Cascading and Long-Term Effects of Childhood Trauma

Childhood traumas have had cascading and/or long-term effects on a child’s life and functioning. Childhood is a period of rapid physical, cognitive, and emotional development (Osofsky, Kronenberg, Bocknek, & Hansel, 2015b; Stamoulis et al., 2015). Traumatic reactions may interrupt the developmental progression of any or all of these realms (Boxes 3.1, 3.2). While subsequent chapters (5, 8, 11, 14) discuss the developmental processes for specific age groups, and some chapters discuss the impact of trauma on them (6, 9, 12, 15), this chapter is devoted to trauma’s long-term and cascading consequences and to how developmental processes are disrupted across time into adolescence and/or adulthood.

For some time, studies have examined the long-term consequences of a variety of traumas including numerous ongoing or emerging psychological, behavioral, interpersonal, and/or health consequences (Table 3.1). With a history of childhood adversity, individuals show higher rates of anxiety, depression, eating disorders, substance abuse, psychosocial, personality disorders, and poorer responses to treatment. Childhood adversity accounts for an estimated 26 to 32% of risk for all adolescent and adult psychiatric disorders (Cloitre & Beck, 2017). For example, Krammer et al. (2015) found that older adults with a history of childhood traumatic stress reported classic PTSD (anxious arousal, intrusive experiences, defensive avoidance) and related symptoms (depression and dissociation; impaired self-reference) later in life (ages 59–98; N = 116). Early traumatic experience also increases risk of psychotic symptoms in response to later life adversity (Lataster et al., 2012). Although psychotic disorders may occur without traumas, some studies show a high percentage of individuals with psychotic disorders have trauma histories (e.g., 75%; any form of trauma, Duhig et al., 2015), and trauma history was associated with increased symptoms. Across 20 studies, evidence suggests that childhood traumatic experiences are related to the persistence of psychotic experiences and clinically relevant psychotic symptoms—two-fold increased odds of persistence (Trotta, Murray, & Fisher, 2015).

Although some findings are inconsistent, even preconception, pre-natal, and early post-natal maternal stress have been linked to childhood psychopathology (Class et al., 2014). For example, mother’s exposure to the death of a first-degree relative either six months before conception, during pregnancy, or in the first two months of the child’s life corresponded to marginally increased, but not significant likelihood of bipolar disorder or schizophrenia (preconception exposure), increased risk of childhood autism (AuSD) and ADHD (highest in third-trimester exposure), and moderately increased risk of suicide attempt or completion (maternal bereavement, post-natal year 1; population study: child outcome—N = 738,144; adult outcome—N = 2.2 million; Class et al.,
### Table 3.1 Possible Long-Term Consequences of Childhood Traumas (documented)

<table>
<thead>
<tr>
<th>Realm</th>
<th>Increased Risk Of</th>
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<tr>
<td><strong>General</strong></td>
<td>poorer quality of life; poorer quality of health; poor quality of relationships</td>
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<tr>
<td><strong>Behavioral</strong></td>
<td>aggression (e.g., reactive; active violence); alcohol or other substance abuse;</td>
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<td>commission of ACEs; compulsive compliance; conduct disturbances (e.g., delinquency,</td>
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<td>gang involvement, violent crimes) and adult criminality; externalizing behavior</td>
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<td>problems; internalizing problems; gambling; inconsiderateness; isolation or</td>
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<td>withdrawal; passivity or hyperactivity; physical inactivity; promiscuity;</td>
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<td>regression; risk taking; re-victimization; smoking; truancy</td>
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<tr>
<td><strong>Cognitive</strong></td>
<td>academic problems (e.g., grade repetition; dropout); aggressive interpersonal</td>
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<td>negotiation strategies; cognitive delays; executive function difficulties</td>
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<td>(e.g., adaptive response inhibition, cognitive flexibility, memory deficits, and/or</td>
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<td>attention problems); language deficits; lower IQ; moral reasoning difficulties;</td>
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<td></td>
<td>problematic thought patterns (e.g., hostile or other attribution biases; attentional</td>
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<td>biases (e.g., negative self-talk; selective attention); cognitive distortions;</td>
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<td>exaggerated defensive responding; negative emotional processing</td>
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<td><strong>Interpersonal</strong></td>
<td>attachment quality problems; dependence; inconsiderate behaviors; ongoing</td>
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<td></td>
<td>biases in attention and reaction; relationship difficulties (e.g., social</td>
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<td></td>
<td>incompetence; poor social sensitivity; trust problems); risk of intimate partner</td>
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<td></td>
<td>violence/rape; lower empathy; poor perspective-taking; undesirable patterns of</td>
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<td></td>
<td>interaction; negative view of self and/or others (see also Cognitive)</td>
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<td><strong>Neurobiological Systems</strong></td>
<td>hypo-activity in brain regions (e.g., prefrontal cortex; limbic system; paralimbic</td>
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<td></td>
<td>system); increased ACTH and elevated cortisol response to stressors; specific</td>
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<tr>
<td></td>
<td>increases or decreases in brain volumes; limbic impairment; shorter telomere length</td>
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<td>(may be gender specific)</td>
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<td><strong>Physical Problems</strong></td>
<td>asthma; autoimmune disease; cardiovascular disease (e.g., ischemic heart disease);</td>
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<td>diabetes; digestive problems; fatigue or chronic fatigue syndrome; fetal death;</td>
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<td>general physical complaints (e.g., headaches, stomach aches); hypertension; liver</td>
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<td>disease; lung disease (e.g., asthma; cancer; poorer lung functioning; chronic</td>
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<td>obstructive pulmonary disease); neurochemical changes; obesity; pain; physical</td>
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<td>growth reductions; unintended pregnancy; inflammation (e.g., increased C-reactive</td>
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<td>protein and/or ICAM-1)</td>
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<td><strong>Psychiatric Disorders</strong></td>
<td>ADHD; alexithymia; antisocial behavior; fear and/or anxiety symptoms and disorders;</td>
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<td>** and Symptoms**</td>
<td>bipolar and related disorders; conduct disorders; depressive disorders and symptoms;</td>
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<td>dissociation; eating disorders; guilt, self-blame, and/or shame; mood and affect</td>
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<td>disturbances (depressive disorders; suicidal ideation and attempts; persistent</td>
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<td>anger); oppositional defiance disorder; personality disorders (e.g., antisocial;</td>
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<td>borderline; dependent; depressive; narcissistic; paranoid; passive aggressive;</td>
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<td></td>
<td>psychotic disorders; self-injury or self-mutilation; sexualized behavior; sleep</td>
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<td>problems; substance use/abuse; suicide attempts; trauma-related disorders (e.g.,</td>
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<td></td>
<td>lifetime PTSD)</td>
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<td><strong>Self-Skills</strong></td>
<td>coping difficulties (e.g., lack of flexibility; poor adaptation to non-controllable</td>
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<td>situations; failure of action in controllable situations); self-concept (e.g., low</td>
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<td>self-esteem; lack of confidence; low self-efficacy; lower body satisfaction);</td>
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<td>poor self-protection and/or poor danger detection; poor self-regulation (e.g.,</td>
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<td>behavioral and/or emotional/afflict); problematic reward processing; problems with</td>
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<td>locus of control (e.g., belief in external control; self-blame; failure to</td>
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<td>recognize controllable or non-controllable situations); stress reactivity and</td>
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<td></td>
<td>sensitivity</td>
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Sources: Anda & Feletti, 2003; Asok et al., 2014; Middlebrooks & Audage, 2008; APA, 2013; Briere et al., 2008; Briere et al., 2016; Byrum et al., 2010; Champagne & Meaney, 2007; Child Welfare, 2013; Dackis et al., 2012; De Bellis & Zisk, 2014; Hansel et al., 2013; Hersch & Bilimoria, 2012; Hodges et al., 2013; Lupien et al., 2009; Maikovich-Fong, Speltz, & Jaffee, 2015; Moss et al., 2012; Nader, 2008; Nader & Fletcher, 2014; Pechtel et al., 2014; Spann et al., 2012; Taylor et al., 2013b; Wekerle et al., 2014.
Box 3.1 Cascading Effects After a Death

Before the incident, Elizabeth (E) was happy, popular, and gregarious. Her mother describes her pre-“breakdown” persona as “a little ball of sunshine. So easy, feisty in a good way, full of energy.” E felt safe and loved. Her older brother was more outgoing than she, and she relied on him for creating a social network. Until he started to pull away when she was in fifth grade, they “ran the neighborhood.” Her grandfather died when she was age nine, and things changed. The family surrounded her grandfather, until he flat-lined. Then he suddenly looked up at his wife once more, and then was gone. E and everyone in the family were allowed alone time with him to say goodbye. Although her parents were spiritual, they were not church-goers (At the funeral, E asked, “Who’s the guy on the ‘t’?”). She believes that this is why she didn’t know where her grandfather had gone, or what had happened to him.

During her alone time with her grandfather, his lifeless eyes and mouth were open. E leaned in and hugged him, and the remaining air in his lungs expelled. She heard his breath and thought he was alive again. She “panicked” and thought that she should do something to help him. Although you could see into the room where the family was, no one was paying attention to her. She felt as though she had let him die again. She was terrified and ashamed. Some people came in and put him in a black bag—“It looked like a garbage bag.” When she went back in with family, they seemed to be having a spiritual experience—all were happy that he had died so peacefully. She told no one. No one asked her about her experience.

She “never felt safe again.” “The ground dropped out from under me, that someone could be there, then just be gone.” It could happen to anyone—her parents, her brother, her. She began to sleep covered by stuffed animals, in case someone came in the night to stab her—they would stab them instead. She developed severe separation anxiety. Her parents were unaware of her distress and later planned a trip out of the country. She was to stay in her grandfather’s house—where he had died—with her step-grandmother (with whom she was not close). During her stay, E fell and had a concussion. She says that she exaggerated her symptoms so that her parents would come home. She didn’t ever want to be apart from them. She stayed home from school for three months. She felt unsafe everywhere—even the back seat of the car. Although loving and accepting, her parents became exasperated with her clinging. They didn’t connect it to her grandfather’s death. E’s brother didn’t have difficulty, and E never told them. After three months, her mother had her write a letter to her grandfather telling him all that bothered her. Then they burned the letter. She felt some relief after this. E does not remember therapy at that time. However, her mother reported that they took her to her first therapy at age 10, because after grandfather died, she had a “breakdown”—separation anxiety, didn’t want to go to school, crying, depression. They had not known until six months after the death that E had seen them put her grandfather in a “black garbage bag”—they were horrified. She was never the same happy little girl after that. Then she went through bullying that they didn’t learn about until her senior year in high school.

