Adverse Childhood Experiences Research Review

GOSOSY CONSORTIUM
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Chapter 1 Defining ACEs
Understanding Adverse Childhood Experiences

The United States, like all nations, faces multiple social and economic challenges that must be met to secure a promising future for its citizens. An integral part of overcoming those challenges is producing a well-educated, healthy adult population sufficiently skilled to participate effectively in a global economy and to become responsible stakeholders in a productive society. Increasing investments are being made in the preschool years to promote the foundations of learning as concerns continue to grow about the quality of public education and its capacity to prepare the nation’s future workforce. Although debates about early childhood policy focus almost entirely on educational objectives, science indicates that sound investments in interventions that reduce adversity and its effects on children are also needed to strengthen the foundations of physical and mental health, generating even larger returns to all of society. This growing scientific understanding about the common roots of health, learning, and behavior in the early years of life presents a potentially transformational opportunity for the future of pediatrics.¹

Children’s health is a nation’s wealth, as a sound body and mind enhance the capacity of children to develop a wide range of competencies that are necessary to become contributing members of a successful society.² Health is more than merely the absence of disease—it is an evolving human resource that helps children and adults adapt to the challenges of everyday life, resist infections, cope with adversity, feel a sense of personal well-being, and interact with their surroundings in ways that promote successful development.

Adverse events or experiences that occur early in childhood can have lifelong consequences for both physical and mental well-being. Only recently have medical investigators in primary care settings begun to examine associations between childhood abuse and adult health risk behaviors and disease. These associations are important because it is now clear that the leading causes of morbidity and mortality in the United States are related to health behaviors and lifestyle factors; these factors have been called the “actual” causes of death. Insofar as abuse and other potentially damaging childhood experiences contribute to the development of these risk factors, then these childhood exposures should be recognized as the basic causes of morbidity and mortality in adult life.³

¹ (“The Lifelong Effects of Early Childhood Adversity and Toxic Stress”, 2017)
² (“The Foundations of Lifelong Health Are Built in Early Childhood”, 2010)
³ (Felitti, 1998)
Traumatic experiences during childhood, including physical abuse and the adversities that accumulate for children reared in persistent poverty, may disturb the neurobiological systems that guide physiological and behavioral responses to stress, potentially for the remainder of an individual's life. Altering these regulatory mechanisms (e.g., setting the stress response system on a “short fuse”) can permanently increase the risks of disease, and even a shortened life span, by undermining the response of the body to the stressors of everyday life. These alterations to developing biological systems can lead to greater susceptibility to a wide range of illnesses well into the adult years, even in the absence of any conscious memory of early trauma.  

Beyond its effect on individuals, poor health early in life also imposes significant societal costs that are borne by those who remain healthy. For example, when large numbers of children become ill because they did not receive their immunizations, the entire population is vulnerable to epidemics of infectious diseases. Similarly, the consequences of adversity and poor health in childhood can lead to higher rates of chronic diseases in adults, including diabetes, hypertension, cardiovascular disease, and cancer, as well as depression, anxiety disorders, addictions, and other mental health impairments. These conditions affect all of society by reducing the productivity of the workforce and increasing the incidence of disability, the demand on medical facilities, and the costs of medical care. Thus, a focus on health promotion in the early childhood period—where evidence supports the promise of effective prevention programs that can change the trajectory of children’s lives—can help reduce the social and economic burdens of illness in childhood and throughout the adult years. This connection between early life experiences and the health of a nation underscores the importance of strategic investments in the care and protection of pregnant women, infants, and young children, and it suggests that most current attempts to prevent adult disease and create a healthier workforce may be starting too late. 

**Image Source:** [http://childsavers.org/trauma/](http://childsavers.org/trauma/)

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4 (“The Foundations of Lifelong Health Are Built in Early Childhood”, 2010)

5 (“The Foundations of Lifelong Health Are Built in Early Childhood”, 2010)
ADVERSE CHILDHOOD EXPERIENCES

looking at how ACEs affect our lives & society

WHAT ARE ACES?

Adverse Childhood Experiences (ACES) is the term given to describe all types of abuse, neglect, and other traumatic experiences that occur to individuals under the age of 18. The landmark Kaiser ACE Study examined the relationships between these experiences during childhood and reduced health and well-being later in life.

