traumatic Loss and Grief

Although all adolescents grieve after the death of a loved one, traumatic grief occurs when the teen experiences the death/loss as a traumatic event and experiences many of the symptoms of PTSD (e.g., intrusive thoughts about the death, increased physical agitation, emotional numbing). These PTSD-like symptoms hinder the natural bereavement process, can cause interference in daily functioning, and do not allow the teen to process and, eventually, let go of the loss (Goodman, Cohen, Epstein, Kliethermes, Layne, Macy, & Ward-Wimmer, 2004). Traumatic grief is often complicated by the secondary consequences of the loss such as moving in with grandparents after the loss of a parent (Cohen & Mannarino, 2004).

Medical Trauma

A study by Costello, Erkanli, Fairbank, & Angold (2002) found that medical trauma (either serious illness or serious accident) was the third-most common traumatic event for youth to experience. Medical trauma can include severe injury, diagnosis and treatment of a life-threatening illness, or other serious medical procedure. Medical trauma can have a significant impact on the emotional well-being of youth as well as of their parents. A study by Winston, Kassin-Adams, & Garcia-Espana (2003) found that 17% of youth who suffered severe injuries and 15% of their parents reported meeting symptom criteria for PTSD; 22% of youth and 33% of parents reported meeting symptom criteria for Acute Stress Disorder (ASD).

Complex Trauma

The term complex trauma is often applied when a child experiences multiple, chronic traumatic events beginning in early childhood (e.g., neglect, maltreatment, witness to domestic violence). Complex trauma can lead to a variety of psychosocial problems including (but not limited to) PTSD, difficulties with attachment, anxiety, substance abuse, aggressive behaviors, eating disorders, and diverse physical disorders such as problems with the metabolic, cardiovascular, and immunological systems (National Child Traumatic Stress Network, 2007). In addition, because of the problems that can develop after living with chronic trauma (e.g., lack of attachment, emotional dysregulation, inability to distinguish danger cues), these youth are at greater risk to be revictimized and experience subsequent trauma (Spinazzola, Ford, Zucker, van der Kolk, Silva-Smith, & Blaustein, 2005).

Risk and Protective Factors Associated with Trauma Exposure

Several factors have been identified as placing youth at risk for experiencing trauma including:

Family characteristics: Trauma exposure is more common among youth whose families are characterized by relationship problems and parental psychopathology (Costello et al, 2002). This same study found that a family history of mental illness doubles the risk of trauma exposure. A closer look at gender differences revealed that girls were at greater risk if either parent had a criminal record or if the home was poor or disorganized.

Stressful events: Experiencing stressful events—such as parental separation or divorce, moving or changing schools, or breaking up with a friend—has been associated with increased risk for trauma exposure (Costello et al., 2002). Adolescents who have experienced high levels of stress in the context of exposure to violence are at greater risk for poor psychological outcomes (Self-Brown, LeBlanc, & Kelley, 2004).

Homelessness: Homeless youth are at a greater risk for experiencing trauma when compared to other adolescents. Often times, these teens have been the victims of severe and recurrent physical, emotional, and/or sexual abuse. When the abuse is at the hand of their caregivers, the result is often running away or being forced to leave their homes. Female homeless adolescents are particularly at risk for experiencing sexual trauma compared to their male counterparts. Even after leaving an abusive home, these teens are extremely vulnerable to continued maltreatment once on their own or residing in shelters (Gwadz, Nish, Leonard & Strauss, 2004).

Monitoring: Research has shown that spending more time in risky contexts (e.g., unmonitored time with friends) and less time in protective contexts (e.g., structured time in recreational activities or with family) were associated with more exposure to violence (Richards, Larson, Miller, Luo, Sims, Parrella, & McCauley, 2004). This exposure, in turn, can lead to development of delinquent behaviors or emotional distress.

Sibling influences: Exposure to deviant activities by an older sibling and participation in such deviant activities with a sibling were found to increase the risk for development of many problems including arrests, drug use, antisocial behavior, deviant peer association, and early sexual experience, as well as the experience of traumatic stress (Snyder, Bank, & Burraston, 2005). These problems were particularly salient in the context of early sibling conflict and ineffective parenting. According to this study, modeling of antisocial behavior and coparticipation in drug use and other risky activities increased chances of victimization in risky contexts.

Having more than one of the of the problems mentioned above places youth at an even greater risk of experiencing additional difficulties. For example, one study examined the cumulative effect of risk, and found that the experience of sexual abuse was more common among children who had a higher number of “vulnerability factors” (Costello et al., 2002).