Loss of Status and Being Bullied. Formerly popular, when she returned to school, she was ostracized. She was now an outsider who had been out of school for random reasons. Again, she felt unsafe. Bullying started in fifth grade. In order to belong, her brother, who was more outgoing but less popular than she had been, made a glib remark about her that started a sexual rumor. Although it gained him some popularity points, she was labeled a slut (in fifth grade). She felt betrayed and afraid. In sixth grade, going to the school cafeteria was torturous because of the bullying, and she spent a great deal of time in the nurse’s office. The bullying continued. In her sophomore year, she became a part of an out-group. Even in high school, she would hide when her brother’s friends came over—feeling unsafe. She has never had a large friend group—she has two or three good friends. She
remains, as an adult, uncomfortable in a crowd of strangers (describes herself as somewhat introverted).

At around 14 or 15, even though E felt damaged, had low self-esteem, and made poor boyfriend choices, she always did well in school. She describes her high school friends as also damaged (had broken lives) and often traumatized in some way. She no longer knew how to get along with mainstream, happy, popular kids. Although E doesn’t remember it, her mother took her to therapy when she was 14 (graduating from eighth grade). Her dad worked a lot, and her mother became very ill during that year (with resulting low energy, intolerance of strong smells). It was not easy to have friends over because of her mother’s illness. She was alone a great deal. Although they seemed unaware of the depth of her being bullied, her depression, and her fears, she felt completely accepted by her parents. Nevertheless, she worried that her mother was frustrated with her and that her father was disappointed in her. She never told them of her worries. She wanted to keep her home a place free of all of that. Also, the bullying began around a sexual rumor that was started by her brother. She didn’t want her parents to think that way about her. She didn’t want that conflict at home. She became seriously depressed. In truth, her mother had been relieved that, during her rebellious phase, she only stopped showering.

**Turning the Bad into Something Good.** At some point, E knew that she had to become a tougher version of herself. Punk rock provided an opportunity in the summer after her freshman year. Her parents didn’t learn of her being bullied until a family session in her senior year of high school. E says that, although she always cared about how she looked, as a punk rocker, they showered infrequently, wore Good Will clothes, had a Vegan diet (she says being Vegan was a way of controlling something in her life), were politically active, and were into angry punk rock music that allowed her to express her anger. She gained a lot of weight. She became “against typical white America” and “a part of the underdogs.” She removed herself from the mainstream, met friends out of the area, went into unsafe, poor areas of the nearby city. They protested, were activists, provided outreach (food drives), and were protective of animal rights as well. She looks back on this period as actually a good thing—it allowed her to figure things out, to see there was more to life than high school, and to express her anger (through punk rock and protest). She gained a sense of power from these activities. She and her friends (all broken in some way) were trying to turn the bad into something good. Her parents “remained unconditionally accepting of her and of her purple-haired and smelly, Vegan friends.” When asked why she didn’t tell her parents, she explained that being accepted and feeling safe are two different things. She never wanted them to know about the sexual rumors and always wanted home to be a safe place, free of all of that. Also, her mother was very ill, and her dad was not a talker.

**Therapy.** E remembers “a slew of therapists” between beginning college and age 20. Although she feels she did have a chance to grieve her grandfather in her different therapies, she cried and appeared deeply sad when she told the story of her grandfather’s death. Her few minutes alone with him had re-defined her and her life. In those few minutes, she lost her sense of safety, her joy, her peace, and her social status. She developed a persistent fear and sense of deep aloneness and damage, unable to share her pain or subsequent painful experiences. The life path she was on took a sharp turn, and, as she put it, “My life spiraled” out of control.

She says that the exposure therapies helped—she could talk about things that had happened without getting emotional. At one point, she had a psychiatrist for meds and a therapist for talking. It felt good to discuss things. However, over time, she learned to do a good job of telling the story. In addition, she dreaded going because she might go in happy, but always left feeling depressed. Although narrative processing had helped her initially, in retrospect, she felt the therapies that helped her to move forward were more helpful than talking about the past. One therapist had her bring her parents and brother in. She had a chance to tell them what she had been through, and how they had
played a role in it. She told them that she had forgiven them, and they had a chance to apologize to her. It was a very helpful session. Years later, she was given anti-depressants because of brain scan results. They seemed to worsen traits that she then learned were signs of ADD. Both she and her mother consider treating the ADD was a turning point in her recovery. Learning about her ADD and being able to put words to some of her behaviors helped a lot (she could tell people, “Don’t think I don’t like you, if I don’t call you back right away. Sometimes I forget or avoid it because I get anxious.” The ADD meds really helped. Her mother also feels that E’s marriage was a part of improvement. She is now a well-liked young mother. She knows her limitations. She is very involved in her church and still helps those less fortunate than she, but without the anger, uncleanness, or protest. She is considered by those who know her to be a very lovely person, inside and out—competent, caring, and faithful.

Note:
All case examples are disguised, may be combined cases, and have had details changed to protect individuals.

Box 3.2 Faulty Attachment and Negativity Translate into Sibling Abuse and Additional Victimization

Danya

Danya’s parents were very much in love and spent as much time as possible with each other. After Danya’s mother (Mom) became pregnant, her father (Dad) had to move to Europe for his work. When Danya was born, her mother sailed with her to join her father. Mom described Danya as always cranky and nasty, since she was a baby. She called the ship-ride to Europe “the trip from Hell.” Although there was some stress related to the separation from her husband during her pregnancy, Mom stated that her own mother was like Danya—angry, grumpy, bitter, and held grudges. Dad seemed to feel that Danya had undermined his relationship with his wife. He resented and wanted nothing to do with his cranky first child. His coolness toward Danya never fully abated, and she never stopped trying to find her way into his good graces. Danya was described as “always difficult to love.” She was mean and picked on her sister and neighborhood kids. As an adult, she was described as “like the 45th president” (“deflects everything off of herself”; “even if she’s done horrible things, she makes the other guy wrong”; uses name-calling to diminish others … boils everyone down to a specified negative name” …). As a child, she called sister Tally a fat pig, stupid, and/or a loser. As an adult, Danya has called Tally a “fat f_ _k.” She tried “all of her life” to gain her father’s favor without success. Finally, she began to say that he was a child-beater (completely unfounded—he never hit her or any of his children according to Tally and Mom). She is described as having remained an angry, mean person, who periodically threatens and always disrupts. She has been banned from family gatherings because of her behaviors, which adds to her rage. As an adult, she has threatened to burn Tally’s house down. Tally’s husband describes Danya as being the most negative, unlucky person he has ever met—she has a great deal of bad luck; “bad things happen to her all the time.” Tally describes Danya as very negative, fearful, mean, and angry.

Tally

Danya’s sister, Tally, was born when Danya was four years old. When his second daughter was born, Dad fell very in love with her. She was his adorable baby, and they remained close throughout his life.
As a result, Danya resented Tally and grew more and more angry. She picked on Tally relentlessly. Tally’s earliest memory was of being in a stroller (around age 18–24 months) and Danya taking her up to the top of a hill and pushing her. Tally went flying down the hill and rolled into the street. She was terrified.

When Tally was three or four, her grandfather molested her. On school vacations, she was left with her grandparents for a weekend or longer. The grandparents would take two children to alleviate stress in Mom and Dad’s home. It was a treat to go, because there were pancakes and candy (Tally said, “No wonder food is my anesthesia”). She described how, on one occasion, her grandfather forced her to open her mouth and permit him to place his penis inside. She vividly described the choking sensation and being unable to breathe, the intense fear … she thought she was going to die. On occasion, Tally was left at her aunt and uncle’s house. Her uncle was on disability and at home all of the time. Two or three times he took Tally on his lap and fondled her, while the wife was in another part of the house cleaning or cooking. Tally thought it was really creepy. When Tally was 4 or 4.5, Danya pushed her into some bushes that caused paper-like cuts all over her. When Tally was age 4.5 or 5, she was climbing up the ladder to the top bunk, when Danya pushed the ladder back ward. She remembers being afraid she was going to die as she was falling backward. She hit her head. This time, her father saw what happened, took care of her, and put a stop to Danya’s threatening behaviors. His protection lasted until he had to start traveling for his work again. When Tally was 12 (seventh grade), Danya, knife in hand, chased her down the alley yelling, “I’m going to kill you.” During that year, Dad went to see a psychiatrist regularly “for help with his wild and unruly four children” (especially Danya and Tally who were in “regular drag-out fights”). Dad sent Tally to his psychiatrist when she was 12.

**Refuge.** In contrast to her own home that felt “dry, dark, scary, stressful, exhausting, and void of creativity,” a childless neighbor had a beautiful home with many mosaics and other art projects. When Tally was 4–5 years old, she would go there to escape. She would water color and do other art projects with the woman who lived there. It was very peaceful. Tally says, “[Neighbor, N] moved slowly, spent a lot of time ‘Seeing’ me”—she “acknowledged my person.” N loved her art, and regularly gave Tally tours of her work. She never ran out of ideas. Her house smelled like oil paints. There was a beautiful pond with turtles and a bamboo grove. Tally says, “It was peace.” It “was creativity” and was “magic.” It was “like heaven.” Tally told people she wanted to be an artist when she grew up. As an adult, in treatment, she is learning to use these images as one method to restore a sense of peace.

**Symptoms.** Tally developed negative expectations (“someone’s out to get me”) and persistent nightmares and night terrors about a tiger chasing her. She would run down the hall in the night to get away from the tiger. Dad went to a psychiatrist for advice. Dad started sitting with Tally on his lap asking her about the tiger—what he was like and what he did. He began reframing the tiger into a kitten who was harmless. Tally stopped having the tiger dreams, but remained fearful. There were many children in the neighborhood. She couldn’t watch cartoons with them, because cartoons were violent with threatening characters. Her parents forbade her to watch, because she became extremely distressed. When friends watched “Wiley Coyote” or “Little Mermaid” or “Chiller,” she could not stand to watch. She couldn’t watch *Wizard of Oz* because of the flying monkeys and the witch. In adulthood, *flying monkeys* became a metaphor to describe endangering persons (some of whom were not actually dangerous).