WHO PARTICIPATED IN THE ACE STUDY?

Between 1995 and 1997, over 17,000 people receiving physical exams completed confidential surveys containing information about their childhood experiences and current health status and behaviors. The information from these surveys was combined with results from their physical exams to form the study’s findings.

Image Source: Adverse Childhood Experiences infographic
Chapter 2
The History of the Original ACES study
How the ACE study got started

The ACE Study – probably the most important public health study many do not know about – had its origins in an obesity clinic on a quiet street in San Diego.

In 1985, Dr. Vincent Felitti, chief of Kaiser Permanente’s revolutionary Department of Preventive Medicine in San Diego, CA, could not figure out why more than half of the people in his obesity clinic dropped out each year for five years straight. Although people who wanted to shed as little as 30 pounds could participate, the clinic was designed for people who were 100 to 600 pounds overweight.

Felitti was a doctor whom patients trusted implicitly. The preventive medicine department he created had become an international beacon for efficient and compassionate care. Every year, more than 50,000 people were screened for diseases that tests and machines could pick up before symptoms appeared. It was the largest medical evaluation site in the world and was reducing health care costs before the need for those reductions became front-page news.

But the 50-percent dropout rate in the obesity clinic that Felitti started in 1980 was puzzling him. A cursory review of all the dropouts’ records astonished him — each had been successfully losing weight when leaving the program. Why would people who were 300 pounds overweight lose 100 pounds, yet drop out even though they were on a roll?

The situation “was ruining my attempts to build a successful program,” he recalls, and he was determined to find out why.

Felitti’s mystery turned into a 25-year quest involving researchers from the Centers for Disease Control and Prevention and more than 17,000 members of Kaiser Permanente’s San Diego care program. It would reveal that adverse experiences in childhood were very common, even in the white middle-class, and that these experiences are linked to every major chronic illness and social problem with which the United States grapples and which cost billions of dollars each year.

Felitti knew was that the obesity clinic had a serious problem in 1985 so he decided to dig deep into the dropouts’ medical records. This revealed that all of the dropouts had been born at a normal weight and did not gain weight slowly over several years.

“I had assumed that people who were 400, 500, 600 pounds would be getting heavier and heavier year after year. In 2,000 people, I did not see it once,” says Felitti. When they gained weight, it was abrupt and then they stabilized. If they lost weight, they regained all of it or more over a very short time.

This knowledge only added to the mystery so he decided to do face-to-face interviews with a couple hundred of the dropouts. He used a standard set of questions for everyone. For weeks, nothing unusual came of the inquiries. No revelations and no clues emerged.

The turning point in Felitti’s quest came by accident. The physician was running through yet another series of questions with yet another obesity program patient: How much did you weigh when you were born? How much did you weigh when you started first grade? How much did you weigh when you entered high school? How old were you when you became sexually active? How old were you when you married?
“I misspoke,” he recalls, “Instead of asking, ‘How old were you when you were first sexually active?’ I asked, ‘How much did you weigh when you were first sexually active?’ The patient, a woman, answered, ‘Forty pounds.’”

The patient burst into tears and added, “It was when I was four years old, with my father.”

Felitti suddenly realized what he had asked.

“I remembered thinking, ‘This is only the second incest case I’ve had in 23 years of practice. I didn’t know what to do with the information. About 10 days later, I ran into the same thing. It was very disturbing. Every other person was providing information about childhood sexual abuse. I thought, ‘This can’t be true. People would know if that were true. Someone would have told me in medical school.’”

Worried that he was injecting some unconscious bias into the questioning, he asked five of his colleagues to interview the next 100 patients in the weight program. “They turned up the same things,” he says.

Of the 286 people whom Felitti and his colleagues interviewed, most had been sexually abused as children. As startling as this was, it turned out to be less significant than another piece of the puzzle that dropped into place during an interview with a woman who had been raped when she was 23 years old. In the year after the attack, she told Felitti that she had gained 105 pounds.

“As she was thanking me for asking the question,” says Felitti, “she looks down at the carpet, and mutters, ‘Overweight is overlooked, and that’s the way I need to be.’”

During that encounter, a realization struck Felitti. It is a significant detail that many physicians, psychologists, public health experts, and policymakers have not yet grasped: The obese people that Felitti was interviewing were hundreds of pounds overweight, but they did not see their weight as a problem. For them, eating was a fix, a solution to the problem.