Trauma Exposure and Youth Development

Several studies in the area of child maltreatment have been conducted to identify ways in which this type of trauma exposure is associated with problems in childhood development. Findings point to possible alterations in specific biological stress systems, which, in turn, can lead to adverse effects on brain development as well as delays in language, cognitive, and academic skills (De Bellis, 2005).

It is important to note that not all children who are maltreated are adversely affected. Additionally, although environmental stress plays a large role in this process, some evidence suggests that the negative effects of stress on the central nervous system may be reversible.

Child maltreatment can have an impact on the body's physical response to ongoing stress. Because neurobiological stress systems are interconnected at many levels, dysregulation in one system can lead to problems in others. For instance, dysregulation of the neurobiological stress system is thought to lead to several of the symptoms associated with PTSD.

Critical stress response mechanisms that have been shown to be affected by childhood maltreatment include:

- **Dysregulation of the serotonin system (Kaufman, Birmaher, Perel, Dahl, Stull, Brent, et al., 1998), which increases the risk for depression, suicidality, and aggression;**
- **Increased sensitivity to the limbic-hypothalamic-pituitary-adrenal (LHPA) axis, which is associated with psychiatric symptoms (e.g., depression, anxiety, sleep difficulties) and physical problems (e.g., memory loss, difficulty concentrating);**
- **Decreased ability of the immune system to respond due to the dysregulation of the LHPA axis, which can increase the risk for developing infectious diseases.**

In addition, neuroimaging findings have suggested a link between child maltreatment and specific problems in brain development and maturation (De Bellis, Keshavan, Clark, Casey, Giedd, Boring, et al., 1999; De Bellis & Keshavan, 2003). Prolonged exposure to such stressors is thought to impair neurophysiological functioning and have a direct impact on memory, learning, and the ability to store and process spatial information due to its impact on the hippocampus.

Trauma as a Risk Factor for Substance Use



Exposure to traumatic events and the experience of grief and loss can place youth at higher risk of developing substance use problems.

Many providers are familiar with the self-medication hypothesis: that people develop substance abuse problems in an attempt to manage distress associated with the effects of trauma exposure and traumatic stress symptoms. This theory suggests that youth turn to alcohol and other drugs to manage the intense flood of emotions and traumatic reminders associated with PTSD, or to numb themselves from the experience of any intense emotion, whether positive or negative.

Research findings have shown that, in a substantial proportion of youth, substance use problems develop following exposure to trauma (25–76%) or the onset of PTSD (14–59%) (Clark, Lesnick, & Hegedus, 1997; Deykin & Buka, 1997; Giaconia, Reinherz, Hauf, Paradis, Wasserman, & Langhammer, 2000; Perkonig, Kessler, Storz, & Wittchen, 2000). Specifically, the experience of physical assault, sexual assault, and witnessing violence has been associated with a greater risk for substance abuse or dependence (Kilpatrick, Acierno, Saunders, Resnick, & Best, 2000). In addition, having PTSD or traumatic stress symptoms can place youth at greater risk of developing substance abuse or dependence (Kilpatrick, et al., 2000; Kilpatrick, et al., 2003; Stevens, Murphy, & McKnight, 2003).

Recent substance abuse treatment outcome studies with adults have documented that elevated PTSD and traumatic stress symptoms at follow-up are associated with relapse after substance abuse treatment (Read, Brown, & Kahler, 2004). Higher initial symptom severity among youth with co-occurring traumatic stress and substance abuse problems was associated with more internal distress and violent behavior at posttreatment (Titus, Dennis, White, Scott, & Funk, 2003).

A likely explanation for the link between traumatic stress and substance abuse is offered by studies that examine levels of craving for substances. Research with adults in this area suggests that substance use craving increases among individuals with co-occurring trauma and substance abuse when they are exposed to cues related to the traumatic event (Coffey, et al., 2002; Saladin, et al., 2003). This suggests that for individuals with both types of problems, trauma and loss reminders can serve as triggers for future substance use. Further evidence is provided by findings indicating that among adults with cocaine dependence, individuals with PTSD were more likely to use following negative experiences (such as unpleasant emotions and physical discomfort) when compared to those without PTSD (Waldrop, Back, Verduin, & Brady, 2006). In the absence of coping strategies to manage distress associated with trauma, individuals with substance abuse problems may be more likely to use.