In kindergarten, Tally wanted to stay home sick with her mom. Her mom was very nurturing when she was sick, and being sick became a way out of danger. During school years, she became an isolationist. She never could participate fully. She would create reasons why being around other people was not worth her time—e.g., boys were too stupid. In the fifth grade, she had one close friend who was, like her, more mature than other children. One day the friend came to her and said she was
moving away. Tally was very “upset and demoralized.” That was another reason to be an isolationist—“you can’t trust anyone.” She’s never had a good friend since then (has never felt she could fully trust them). After that she had only fleeting friends. “People hurt you.” She became rageful. Her mother “never stepped up and protected me” and “my father was a rager—he would put up with it and put up with it, then blow, with a full six-months-worth of complaints, he exploded.”

**Tally’s Adulthood.** As an adult, Tally still fears that her sister will find a way to kill her. Adult Tally worked, and was less often ill. However, as an adult, she has developed an autoimmune disease (autoimmune ailments have been significantly linked to trauma). She is a successful executive businesswoman. One of Tally’s adult coping practices has been great self-sufficiency. Taking charge and taking control are frequently used responses to feeling threat. Outwardly, the excuse is that people won’t do things right. She says she is aware that she must be in control so that she won’t get hurt. Her control issues sometimes alienate people, including family. Her social interactions (including with husband) are curtailed in a number of ways—e.g., no even mildly scary movies. Even as an adult, Tally cannot stand to watch cartoons or violence. She couldn’t see Harry Potter movies or other movies with threat. She will only go to mild movies (usually romantic comedies or other harmless movies). She did okay with C.S. Lewis’s tales of Narnia, however. She felt the characters were less threatening and more human. Because she could not go to most movies and doesn’t trust anyone, she has missed opportunities in childhood and adulthood for building camaraderies. She has missed some of the lessons that can be learned from tales—e.g., to say “Riddikulus” and change the mental image for some fears or to use the Patronus charm (or other self-talk or imagery method) to keep away the Dementors who drain away all of her happy memories (Harry Potter).

**Avoidance.** Tally still avoids doing things because they are risky. Her self-talk, days or weeks before an event (e.g., a wedding, a gathering of friends), may tie her in knots, make her feel really bad in her body, and cause such physiological distress that she feels “I don’t feel well” becomes a truthful although self-made excuse to stay home. Being with others is “too risky”—“too many flying monkeys” ... “they come out of nowhere.” She has learned from her mother to be pleasant and upbeat on the surface, and believes that she looks calm. Tally occasionally feels “in the zone.” She has practiced yoga for years, and feels that without it she would have become agoraphobic, among other things.

**Yoga.** Tally functions well, despite her fears. She feels better if home and office are uncluttered and tidy, “free of mess.” She feels she can replicate that internally. She also feels safe on her corner of the couch watching comedies and light or spiritual fare. Although she said she does not have faith in God or man, she feels unbalanced all day if she doesn’t spend at least 10 min. in the morning reading spiritual books, praying, and meditating.

**Family.** Tally says, “Metaphorically, my children got a mother who is calling 911 all of the time and a father who doesn’t recognize the need to call 911, when it’s there.” A pattern of frequent overreaction by Tally and minimization by her husband has been observed by others. Tally remains fearful of her sister. She spent the summer after Danya threatened to burn down her home, unable to sleep waiting to hear the gasoline pouring around the house. They went to a family cabin with the extended family, and she feared Danya would come and burn all of the family (who had shut her out) at once. As time has passed, Tally’s brother has also become negative and grumpy and is trying to undermine or take Tally’s business, with legal actions. Tally says she is living in terror and doesn’t know what to do. She has discussed the type of attorney she needs to face her brother’s multiple, “cut-throat” attorneys. Her attorney is mild mannered and kind.

**Now.** Tally has started to increase her support systems, to improve her coping repertoire, to change her self-talk, and has recently been inspired both by a book about how to be happy, written by a master Yogi (after visiting a retreat site with a group of very peaceful people), and by participation in **Somatic Experiencing® Therapy**—a body-focused treatment that has been used for PTSD (e.g., Brom
et al., 2017). She is beginning to find that she can have a different attitude toward what is happening in her extended family. Danya, again recently, threatened to come to her house and kill her while her husband was away, and her brother continues litigation. For the first time, Tally now doubts that her sister will actually hurt her—recognizing how many times she has threatened, and she asks, “What can they take from me, really? I have other family, now. If I lose the business, we’ll adjust.”

Note:
All case examples are disguised, may be combined cases, and have had details changed to protect individuals.

2014). Preconception but not pre-natal stress has also increased the risk of premature birth and infant mortality (Class et al., 2013). Additionally, maternal anxiety and pre-natal stress have been linked to subsequent neurodevelopmental or behavioral problems and to difficult temperament in infants and children (Beydoun & Safﬁlas, 2008; Charil, Laplante, Vaillancourt, & King, 2010; Chapter 5). Difficult temperament may result in distress and interpersonal difficulties that in turn affect self-esteem and ongoing quality of life.

Attachment has proven to be a potent, long-term moderator of social and behavioral cascades from infancy (Boldt, Kochanska, & Jonas, 2017). For mother– and father–child relationships at infant age 15 months, externalizing in preadolescence was only signiﬁcant for insecure attachments. Traumas also may have an indirect effect on children’s trajectories and recovery through their impact on parenting—e.g., undermining parenting quality (Masten & Osofsky, 2010) and/or their impact on how others (e.g., peers, teachers) see or respond to a youth (Boxes 3.1, 3.2). As the Parkland, Florida school shooting demonstrated, victimization may lead to increased support and/or admiration for some youth. In contrast, victimization of a child or her/his posttrauma behaviors has sometimes elicited disdain from other youth and adults, with losses in well-being and opportunity.

In addition to the ongoing consequences of childhood trauma is the impact of such traumas or PT symptoms on treatment for speciﬁc disorders. For example, emotional abuse predicts longer treatment for depression (Maikovich-Fong, Speltz, & Jaffee, 2015; Walker et al., 2000) and has been a factor in non-completion or increased treatment resistance (Maikovich-Fong et al., 2015). Childhood traumas have been related to cPTSD and PTSD symptoms in later life (Krammer et al., 2015). The ability versus the inability or reluctance to talk about past traumatic experiences in spite of a need or urge to do so (dysfunctional disclosure) and social acknowledgment (e.g., whether people react with understanding and acknowledge the individual as a victim or survivor or are rejecting) are important social-interpersonal factors that each mediate PT adjustment across life (Krammer et al., 2015; Maercker & Horn, 2012). However, the two factors are not independent—a cascade has been found in more than one study: type of social acknowledgment inﬂuences level of dysfunctional disclosure, which in turn inﬂuences PTSS (Krammer et al., 2015; Müller, Forstmeier, Wagner, & Maercker, 2011).

Posttrauma Narratives that Influence Communities and Individuals

Traumas affect communities as well as individuals. The way a community deﬁnes an event and its aftermath as well as the community’s working hypothesis and prevailing mindset inﬂuence ongoing reactions. This may be especially true when groups of trauma-exposed individuals remain in their less urban communities over time. For example, in a community where a natural disaster killed 10 elementary school children and injured many others, over time a working hypothesis emerged among community members suggesting that this was a community with bad luck or maybe even a jinx that attracted bad experiences to them. A couple of years after the initial disaster, every car
accident, act of nature, or other negative event joined the list of proofs of the bad luck community. Ten years after the event, one youth described a lightning-strike (small property damage; no injuries) as a sign of the jinx. One reporter insisted that there were more suicides in this area than others in the 10 years since the disaster, even though his own research showed that the numbers were within the normal range for a community of that size. As a consequence of expectations, community members awaited the next bad thing.

In contrast to the preceding community, another community where a bomb went off in an elementary school in which children were held hostage (there were injuries but no children died), the community was heartened by the story that an angel or angels had assisted children to safety. Community members sought evidence for a miraculous preparation and protection before and during the event and found hope and upliftment. Many years later, the affected adults, sometimes tearfully, focused on the miracle of their survival and the things that happened before and during the event. One mother—who had been a child in the room when the bomb went off—spoke of how her children are a miracle because of the miracle of her own survival.

In locations affected by mass violence or disaster, subgroups of individuals may progress with their own theories that engender either hope (e.g., beliefs in growth and protection), helplessness (e.g., conspiracy theories or evidence that suggest the threat endures), or other emotion-inducing beliefs. For example, in New Orleans after Hurricane Katrina, one group spoke of an explosion purposely set that caused massive destruction. The explosion was discussed as a conspiracy against poorer landowners or blacks and was described variously, e.g., as attempted genocide or to gain property (Myers, 2006). While the Army Corps of Engineers stated that Katrina was too massive for a protection system intended for a category 3 hurricane, the LSU Hurricane Center explained that the “explosion,” in fact, was the load structural failure of the “protective” barriers that should have handled Hurricane Katrina with relative ease (Grunwald & Glasser, 2005). As is true for other multifaceted traumas, after war and massive amounts of destruction, the intense and horrific exposures—e.g., repeated horrible events, prolonged fears, and many witnessing or injuring experiences—have been associated with traumatic and other reactions (e.g., Thabet, Tawahina, Punamäki, & Vostanis, 2015). Nevertheless, a group of less exposed adults in one war-torn region remained upbeat in the belief that renewed spirituality would serve to protect them. Clinicians and researchers do not always remain in an affected region long enough to hear the emergence of posttrauma community narratives. It is important to anticipate the possible development of such working theories in order to enhance the possibility of hopefulness and growth—e.g., a lightning-strike with little damage and no injuries can be defined in a positive way.

Cascading Effects of Trauma

Briere and Jordan (2009) have noted that maltreatment-related symptoms in adult women likely reflect “a complex, interdependent, sometimes interactive cascade of conditions and events, leading to a range of negative psychological outcomes that may vary significantly from woman to woman” (p. 383). Terms such as cumulative effects, cascading or snowball effects, progressive effects, transactional effects, chain reactions, or contagion effects refer to the effects of traumas that can spread or increase over time (over weeks, months, or years), from one level to another, from one area of functioning or domain to another, from one person to another, from persons to communities, and from one generation to the next, through multiple mediating processes (Caspí, 1998; Cicchetti, 2003; Masten & Cicchetti, 2010; Masten & Narayan, 2012; see Nader, 2008). A youth on a successful path among peers and toward a career may be derailed by the effects of traumatic experiences (Nader, 2008). Death or injuries of loved ones may have additional cumulative effects.