Eating soothed the anxiety, fear, anger, or depression — it worked like alcohol or tobacco or methamphetamines. Not eating increased their anxiety, depression, and fear to levels that were intolerable.

In addition, for many people just being obese solved a problem. The woman who had been raped felt as if she were invisible to men once she gained weight. In the case of a man beaten up when he was a skinny kid, being fat kept him safe. In another case, a father told his 7-year-old that the only reason he was not raping her 9-year-old sister was because she was fat. Losing weight increased their anxiety, depression, and fear to levels that were intolerable so they quit the program and re-gained the weight.

This discovery was the more important result of Felitti’s inquiry — the mind-shift that would begin spreading far beyond a weight clinic in San Diego. It would provide more understanding about the lives of millions of people around the world who use biochemical coping methods — including alcohol, marijuana, food, sex, tobacco, violence, work, methamphetamines, thrill sports — to escape intense fear, anxiety, depression, and anger.

Public health experts, social service workers, educators, therapists, and policy makers commonly regard addiction as a problem. Some, however, are beginning to understand that turning to drugs is an expected response to serious childhood trauma, and that telling people who smoke or overeat or overwork that
they should stop because these things are bad for them does not work when those behaviors provide a temporary, but gratifying, solution to a bigger problem.

Ella Herman was one of the people who participated in the obesity clinic but had dropped out. Herman, who owned a successful childcare center in San Diego, said she was sexually abused by multiple men as a young child. She married a man who abused her repeatedly and tried to kill her. With the help of her family, she fled with her children to San Diego, where she later remarried.

“I imagine I’ve lost 100 pounds about six times,” she recalled. “And gained it back.” Every time she lost weight and a man commented on her beauty, she became terrified and began eating. But she never understood the connection until she attended a meeting at which Felitti talked about what he had learned from patients. “He had a room full of people,” she said. “The more he talked the more I cried, because he was touching every aspect of my life. Somebody in the world understands, I thought.”

Herman later sent a letter to Felitti. “I want to thank you for caring enough about people to read all those charts and finding out what happens to all of us who are molested, raped, and abused in childhood,” she wrote. “...I suffered for years. The pain became so great I was thinking of jumping off the San Diego Bay Bridge....How many people may have taken their life because they had no program to turn to? How many lives can be saved by this program?”

in 1990, Felitti flew to Atlanta to give a speech to the of the North American Association for the Study of Obesity. The audience listened quietly and politely. When he finished, one of the experts stood up and blasted him. “He told me I was naïve to believe my patients, that it was commonly understood by those more familiar with such matters that these patient statements were fabrications to provide a cover explanation for failed lives!”

At dinner, Dr. David Williamson, an epidemiologist from the U.S. Centers for Disease Control and Prevention, sat next to the perplexed Felitti. Williamson was intrigued. He leaned over and “told me that people could always find fault with a study of a couple of hundred people,” says Felitti, “but not if there were thousands, and from a general population, not a subset like an obesity program. I turned to him and said, ‘That’s not a problem.’” Williamson invited Felitti to meet with a small group of researchers at the Centers for Disease Control. Dr. Robert Anda, a medical epidemiologist, was among them.

Anda began his career as a physician but became intrigued with epidemiology and public health. When he met Felitti, he had been studying how depression and feelings of hopelessness affect coronary heart disease. He noticed that depression and hopelessness were not random. “I became interested in going deeper, because I thought that there must be something beneath the behaviors that were generating them,” says Anda.

Kaiser Permanente in San Diego was a perfect place to do a mega-study. More than 50,000 members came through the department each year for a comprehensive medical evaluation. Every person who came through the Department of Preventive Medicine filled out a detailed biopsychosocial (biomedical, psychological, social) medical questionnaire prior to undergoing a complete physical examination and extensive laboratory tests. It would be easy to add another set of questions. In two waves, Felitti and Anda asked 26,000 people who came through the department “if they would be interested in helping us understand how childhood events might affect adult health,” says Felitti. Of those, 17,421 people agreed.
Before they added the new trauma-oriented questions, Anda spent a year pouring through the research literature to learn about childhood trauma, and focused on the eight major types that patients had mentioned so often in Felitti’s original study and whose individual consequences had been studied by other researchers. These eight included three types of abuse — sexual, verbal, and physical. It also included five types of family dysfunction — a parent who is mentally ill or alcoholic, a mother who is a domestic violence victim, a family member who has been incarcerated, a loss of a parent through divorce or abandonment. He later added emotional and physical neglect for a total of 10 types of adverse childhood experiences (ACEs).