Because, from each phase of development, children take the biological, cognitive, social, and emotional knowledge, skills, and other resources they have gained into future situations and challenges (Geiger & Crick, 2001; Nader, 2008; Price & Lento, 2001), trauma’s effects on the brain and
developing skills can have such cascading and cumulative effects for youth (Caspì, 1998; Cicchetti, 2003; Lupien, McEwen, Gunnar, & Heim, 2009; Nader, 2008). Consequently, early traumas may have a greater capacity to impose significant and cascading dysfunction than experiences occurring later (e.g., in adolescence or adulthood) when skills such as self-regulation have already been established. Traumatized children may show developmental delays (Chapter 1—e.g., brain, language; Chapter 4)—e.g., adopted and foster children diagnosed with reactive attachment disorder have exhibited developmental delays in communication, daily living skills, and socialization (e.g., developmental-age equivalency of 4.4 years for average chronological age of 9.9 years; Becker-Weidman, 2009).

Traumas (e.g., maltreatment) that occur during early brain development “may potentiate a cascade of maturational and structural changes that eventuate in the neural system proceeding along a trajectory that deviates from … normal neurobiological development” (Cicchetti, Handley, & Rogosch, 2015a, p. 563)—e.g., changes in volume (e.g., amygdala, hippocampus; Aas et al., 2012; Baker et al., 2013; Bremner, 2006), dendrite atrophy (i.e., impaired receptors of electrochemical signals), and suppression of brain cell growth (neurogenesis; Aas et al., 2014; Herpfer et al., 2012; Sapolsky, 1998; Wolf, 2003; Chapter 1). For example, limbic system impairments (e.g., related to motivation, emotion expression; Glossary) persist into adulthood, and relate to the risk of developing, e.g., depressive and/or PTS symptoms (Dackis, Rogosch, Oshri, & Cicchetti, 2012; Gibb et al., 2010). On the other hand, as noted, some effects are age period specific (Chapter 1, age-related chapters). For European males in a cohort study (France, England and Wales, Sweden), stressors experienced during ages 10–14 were more strongly associated with decreased life span than those experienced during infancy, ages 1–4, 5–9, and 15–19 (Falconi, Gimmel, Dahl, & Catalano, 2014). Some evidence suggests that youth consistently abused into adolescence and those abused at an older age (mean 10.6) are more likely to be incarcerated than maltreated younger children (see Danielson, Moreland, & Walsh, 2015).

Trauma-related disruptions to academic and interpersonal functioning as well as other disturbed processes—e.g., changes in neurobiology, personality, cognition, reactivity, friend choice—may drastically alter a youth’s life course (see Nader, 2008; Perry, 2006). Childhood ill-temperedness (a personality trait and/or a result of trauma), for example, has been found to lead to cumulative consequences such as contentious relationships with caretakers and peers, difficulties with school authorities, negative school experiences, and lower occupational status (Caspì, 1998). Initially and over time, negative self-talk may result in such experiences as failures, avoidance of seeking desired goals, and unpleasant interactions. The consequences of failures, negativity, and lack of effort to attain desired goals may include missed opportunities, lost respect from others, disruption of relationships, and loss of status—e.g., a previously popular girl was described as a bully, because of increased irritability after a trauma in which she was shot.

Following trauma, normally viable coping methods may become faulty. Self-distraction, self-soothing—e.g., reasonable amounts of comfort food or drink; calming or “head-clearing” activities such as a warm bath, a run, a game, etc.—or arousal reduction (e.g., through meditation, activities) can be beneficial ways of coping with stress. However, for traumatized youth and later as adults, self-soothing or distraction to reduce or avoid trauma-related and subsequently other distress may include dissociation, substance abuse, or non-productive tension reducing behaviors such as promiscuity, overeating and/or purging, impulsive behaviors (e.g., aggression, suicidal behaviors, dangerous risk-taking), or self-mutilation (Briere & Jordan, 2009), each of which may undermine ongoing functioning. Spinazzola and colleagues (2014) point out that, following psychological maltreatment, substance abuse may become a coping mechanism and, itself, a cascading secondary outcome.
Cascades from Individual Symptoms

At any age/stage, strong challenges to self-concept and disruptions to the development of important life skills—e.g., trust, self-worth, sense of control, autonomy, and cognitive processing, among others—may have a major adverse impact on a person’s life and course of development (Nader, 2008). For example, negative reactivity in school children (ages 6–7) has predicted poor social preference in later childhood and early adolescence. Poor social standing among peers, in turn, has predicted greater engagement in antisocial behavior in later adolescence (Buil et al., 2017). Negative life events may trigger a cascade of negative results starting from loss of resilience and/or protective factors and may lead to increased risk of developing mental health, interpersonal, and other problems. Specific individual symptoms (e.g., impulsivity, emotionality, dissociation, aggression, anxiety, reduced attention; poor sleep) that may themselves trigger cascades of outcomes following traumatic events influence ongoing environmental (e.g., reactions from others; academic climate), behavioral, and other effects (Nader, 2008; Tomko et al., 2015). For example, poor sleep may result in many other symptoms, such as poor attention, poor concentration, increased irritability, and clumsiness, which in turn may result in additional and prolonged other reactions. Evidence suggests that trauma plays an important role in the emergence of catatonia in children, which may lead to premature death (Benarous et al., 2017). The individual PT symptoms to follow include a sampling of the possible cascading results from an individual symptom.

Aggression

Aggression has many associations (e.g., shame, trauma; Chapters 1, 4, 8, 11; Nader, 2008), including traumatic exposure (Ford, 2002; Greenwald, 2002), which in turn may lead to peer rejection followed by evolving symptoms related to exclusion and/or aggression (Nader, 2008; Chapter 1). Youth who are aggressive may show more externalizing behaviors (e.g., impulsivity, oppositional behavior) in middle childhood, and, in adolescence, more conduct problems (e.g., delinquency, antisocial personality features) than peers (Crick et al., 1997). Following traumas, youth may develop negative attribution and expectation biases, changed morality, script-like patterns of interaction, and/or additional experiences that increase the likelihood of continued aggression (see Nader, 2008—Chapter 14). They may choose friends who are also aggressive and/or who have been through similar experiences. Laird et al. (2001) found that nearly two thirds of youth who continued to show externalizing behavior problems, from early childhood to adolescence, had endured peer rejection in childhood, and over one third were highly involved with antisocial peers. Aggression or other antisocial behaviors in childhood increase the risk of later exposure to significant negative life events and psychosocial adversities (Rutter, 2003). Additionally, traumas may translate into patterns of interpersonal aggression that become a part of later parenting or spousal behaviors as victim or perpetrator. For example, childhood sexual or physical abuse is a risk factor for adult domestic violence (Wekerle, Wolfe, Dunston, & Allred, 2014).

Highly psychopathic inmates convicted of violent crimes—e.g., homicide, kidnapping, organized crime, torture—have significantly undergone higher levels of victimization and exposure to stressful events—e.g., physical and sexual abuse; compared to inmates with minor offenses (Borja & Ostrosky, 2013). To achieve personal goals, psychopaths show arrogance, callousness, and superficial charm, interpersonally. Although they may appear normal, they are manipulative, are unable to develop strong affective bonds, and lack empathy, guilt, or remorse. Irresponsibility and impulsivity are commonly related to psychopathy and to antisocial personality disorder (the latter may be a low- to mid-level of psychopathy). Borja and Ostrosky (2013) found that the sum of traumatic events experienced along with emotional abuse correlated with psychopathy scores. While a hostile environment may have favored development of an antisocial lifestyle (e.g., robbery, frauds, illegal acts) to obtain financial rewards, intended abuse aimed at hurting victims
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physically and emotionally favored the affective detriments observed in psychopaths, leading to extreme violence to achieve goals.

Impulsivity and Negative Emotions

Impulsivity and negative emotions may follow trauma. Both impulsivity and emotional lability at an early age can be amplified (e.g., by family and other environmental invalidation; by trauma) and lead to later emotional and behavioral dysregulation (Crowell, Beauchaine, & Linehan, 2009). Negative emotional states may result in an emotional cascade and consequently result in dysregulated or impulsive behavior (perhaps used to distract from the rumination) or result in other problematic outcomes (Selby, Anestis, & Joiner, 2007). For example, an individual may ruminate on negative emotions or the situation inducing such emotions—e.g., thinking about an argument and repeatedly, mentally fighting with the other person—thereby increasing negative states (e.g., anger), followed by impulsive actions to “get back at” the other or to harm the self. PTSD-associated alexithymia (difficulty identifying and labeling emotions) was discussed in Chapter 1. In a discussion of borderline personality disorder (BPD, a disorder linked to trauma and to other variables), Tomko and colleagues (2015) demonstrated that negative emotion-related impulsivity may result from poor differentiation of emotions. Undifferentiated affect has, in turn, been associated with reduced quality of interpersonal relationships, increased alcohol use, and non-suicidal self-injury. For individuals with borderline PD or depressive disorder (N = 131; Tomko et al., 2015), while general negative affect (e.g., anger, sadness, or anxiety) has interfered with the ability to attend to environmental stimuli and to persevere through difficult tasks, undifferentiated negative affect (lack of discrete emotions) significantly predicted negative urgency (being prone to respond impulsively, rather than adaptively to negative affect), lack of planning or premeditation, and motor impulsivity. Across time (28 days), lower differentiation of negative affect states related to an increased tendency to act rashly in response to extreme negative mood states and to a greater inability to plan or persist through tasks. Although the propensity to experience negative affect is also a strong predictor of impulsivity, the interaction of negative affect and undifferentiated negative affect was especially predictive of momentary impulsive feelings (Tomko et al., 2015). Impulsiveness may result in a multitude of problems (e.g., incarceration, relationship problems), which may have snowballing or devastating effects.

Attention Problems

Attention and its associated control systems are recognized as critical common processes underpinning important aspects of cognitive and emotional functioning (Fearn & Belsky, 2004). Good attention is needed to perform well in all realms of life—academic, professional, and relationship. Problems with attention and/or concentration following traumatization may lead to dysfunction in multiple realms simultaneously. When youth have difficulty maintaining attention needed for learning, congruent conversations, and task performance, then relationships, academic status, and job performance may suffer and continue to decline. Deficits in attentional control have been implicated in many psychological disorders (Fearn & Belsky, 2004). A strong link between PTSD and attention problems in childhood or adulthood has been documented (Kaplow et al., 2008). Garrido, Taussig, Culhane, and Raviv (2011) found that both minor and severe physical abuse were associated with greater levels of attention problems and with aggressive behavior. Attention has mediated the association between abuse severity and aggression, accounting for over three quarters of direct effects of severe abuse on aggression and about one quarter to one half between minor abuse and aggression. Higher degrees of attentional control have predicted higher levels of recovery from trauma-related negative moods following retelling of a trauma (Bardeen & Read, 2010).
Dissociation

Peri-traumatic and persistent dissociative symptoms have predicted the development and continuation of PTSD symptoms (Werner & Griffin, 2012) and reduced treatment success without inclusion of specific methods to reduce dissociation (Brand et al., 2014; Cloitre, Petkova, Wang, & Lu, 2012). Witnesses as well as direct victims of traumas have demonstrated dissociation (Hagan, Hulette, & Lieberman, 2015). Dissociation predicts later attention problems (Kaplow et al., 2008). Children sexually abused by a family member and/or who reported symptoms of dissociation upon disclosure of abuse have shown increased risk of developing attention problems eight to 36 months after disclosure. For children with more types and severity of forms of childhood maltreatment as well as higher levels of depressive, dissociative, and posttraumatic symptoms (than non-self-injuring children), Franzke, Wabnitz, and Catani (2015) found that dissociative symptoms (but not post-traumatic or depressive symptoms) mediated the relationship between childhood maltreatment and later non-suicidal self-injury (NSSI). Franzke and colleagues suggest that NSSI may be an attempt to interrupt dissociation or to counteract the feelings of numbness and emptiness associated with dissociation (Chapter 16). Wekerle et al. (2014) have suggested that the fragmentation of affect and experience may progress over time into borderline personality disorder, chronic pain, or dissociative identity disorder.

Anxiety or Irritability

Anxiety or irritability may impact youth in a cascade of results. For example, anxious individuals may be more sensitive to peer rejection (Chapter 11), which may make them more vulnerable to peer influence—e.g., to drink or use drugs, linked to its own cascade of life changes (Oshri, Sutton, Warner, & Miller, 2015; Purdie & Downey, 2000). Irritability is a common expression of distress for both traumatized and depressed youth (Hammen & Rudolph, 2003). Hypersensitivity to stimuli, such as sounds, may lead to irritability (Bloch, Silber & Perry, 1956; Carrion, Weems, Ray, & Reiss, 2002; Nader, 2008). Irritability may repel others, and consequently, adults as well as peers may avoid and/or see a youth as less worthy of receiving opportunities. In contrast, posttrauma withdrawal and/or quiet suffering may result in neglect and also interfere with social development, learning, and other important tasks.

Self-Concept

Diminished self-esteem may follow events that directly devalue a child, expose a child to stigma, or decrease opportunities to engage in esteem-enhancing activities (Haine et al., 2003; Boxes 3.1, 3.2, 2.3). Low self-concept is a risk factor for PTSD and can be a result of traumatization (e.g., a result of inter-parental violence; maltreatment; assault; peer victimization; e.g., Fosse, 2006; Levendosky & Graham-Bermann, 2001; Litman et al., 2015; Nader & Fletcher, 2014; Spinazzola et al., 2014). For example, adults bullied in childhood have had lower self-esteem, higher psychiatric symptoms, and external locus of control (Fosse, 2006). Trauma or loss may affect self-esteem, and lower self-esteem may affect competence, which in turn affects more than one area of ongoing functioning. Low self-esteem has been linked to psychopathology, vulnerability to criticism, self-destructive behaviors, negative feelings about self and others, interference with relationships, negative emotionality, and social withdrawal. In contrast, high self-esteem has been linked to positive emotions; life satisfaction; aggression under threat; adjustment and well-being in social relationships; school achievement; resilience to stressful life events; and the reduced likelihood of anxiety or depression (see Nader, 2008—Table 1.3). Poor self-image has been a factor in the perpetuation of anxiety and of depression (adults: Iancu, Bodner, & Ben-Zion, 2015; Wegener et al., 2015) as well as in other problems that influence ongoing quality of life (see Information Processing, to follow; Box 3.1).
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Trauma also may interfere with the ability to achieve optimal creativity (e.g., “flow” Csikszentmihalyi, 1990, 1997a, 1997b; Glossary) or previously automatic and/or well-focused, skilled, esteem-enhancing activities (Nader, 2008). Such interference may greatly reduce success, future opportunities, and self-concept, especially if self-concept is highly linked to such activities. For example, when success and self-concept are tied to athletic skill or to a skill involving creative problem-solving, the loss of creativity and automatic excellence can devastate self-concept with ongoing repercussions.

Information Processing

Faulty or changed information processing may follow traumatic experiences and may combine with other symptoms creating a cascade of outcomes (Nader, 2008). Increased biochemical reactivity may combine with alterations in information processing—e.g., attributional biases; changed expectations; negativity or perceptual biases; negative self-talk in stressful or challenging situations—and/or combine with trauma-related automatic reactions—e.g., aggressive self-protection; failure to protect oneself; watchful freezing (Dalgleish et al., 2003; Dodge, Bates, & Pettit, 1990; Dodge et al., 1995). Combined, they may contribute to outbursts of anger or aggression or withdrawal and subsequent school and interpersonal difficulties.

Changes in information processing may include trauma-compelled script-like behavior patterns that greatly influence ongoing interactions and goal-directed behaviors—e.g., identification with a victim, perpetrator, rescuer, witness, etc.; preoccupation with thwarted, intense peri-traumatic desires to act (Nader, 2008—Chapter 14). In a television interview, an actor, well known in the mid-20th century, told of an incident when he was a baby: when his mother accidentally let go of it, his baby carriage went flying down a hill and into the street. He explained that this had become a metaphor for his life. He repeatedly flew into dangerous situations, feeling unable to control the outcome. Another example of posttrauma script-like behavior is one evoked from an intense peri-traumatic desire to assist a friend and/or other victims: a mass violence victim who desperately wanted to but was unable to help others—especially his best friend who died during the mass shooting in a public place—subsequently repeatedly tried to rescue friends, sometimes putting himself in life-threatening danger to do so (later, he was stabbed protecting others; Nader, 2008).

Individuals are selectively responsive to information that is consistent with their self-views and expectations, and they selectively interpret information based on personal biases (Caspí, 1998; Crick & Dodge, 1994; Dalgleish et al., 2003; Nader, 2008). For example, individuals with social anxiety disorder believe the world to be and experience the world as threatening and dangerous (Iancu et al., 2015). They fear and expect others to judge them and expect to be embarrassed by their own behaviors. They may interpret another’s gaze as an indicator of criticism and/or rejection. Following trauma exposure, individuals may develop changed expectations such as expectations of hostility or harm from others. Such expectations may increase reactivity, thereby changing what youth evoke from others and influencing the environments youth create for themselves (Caspí, 1998; Nader, 2008; Nader & Fletcher, 2014). In a reactive world, expectation or interpretation biases may create corresponding facts (Caspí, 1998; Crick, 1995; Nader, 2008—Chapters 4 and 14). That is, expectations may lead to behaviors that in turn elicit reactions that perpetuate the expectations (Caspí, 1998; Boxes 3.3, 15.1; Chapter 12—ODD and Interpersonal Relating). For example, negative expectations (e.g., of hostility, rejection) may lead to anticipatory rudeness or retaliation that in turn elicits anger or hostility from others (confirming expectation). Similarly, a youth’s fears of abandonment or rejection may lead to excessive reassurance seeking or to tantrums in response to perceived signs of rejection that in turn make people want to stay away from them (Box 15.1).
Self-Reflection

Childhood traumatic experiences may result in poor metacognitive monitoring or reflective functioning—the ability to step back and consider one’s own cognitive processes as objects of thought or reflection (Fonagy, 2006; Fonagy & Bateman, 2016). In turn, the absence of a self-reflective function may result in lack of a capacity to empathize with others and to place personal emotions in a meaningful context (Knox, 2003). Such conditions influence ongoing personal and interpersonal functioning (see Developmental Skills, Chapter 1—Perspective-Taking).

Attachment Style and Emotion Dysregulation

Chronic stress induced in caretaking environments can interfere with the successful achievement of developmental skills (e.g., secure attachments, emotion regulation strategies), which may potentiate a cascading effect of deficits resulting in maladaptation during young adulthood (Oshri et al., 2015;
Chapter 4). Adult attachment style and emotion dysregulation are among potential mechanisms through which maltreatment leads to risk behaviors (e.g., risky sex; substance abuse). In a study of undergraduate students (N = 361; Oshri et al., 2015), emotional and sexual maltreatment (but not verbal abuse) related to anxious and avoidant attachment styles, emotion dysregulation, and a variety of risk behaviors. Verbal abuse was directly related to alcohol use. Individuals with a history of childhood trauma and avoidant attachment styles may engage in risk behaviors through use of strategies that include emotional disengagement (e.g., when participating in antisocial behaviors; Mikulincer, Shaver, & Pereg, 2003).

**Cascades from Neurobiological Changes**

In addition to a marked increase in risk of psychopathology (e.g., PTSD, depression, bipolar disorder, schizophrenia), exposure to early life trauma can produce a cascade of neurobiological changes (e.g., associated with adult cognitive deficits; Gould et al., 2012; see Nader & Fletcher, 2014; Savitz et al., 2007) as well as a cascade of negative consequences related to stress sensitivity and responsiveness and to limbic system development and functioning (Dackis et al., 2012; Lupien et al., 2009). For example, child maltreatment is linked to lasting changes in neuroendocrine regulation, alterations in brain structure and function, and symptoms of “limbic irritability”—e.g., somatic and perceptual distortions, brief hallucinatory events, motor automatisms, and dissociative symptoms; like temporal lobe epilepsy—which may stem from increased excitatory neurotransmission following maltreatment (Dackis et al., 2012). Dackis et al. found significant indirect effects of maltreatment on depression and dissociation via limbic irritability (moderated by FKBP5 genetic polymorphism; Chapter 1; Table A4.1). Posttrauma changes in glucocorticoid sensitivity and posttrauma hypo- or hyper-cortisol production have been related to increased risk in the occurrence and maintenance of PTSD and other post-adversity psychopathology, sometimes influenced by diathesis-stress vulnerability or reactivity (see Alexander et al., 2018).

**Box 3.4 Exposure to Hurricane Katrina**

For hours after Hurricane Katrina, six-year-old Tanya was on the roof of a house with her sisters waiting for rescue. She saw bloated bodies float by and every time the water started to slap against the edges of the roof or spray on her, she feared that she would end up dead in the water, eaten by gators or killed by snakes. After rescue, they were relocated. In her new school, she became particularly distressed on rainy days, especially if the streets started to have water buildup. She screamed and cried when anyone splashed water on her. She screamed and pulled back when they tried to give her a bath, in the house where she, her mother, and her sisters were staying, since their relocation after the hurricane. By age 12, although she less frequently needed to use her meditative, breathing techniques when it rained, she began insisting that they live only on high ground and far away from the coastline. At age 19, when another hurricane threatened to bring flooding rains to her area, she was anxious but had effective coping strategies to employ.

Note:
All case examples are disguised, may be combined cases, and have had details changed to protect individuals.
Long-Term Consequences of Childhood Trauma Exposure

In addition to potential and documented posttrauma cascades of symptoms, numerous long-term effects have been identified for multiple types of trauma—e.g., natural and man-made disasters, severe accidents, and interpersonal traumas such as maltreatment, bullying, or other violence. Types of trauma often co-occur—e.g., physical abuse with other interpersonal violence (e.g., witnessing domestic violence; psychological abuse; sexual abuse; Hodges et al., 2013). Although researchers have attempted to show differences in the results of different trauma types, a variety of traumas are linked to many of the same outcomes (Perez, Abrams, Lopez-Martinez, & Asmundson, 2012; Schafer & Ferraro, 2013). For example, female undergraduates with a variety of previous trauma exposures reported significantly more physical health symptoms, PTSD, and depressive symptoms—e.g., after life-threatening situations; armed robbery; traumatic death of a close person; abuse; witnessing violence (Perez et al., 2012, N = 516). Hyperarousal and depressive symptoms uniquely mediated the relationship between trauma exposure and physical health symptoms.

To follow are some of the long-term consequences found after specific types of traumas (see Table 3.1). In general, severe disasters (e.g., Katrina, Box 3.4; Kronenberg et al., 2010), war exposure (see Masten & Osofsky, 2010; Punamäki, Qouta, & El-Sarraj, 2001; Qouta et al., 2008), school violence (Pynoos et al., 1987; Nader et al., 1990; Turunen et al., 2014), and other traumas have shown that greater severity and number of experiences, adversity in the recovery environment, and lower social support are associated with more negative outcomes and fewer prosocial behaviors (Masten & Osofsky, 2010; Nader, 2008; Nader & Fletcher, 2014). Children with polyvictimization—multiple types of trauma exposure (e.g., maltreatment, accidents, disasters, robbery, and interpersonal losses)—fare worse than those with single trauma types and are significantly more likely to exhibit problems (e.g., delinquent behaviors with both juveniles and adult arrests; Danielson et al., 2015; Finkelhor, Shattuck, Turner, & Ormrod, 2014; Ford, Elhai, Connor, & Frueh, 2010; Ford, Chapman, Connor, & Cruise, 2012; Wekerle et al., 2014).

Maltreatment and Family Dysfunction

Many studies have examined adverse childhood experiences (ACEs—maltreatment and family dysfunction traumas) over time. ACEs include verbal, physical, or sexual abuse; family dysfunction such as a mentally ill, an incarcerated, or a substance-abusing family member; domestic violence; and/or parental absence because of divorce or separation (Felitti et al., 1998). ACEs have been linked to a range of adult adverse outcomes (e.g., SA; psychological distress—e.g., depression; physical maladies—see ACEs and Health; Bynum et al., 2010). For adults seen at San Diego’s Kaiser Permanente (N = 17,000; Anda & Felitti, 2003), 33% reported no ACEs, 26% reported 1, 16% related 2, 10%–3, 6%–4, 5%–5, and 6%–6. For a larger sample of adults (N = 26,229; Bynum et al., 2010), although 41% reported no ACEs, more than half (59.4%) had at least one ACE; 8.7% reported more than five adverse experiences with a sharp decrease in reporting of ACEs for individuals over age 55 (e.g., reports of physical abuse were 16.9% for ages 18–24 & 9.6% for ≥55). The effects of ACEs were cumulative: e.g., in stepwise fashion, the higher the score, the greater the chance of being a user of street drugs, tobacco, or having problems with alcohol abuse (see poly-victimization, Chapter 1; Bynum et al., 2010; Naramore, Bright, Epps, & Hardt, 2017).

Many maltreated children are able to become well-functioning adults (Afifi & MacMillan, 2011; Wekerle et al., 2014). Nevertheless, as will be discussed in other chapters, maltreatment is related to a number of negative outcomes (e.g., physical and psychological difficulties) that persist or occur in adulthood (Wekerle et al., 2014; Box 3.5). For example, maltreatment at one time-point significantly has predicted future maltreatment (also predicted by not living with biological parent or primary caregiver substance abuse, SA; Harpur, Polek, & van Harmelen, 2015). Across 13 studies, a clear, independent link was found between childhood maltreatment and poor economic outcomes.
in adulthood (Bunting et al., 2018). Eight studies showed relationships to maltreatment type (more study and larger samples are needed): Neglect was consistently related to a number of long-term economic outcomes, while physical abuse has a more consistent relationship with income and employment and had a similar magnitude effect as sexual abuse. Consistently witnessing violence/abuse also related to lower net worth and income. Although sexual abuse studies found less of an association with income and employment (a range of severity across studies), they found a relationship with other outcomes—e.g., absence due to sickness, fewer assets, welfare receipt, reduced adult SES, and financial insecurity (Bunting et al., 2018). Some evidence suggested reduced employment for physically abused males and reduced likelihood of employment for sexually abused females.

Although more study is needed, among protective factors against the adverse effects of ACEs are positive peer relationships, school engagement, and school attainment, each of which have mitigated some negative outcomes, while peer conflict has exacerbated outcomes (Moses & Villodas, 2017). For adults with histories of ACEs (N = 2486 German subjects ages 14–92), Beutel et al. (2017) found that high symptom scores were found in those with high ACEs and low resilience. The lowest symptom scores were found in those with high resilience and low adversity. Both

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**Box 3.5 The Throw-Away Child**

Because it was believed that her adolescent mother would be able to take her back after she stabilized her situation, Wendy was placed in temporary foster care. She moved from one foster home to another (up to two years per placement), until her mother finally could take her, years later. She was abused in one household, but her mother never believed her claim of abuse. Although the exact nature of some of the early attachments is unknown, at least after the first placement, she never formed a secure attachment to a caregiver. In Wendy’s teens, her mother felt unable to deal with her numerous problems and asked that she be placed again in foster care. By age 20, Wendy was unable to function without assistance. She exhibited below-age-level functioning at multiple levels and exhibited hyperactive behaviors (e.g., inability to sit still; attention problems; constant speed-talking), personality and attachment disordered behaviors (e.g., inability to form secure attachment relationships; impulsivity; unstable self-image and self-care, goals, and relationships), depressive episodes, and suicidal ideation (and thoughts of self-injury). In some ways, she functioned at a preschool level (e.g., animistic thinking). She could not be easily comforted when distressed. She also exhibited young adolescent behaviors (e.g., rebellious defiance, risk-taking, demands for the privileges of independence without recognition of the consequences of her actions or understanding of how to attain resources). She frequently, angrily described herself as a throw-away child—her mother didn’t want her and sent her away fairly quickly after each time she tried to return to her—and she expected to be thrown away, if she formed an attachment. She was finally placed with a caring family, who agreed to assist her transition to independent living. When the family went on a trip, they moved her to another placement for a week (she could not be left alone in the house without available assistance for food, emergencies, etc.). Feeling like she had again been thrown away, she withdrew, stopped eating, then ran away until it was too cold to stay on the street. Although this functionally young woman may have benefitted from an attachment-based treatment such as AEDP (Chapter 16), it would require finding resources not generally available to a state-sponsored young person.

**Note:**
All case examples are disguised, may be combined cases, and have had details changed to protect individuals.
distress (depression, anxiety, trauma symptoms) and somatic complaints were associated with low resilience, low social support, and low income.

Adverse Childhood Experiences (ACEs) and Health

Early studies of ACEs demonstrated that the number of categories of ACEs showed a graded relationship to the presence of adult diseases—ischemic heart disease, cancer, chronic lung disease, skeletal fractures, and liver disease (Felitti et al., 1998). Recent studies have shown an inverse relationship between ACEs and health-related quality of life (Maikovich-Fong et al., 2015; Schafer & Ferraro, 2013): with autoimmune, liver, cardiovascular, and lung (cancer) disease (Maikovich-Fong et al., 2015), alcohol or drug abuse, obesity, physical inactivity, promiscuity, smoking, suicide attempts, diabetes, cancer, and premature mortality (Bynum et al., 2010) that emerge or persist decades after the adversity has been documented. Categories of ACEs have been strongly interrelated; multiple kinds of childhood exposures have corresponded to multiple health risk factors later in life (Anda & Felitti, 2003). Faulty behaviors may be used as attempts to alleviate the emotional or social distress that result from ACEs. High-risk behaviors in turn may have adverse results. For example, high-risk sexual behaviors or drug usage may result in AIDS and other sexually transmitted disease, cancer, cardiovascular disease, chronic obstructive pulmonary disease, unwanted and/or high-risk pregnancies, and a cycle of child abuse.

Of course, there are a number of pathways to poor health outcomes—e.g., stress, no exercise, poor eating habits, smoking. As noted, maltreatment has been related to “limbic irritability,” which in turn is linked to somatic, sensory, and behavioral symptoms (Dackis et al., 2012; Wekerle et al., 2014). Another trauma-related pathway includes childhood trauma’s effects on C-reactive protein—a biomarker of inflammation and tissue necrosis; linked to autoimmune disease (Glossary; Danese et al., 2007; De Bellis & Zisk, 2014; Jones et al., 2011; Maikovich-Fong et al., 2015; Szalai, 2004). New Zealand adults (birth cohort N = 1037) with histories of poverty, social isolation, or maltreatment showed higher rates of depression and age-related metabolic disease risks in adulthood (e.g., greater body mass index, total cholesterol, and higher levels of C-reactive protein, Danese et al., 2009; De Bellis & Zisk, 2014). Platinga et al. (2013) studied inflammation (C-reactive protein and other markers—e.g., intercellular adhesion molecule-1 [ICAM-1], fibrinogen, white blood cells)—in adults with or without PTSD in response to past traumas—i.e., a major disaster, very serious accident, or fire; being physically assaulted or raped; seeing another person killed, badly hurt, or a dead body; or hearing about something horrible that has happened to someone you are close to (N = 562 twin males—238 pairs). Trauma-exposed individuals with PTSD had significantly higher levels of c-reactive protein and ICAM-1 compared to those without PTSD (Platinga et al., 2013).

Adverse Childhood Experience Type and Other Outcomes

Interpersonal violence has been a robust predictor of negative psychosocial outcomes (Hodges et al., 2013). ACEs have been linked to negative academic outcomes and school dropout as well as to mental health and health problems (Moses & Villodas, 2017). Up to two thirds of individuals who enter substance abuse treatment report a history of some form of maltreatment (Wekerle et al., 2014). Wekerle et al. note that a sexual abuse history is linked to impairments in self-regulation, self-concept, and psychological disturbances (e.g., depression, dissociation, PTSD). While neglect may be more likely to result in delayed physical development and dependence issues, physical abuse, neglect, and/or sexual abuse may result in social, emotional, and interpersonal problems, which may influence ongoing development.

Based on a nationally representative US survey, ACEs are among variables associated with chronic school absenteeism (ages 0–17; Stempel et al., 2017)—e.g., maltreatment, parental substance
use, family conflict, and poverty; poor school climate and neighborhood violence. Odds were higher for absenteeism with two or more ACEs. In addition to missing critical learning opportunities, chronic absenteeism has predicted school dropout (better predictor than low grades or standardized test scores). School dropouts have been shown to experience higher levels of chronic diseases, substance abuse, mental health problems, and early death.

Although most maltreated children do not later commit crimes, the risk of doing so is higher than in the general population (Wekerle et al., 2014). Juvenile offenders (e.g., delinquency; trading sex) with histories of ACEs have been more difficult to rehabilitate and more likely to re-offend (N = 64,329; ages 11–22 adjudicated before age 18; Naramore et al., 2017). In addition to criminality, ACEs have been linked to risky sexual behaviors and to revictimization as well as to becoming sexual offenders. For males, any type of maltreatment is linked to alienation, inappropriate sexual behavior, and social incompetence in adolescence (Wekerle et al., 2014). Studies have found, for childhood maltreatment, that women report more self-capacity disturbance—i.e., in interpersonal relatedness, identity, and affect regulation—and more relationship difficulties than men (Bigras, Godbout, & Briere, 2015). For women, a sexual abuse history is associated with adult sexual adjustment difficulties—e.g., anxiety, low arousal, flashbacks, guilt, use of sex as an interpersonal strategy (Wekerle et al., 2014). Multiple ACEs (nearly all of 10 types) were more prevalent among girls engaged in trafficking sex (prostitution) compared to other offenders (Naramore et al., 2017). These behaviors put them particularly at risk of revictimization throughout adulthood. For such youth, it is important that interventions ensure consistent contact with caring adults in protective environments, ensure that belonging and self-esteem needs are met healthfully, and include appropriately monitored positive peer relationships and social media contacts screened for possible predators.

ACEs are risk factors for mental health problems—e.g., self-injury, bipolar disorder, catatonia, PTSD, depression, anxiety, personality disorders (Benarous et al., 2017; Beutel et al., 2017; Thomassin, Shaffer, Madden, & Londino, 2016; Welles, Patel, & Chilton, 2017; Chapter 15). Although bullying has been strongly linked to self-injury (SI), ACEs, especially emotional abuse and neglect, have been related to SI as well (Brown & Plener, 2017; Thomassin et al., 2016). For those with ACEs, symptoms such as anxiety and depression may make it difficult to deal with life’s challenges (Beutel et al., 2017). Helplessness and low self-efficacy may interfere with adaptive coping such as help-seeking and functional internal beliefs and self-talk. In turn, these results may lead to more depression, anxiety, and somatic difficulties. For young adults, ACEs’ link to depression has been increased with high levels of exposure to community violence (N = 103; Welles et al., 2017). Although self-efficacy—belief in one’s own ability to draw on motivation, cognitive resources, and action plans to meet a situation’s demands—did not influence ACEs’ link to depression, both self-efficacy and the hope of employment mildly reduced the association between community violence and depression.

Domestic or Intimate Partner Violence (IPV)

Youth raised in households with family violence (intimate partner violence, IPV) are at risk of mental health difficulties (e.g., ongoing sadness), problematic health, and cognitive and social problems (Harris, York, & Giardino, 2015; for high-reactive infants at 7 months and 15 months, higher asthma, and higher cortisol 20 min. after task; Lamb, Humphreys, & Hegarty, 2018). Such youth may be unintentionally injured during IPV or become victims of maltreatment as well. They have often had lower levels of immunization and higher levels of risk-taking (Bair-Merritt, Blackstone, & Feudtner, 2006). Youth exposed both to maltreatment and domestic violence have had greater emotional and behavioral problems than youth exposed to one of the two types of trauma (Maikovich-Fong et al., 2015). Although less studied, very young as well as older children are affected by spousal abuse (Osofsky, 2018). During the first year of life, infants are able to recognize
fearful facial expressions. Parental conflict has been linked to infants’ negative personality traits (Chapter 5). Early relationships influence young children’s abilities to trust and to develop positive relationships across life as well as influence ongoing mental health (Osofsky, 2018). Early intervention is recommended.

Domestic violence has been linked to both short- and long-term consequences such as behavioral, emotional, cognitive, physical, and social difficulties (Bowyer, Swanston, & Vetere, 2015). For example, children have described an ongoing sadness that interfered with their inter-relating at school and after (Lamb et al., 2018). For children exposed to interpersonal violence, shifting, discordant views of the father may develop—e.g., the kind father who does everything for his children vs the mean, violent father who hurts mother and should be punished (Staf & Almqvist, 2015). Conflicting or confused feelings also have included being so afraid of a father that a child never dared to be angry with him or feeling both angry with and missing an absent father. Children exposed to IPV may be confronted directly with violence or threats during which they learned to suppress their own feelings or desires, learned to avoid sharing information in order to avoid escalation or because it was ignored, felt in a constant state of unsafety and uncertainty, had a need to take control in a parenting way, and/or had an ongoing sense of powerlessness (U.K. youth ages 10–16, Bowyer et al., 2015; Swedish children ages 8–13; Staf & Almqvist, 2015). Memory confusion or forgetfulness, a compulsion to be compliant or to be controlling, self-protective strategies (dissociation, suppression, or aggression), and/or suppression of feelings and desires may become a continuing style.

Information was elicited from a small number of youth, ages 6–19, related to their views of their spousal abusing fathers (Lamb et al., 2018). This information prescribes targets of intervention. Even though a few youth wanted nothing to do with their fathers, all of them wanted their fathers to make some reparative action that would allow them to move on with their lives. Most youth wanted fathers to admit they had done something wrong, did not want excuses/reasons for the father’s behavior, and wanted a sincere apology (including owning up to his behavior). Some youth had heard repeated apologies before, followed by repeated offenses. Some youth wanted a sincere apology followed by some form of penance—e.g., jail time; accepting that their children don’t trust them and do feel weird around them; actions that prove contrition (not bribes); fathers getting help so they can be a father that youth are not scared of; to actually make them feel safe; not get angry and say mean things; positively co-parent with the mother; to stop diminishing the mother. Some youth wanted actual trust building, not reassurance. Others thought actual change was not possible for the father. Their fathers had “played the good-guy” and had not ceased the abuse. Cessation of abuse was/is essential.

**Natural and Man-Made Disasters**

Natural disasters may affect a child’s personal, interpersonal, and community life. Routines, families, and communities may be in a state of disarray after disasters (Bernstein & Pfefferbaum, 2018). Natural (e.g., hurricanes, tornadoes, brush fires) and man-made disasters (e.g., oil spills, nuclear plant accidents) also have been linked to a number of mental health problems—e.g., PTSD, anxiety, depression, aggression. As noted, post-disaster reactions are often linked to severity of exposure, to number of trauma experiences (during and prior to the disaster), and/or to adverse life—environmental conditions as well as to child intrinsic issues such as genetics, personality, and resilience factors (Masten & Osofsky, 2010; Nader, 2008; Nader & Fletcher, 2014). Trauma also may affect personality and neurobiology. For example, a study of Hurricane Sandy showed that infants’ in utero exposure alone had a considerable impact on both infant temperament and developmental trajectory of temperament from infancy to childhood (Zhang, Su, Li, & Chen, 2018a). Pre-natal maternal stress was a robust predictor of 6-month-old infants’ dysregulated affective traits and both positive and negative emotional reactivity—i.e., higher pleasure seeking, greater approach tendencies;
higher perceptual sensitivity (to environmental stimuli); more vigilance/fearfulness; affiliation problems (low cuddliness); more attention problems (duration of orientation). This profile is considered adaptive in a threatening environment. In utero stress exposed infants showed improvements in fearfulness by age two. Cuddliness decreased from six to 18 months, then improved.

After a natural disaster, the prevalence of youth mental health problems tends to decrease over time (McLaughlin et al., 2010). However, the severity or complexity of some disasters has been linked to increased levels of serious emotional disturbance over time (i.e., considerably greater than predisaster prevalence, McLaughlin et al., 2010; Nader, 1997). Complex disasters with multiple types of and/or opportunities for exposures may have more complex and persistent outcomes. After complex events, symptoms may be prolonged and may include, for example, persistent PTSD, aggression, emotion dysregulation, depression, anxiety, and emotional distress (Hansel et al., 2013; Nader, 2008; Osofsky et al., 2015a). Ten years after a tornado that included multiple traumatic exposures—e.g., life threat, witnessing deaths and injuries, multiple losses of many well-known individuals, and futile attempts at rescue or resuscitation—when youth were in or graduating from high school, treated children showed improvements. Some youth exhibited a variety of continued or delayed onset reactions—e.g., personality changes; greater intensity of emotional reactions; no initial trauma reported but a panic attack after a tornado-related SAT test question. The community as a whole seemed to change—e.g., increased expectations of danger and of bad experiences (Nader, 1997, 2015).

**Symptom Trajectories After Disasters**

Some children have been followed across time after disasters. For children followed across time after Hurricane Andrew, also a high-impact disaster, La Greca and colleagues (2013) found three main trajectories of PTS reactions following disaster as well as a delayed trajectory (N = 568, third to fifth graders): resilient (37%), recovering (43%), and chronic distress (20%). Youth who exhibit chronic distress a year or more after an event have often been shown to have persistently high levels of PTS. Delayed trajectories did not differ from chronic distress trajectories for the youth exposed to Hurricane Andrew (La Greca et al., 2013). PTSD with delayed expression (DSM-5) is PTSD that is diagnosable after six months following an event (full criteria not met before then; APA, 2013). It can be persistent and debilitating (Hartman, 2014; see Nader & Fletcher, 2014).

Children in New Orleans (42% were still displaced) were assessed for levels of social support in separate domains and PTS at four time points from 3–7 months after Hurricane Katrina to 25–27 months after (N = 426; Lai et al., 2018). Greater PTSS were associated with avoidance of sources of social support, lower perceived levels of social support, or selected supportive relationships. Initial PTSS predicted perceived decreased parental, teacher, and peer social support (especially parent and peer support)—i.e., whether they felt understood, could talk to them, spent time with them. At time 4, children perceived greater support from parents and peers. Increased support may have been related to reductions in parent and peer distress, that prolonged distress may trigger greater response, and/or some return of normalcy made support easier to provide (or perceive). Low peer social support, rather than parent or teacher support, 13–17 months after Katrina was linked to higher PTSS at 19–24 months after.

After an earthquake in China, children were assessed four months after and more than two years, four years, and five years later (Cheng, Liang, Fu, & Liu, 2018). PTSD symptoms four months after predicted depressive symptoms more than two years later; depressive symptoms at four months after predicted PTSD symptoms more than two years later. Depressive symptoms more than two years later predicted PTSD symptoms more than three years later; depressive symptoms more than three years later predicted PTSD symptoms more than four years later.
Long-Term Effects of Childhood Trauma

Risk Factors After Disasters

Child risk factors and event factors contribute to reactions to natural disasters (Chapter 4). In the Hurricane Andrew study, children in the chronically distressed trajectory showed greater odds of reporting high anxiety, lower social support, more intervening stressful life events, and higher use of poor emotion regulation strategies (La Greca et al., 2013). After an earthquake in China, being female, poor parental relationships, and higher exposure levels were risk factors for PTSD or depressive symptoms (Cheng et al., 2018). Zuromski et al. (in press) found suicidal ideation in 5% of adolescents following tornado exposure (N = 2000). Even controlling for symptoms of PTSD and depression, prior interpersonal violence exposure was most robustly related to suicidal ideation. Emotional abuse and depression after an earthquake contributed to suicide risk, with emotional neglect and PTSD making somewhat smaller contributions (N = 6132 children and adolescents, Tang et al., 2018). Mediation analysis suggested that PTSD and depression symptoms partially mediated the link between suicidality and emotional neglect or abuse. Symptom scores were generally higher for females than for males—i.e., higher PTSD, depression and suicidality. Depression and suicidality were more common for older youth.

A number of factors have been related to persistence. Three years after Hurricane Katrina, children and adolescents with high stress exposure had the greatest likelihood of continued serious emotional distress (McLaughlin et al., 2010; Box 3.4). Hurricane Katrina overwhelmed the coping resources of many children, regardless of their pre-hurricane functioning (McLaughlin et al., 2010). For Hurricane Katrina, risk factors for persistence of reactions have included ongoing stress—e.g., from long-term family or community disruption following disaster; separation from a parent; parental unemployment; guests in the home; prior decrements in functioning (only among youth with low to moderate hurricane stress); highest levels of hurricane stress—e.g., severe threat to life, witnessing: injuries, bodies, deaths; lower levels of environmental and relational support; prior traumatic experience; and being female (Hansel et al., 2013; McLaughlin et al., 2010; Box 3.4). This is in agreement with other findings that cumulative stressors and exposure levels strongly influence child mental health outcomes. Highly exposed children were more likely to experience ongoing stressors—e.g., forced relocation after the storm, housing instability, ongoing disruption, lack of access to services, and dissolution of support networks (McLaughlin et al., 2010). Among adults, ongoing stress predicts persistence and delayed onset of PTSD; findings for youth have been mixed, which may be related to disaster severity or circumstances (sociodemographic factors were unrelated to findings, McLaughlin et al., 2010). In a follow-up study of Swedes exposed to the 2004 tsunami in Thailand, elevated risk of worsening mental health was related to prior life events as well as to exposure to life-threatening experiences and to loss of known individuals during the tsunami (Wahlström, Michelsen, Schulman, & Backheden, 2010).

War and Terrorism

In wartime, for young children, either separation or alterations in the parent–child relationship influence outcomes (Osofsky et al., 2015b). As early as World War II (WWII), young children have been observed during and after wartime experiences (Nader & Fletcher, 2014; Osofsky et al., 2015b). Freud and Burlingham (1943) observed that children who were separated from caregivers during WWII exhibited regression, aggression, depression, and withdrawal. War is among the traumas that often include multiple types of exposure—e.g., multiple instances and kinds of life threat, witnessing death or injury, separations, witnessing and/or experiencing torture, being used as or witnessing a human land mine, forced killing or injuring others, lack of life-necessary resources (e.g., food, water, medicine, clean air; e.g., Cook et al., 2015; Thabet et al., 2009; Boxes 13.1, 16.3)—which are associated with a number of adverse and sometimes complex mental health outcomes (Finkelhor et al., 2007). After concentration camp experiences, some latency age children
did well until they had difficulties in preadolescence (delayed onset or DSM 5 PTSD with delayed expression; Freud, A, 1954 in Hartman, 2014). PTSD with delayed expression has been associated with persistence and severity (see Nader, 2008). Thabet et al. (2009) suggest that children in war-torn countries may be more likely to have their social development inhibited, which may influence ongoing inter-relating. In part, changes in social development may be attributed to greater sanctioning of violence in their environments and to greater fear of others.

**War: Influencing Variables**

In adverse living conditions, such as war, whether resiliency factors (e.g., intellectual competence, creativity) lead to outcomes such as optimal development or delinquency depends, in part, on mediators such as a youth’s attentional style or emotion regulation and such as parental attitudes and behaviors toward the child (Punamäki et al., 2001). Qouta, Punamäki, and El-Sarraj (2008) found that loving and wise parenting, children’s flexible information processing, high cognitive capacity, flexible and multiple coping strategies, and narrative and symbolic nocturnal dreaming—i.e., dreams with a beginning, intensification or turning point, and an end; with bizarre, vivid, and symbolic scenes and themes, but with joyful feelings and happy endings—as well as social support and good peer relations served as protective factors for youth exposed to war. For former Ugandan child soldiers, Klasen et al. (2010) found protective associations for posttrauma resilience and fewer guilty cognitions, less desire for revenge, better family socioeconomic situations, and greater perceived spiritual support. On the other hand, Klasen et al. found higher levels of trauma and other symptoms for older former child soldiers. For the Sierra Leone former child soldiers, Betancourt et al. (2010) found less family acceptance for older than for younger children—older children may evoke less sympathy or more fear. Betancourt and colleagues found that nearly a third of the child soldiers improved over time (assessed baseline 2002; again in 2004 and 2008; N = 529). Nevertheless, a few child soldiers experienced an increase in symptoms over time. Family environment was central in results. For example, while toxic war experiences such as surviving rape or perpetrating violence were strongly linked to initial symptom levels, post-conflict family abuse and neglect were associated with higher levels of symptoms as well. Risk factors for worsening symptoms over time included death of a parent and post-conflict stigma in the community (Betancourt, Newnham, McBain, & Brennan, 2013b). Increases in family acceptance were associated with decreases in PTSD symptoms. Youth also showed improvements in internalizing symptoms over time related to improvements in parental mental health over time (Betancourt, McBain, Newnham, & Brennan, 2015b). Intergenerational effects of war and other traumas on children have been demonstrated repeatedly (Betancourt et al., 2015b; Danieli, 1998; see Saile, Ertl, Neuner, & Catani, 2015). Evidence shows that trauma can be passed on and that parental mental health is an important factor in children’s early and ongoing PTSD and other mental health problems (e.g., internalizing, externalizing) including after war (Betancourt et al., 2015b; Danieli, 1998; Saile et al., 2015).

**Rape During War**

Rape has been a part of war for thousands of years (Tanak, Bible). Kuwert and colleagues (2014) found that, compared to female long-term survivors of non-sexual WWII trauma, women exposed to war-related sexual violence (aged 12–26, during war; 1 to 71 events per person) reported greater severity of PTSD-related avoidance and hyperarousal symptoms, as well as anxiety more than six decades later (in 2009; total N = 129). Almost 81% of sexually violated women also reported severe sexual problems during their lifetimes (compared to 19% of women with non-sexual war trauma). Studies have also found increases in cortisol levels in long-term studies of war-rape survivors (Gola et al., 2011). In contrast, women with war-related sexual violence exposure also reported greater posttraumatic growth (Glossary, Chapter 4), despite less social acknowledgment as trauma survivors,
compared to survivors of non-sexual war trauma (Kuwert et al., 2014). Both controls and rape victims were exposed to multiple wartime experiences—e.g., forced displacement, looting, witnessing extreme violence including the killing of relatives, air raid experiences.

Conclusions

For all types of potentially traumatic events, trauma exposure in childhood is associated with numerous cascading and long-term effects for a significant number of children. Both long-term positive growth and negative reactions may follow a variety of traumas and stressors. Outcomes may be complex, reduce the quality of life, and undermine functioning. The complexity of events—e.g., severity and/or multiple types of exposures— increase the likelihood of multiple and/or persisting symptoms. For many types of trauma, there is evidence of a possible remedy for posttrauma immediate and ongoing reactions when appropriately timed interventions are provided (Nader, 2012a). For example, an intervention that facilitated high-quality parent/child attachment relationships with foster care providers showed effects on foster-placed children’s brain development (Zeanah et al., 2011b; Chapters 7 and 10). With the exception of the body of the corpus callosum and superior corona radiata, the foster care group did not significantly differ from the never-institutionalized group, suggesting a potential remediation of specific white matter pathways for children removed early in life from institutional care and placed in responsive families. As will be discussed in Chapter 4, the type, intensity, and persistence of reactions to traumatic events depends on a variety of factors, including the nature of the event, the risk and protective factors of the child, and her/his previous and ongoing environments.