The initial surveys began in 1995 and continued through 1997, with the participants followed subsequently for more than 15 years. “Everything we’ve published comes from that baseline survey of 17,421 people,” says Anda, as well as what was learned by following those same people for so long.

When the first results of the survey were due to come in, Anda was at home in Atlanta. Late in the evening, he logged into his computer to look at the findings. He was stunned. “I wept,” he says. “I saw how much people had suffered and I wept.”

“This was the first time that researchers had looked at the effects of several types of trauma, rather than the consequences of just one. What the data revealed was mind-boggling.”

**Method of the Original ACE Study**

The CDC-Kaiser Permanente Adverse Childhood Experiences (ACE) Study is one of the largest investigations ever conducted to assess connections between chronic stress caused by early adversity and later-life health. The study began with a partnership between Kaiser Permanente and the U.S. Centers for Disease Control and Prevention. This study is based at Kaiser Permanente’s San Diego Health Appraisal Clinic. The Adverse Childhood Experiences (ACE) Study was undertaken in a primary care setting to describe the long-term relationship of childhood experiences to important medical and public health problems. The ACE Study is assessing, retrospectively and prospectively, the long-term impact of abuse and household dysfunction during childhood on the following outcomes in adults: disease risk factors and incidence, quality of life, health care utilization, and mortality.

The original ACE Study was conducted at Kaiser Permanente from 1995 to 1997 with two waves of data collection. Over 17,000 Health Maintenance Organization members from Southern California receiving physical exams completed confidential surveys regarding their childhood experiences and current health status and behaviors. All 13,494 Kaiser Health Plan members who completed standardized medical evaluations at the Health Appraisal Clinic between August–November of 1995 and January–March of 1996 were eligible to participate in the ACE Study. Health appraisals included completion of a

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6 (Stevens, 2017)
7 (Felitti, 1998)
standardized medical questionnaire that requested demographic and biopsychosocial information, review of organ systems, previous medical diagnoses, and family medical history. A health care provider completed the medical history, performed a physical examination, and reviewed the results of laboratory tests with the patient. The CDC continues ongoing surveillance of ACEs by assessing the medical status of the study participants via periodic updates of morbidity and mortality data.\(^8\)

Anda and Felitti developed a scoring system for ACEs. Each type of adverse childhood experience counted as one point. If a person had none of the events in her or his background, the ACE score was zero. If someone was verbally abused thousands of times during his or her childhood, but no other types of childhood trauma occurred, this counted as one point in the ACE score. If a person experienced verbal abuse, lived with a mentally ill mother and an alcoholic father, his ACE score was three.\(^9\)

Things start getting serious around an ACE score of 4. Compared with people with zero ACEs, those with four categories of ACEs had a 240% greater risk of hepatitis, were 390% more likely to have chronic obstructive pulmonary disease (emphysema or chronic bronchitis), and a 240% higher risk of a sexually-transmitted disease.\(^10\)

They were twice as likely to be smokers, 12 times more likely to have attempted suicide, seven times more likely to be alcoholic, and 10 times more likely to have injected street drugs.\(^11\)

People with high ACE scores are more likely to be violent, to have more marriages, more broken bones, more drug prescriptions, more depression, more auto-immune diseases, and more work absences.\(^12\)

“Some of the increases are enormous and are of a size that you rarely ever see in health studies or epidemiological studies. It changed my thinking dramatically,” says Anda.\(^13\)

\(^8\) ("About the CDC-Kaiser ACE Study", 2016)
\(^9\) (Stevens, 2017)
\(^10\) (Stevens, 2017)
\(^11\) (Stevens, 2017)
\(^12\) (Stevens, 2017)
\(^13\) (Stevens, 2017)
## Understanding ACE Scores

### ACE SCORE Questionnaire

Prior to your 18th birthday:

<table>
<thead>
<tr>
<th>Question</th>
<th>No/Yes Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did a parent or other adult in the household often or very often...</td>
<td></td>
</tr>
<tr>
<td>Swear at you, insult you, put you down, or humiliate you? or Act</td>
<td>No/Yes, enter 1</td>
</tr>
<tr>
<td>in a way that made you afraid that you might be physically hurt?</td>
<td></td>
</tr>
<tr>
<td>Did a parent or other adult in the household often or very often...</td>
<td></td>
</tr>
<tr>
<td>Push, grab, slap, or throw something at you? or Ever hit you so hard</td>
<td>No/Yes, enter 1</td>
</tr>
<tr>
<td>that you had marks or were injured?</td>
<td></td>
</tr>
<tr>
<td>Did a parent or other adult in the household often or very often...</td>
<td></td>
</tr>
<tr>
<td>Push, grab, slap, or throw something at you? or Ever hit you so hard</td>
<td>No/Yes, enter 1</td>
</tr>
<tr>
<td>that you had marks or were injured?</td>
<td></td>
</tr>
<tr>
<td>Did an adult or person at least 5 years older than you ever...</td>
<td></td>
</tr>
<tr>
<td>Touch or fondle you or have you touch their body in a sexual way? or</td>
<td>No/Yes, enter 1</td>
</tr>
<tr>
<td>Attempt or actually have oral, anal, or vaginal intercourse with you?</td>
<td></td>
</tr>
<tr>
<td>Did you often or very often feel that ... No one in your family loved</td>
<td>No/Yes, enter 1</td>
</tr>
<tr>
<td>you or thought you were important or special? or Your family didn’t</td>
<td></td>
</tr>
<tr>
<td>look out for each other, feel close to each other, or support each</td>
<td></td>
</tr>
<tr>
<td>other?</td>
<td></td>
</tr>
<tr>
<td>Did you often or very often feel that ... You didn’t have enough to</td>
<td>No/Yes, enter 1</td>
</tr>
<tr>
<td>eat, had to wear dirty clothes, and had no one to protect you? or</td>
<td></td>
</tr>
<tr>
<td>Your parents were too drunk or high to take care of you or take you to</td>
<td></td>
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<tr>
<td>the doctor if you needed it?</td>
<td></td>
</tr>
<tr>
<td>Were your parents ever separated or divorced?</td>
<td>No/Yes, enter 1</td>
</tr>
<tr>
<td>Was your mother or stepmother:</td>
<td>No/Yes, enter 1</td>
</tr>
<tr>
<td>Often or very often pushed, grabbed, slapped, or had something</td>
<td></td>
</tr>
<tr>
<td>thrown at her? or Sometimes, often, or very often kicked, bitten,</td>
<td></td>
</tr>
<tr>
<td>hit with a fist, or hit with something hard? or Ever repeatedly hit</td>
<td></td>
</tr>
<tr>
<td>over at least a few minutes or threatened with a gun or knife?</td>
<td></td>
</tr>
<tr>
<td>Did you live with anyone who was a problem drinker or alcoholic, or</td>
<td>No/Yes, enter 1</td>
</tr>
<tr>
<td>who used street drugs?</td>
<td></td>
</tr>
<tr>
<td>Was a household member depressed or mentally ill, or did a household</td>
<td>No/Yes, enter 1</td>
</tr>
<tr>
<td>member attempt suicide?</td>
<td></td>
</tr>
<tr>
<td>Did a household member go to prison?</td>
<td>No/Yes, enter 1</td>
</tr>
<tr>
<td>Now add up your “Yes” answers:</td>
<td></td>
</tr>
<tr>
<td>__This is your ACE Score</td>
<td></td>
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</table>
Adverse Childhood Experiences (ACEs) are common. Almost two-thirds of study participants reported at least one ACE, and more than one in five (20%) reported three or more ACEs. The study found a strong relationship between the number of childhood exposures and the number of health risk factors for leading causes of death in adults.  

In the last 14 years, Anda, Felitti and other CDC researchers have published more than 60 papers in prestigious peer-reviewed journals, including the Journal of the American Medical Association and the American Journal of Preventive Medicine. Other researchers have referenced their work more than 1,500 times. Anda and Felitti have flown around the U.S., Canada and Europe to give hundreds of speeches.

Their inquiry “changed the landscape,” says Dr. Frank Putnam, director of the Mayerson Center for Safe and Healthy Children at Cincinnati Children’s Hospital Medical Center and professor at the University of Cincinnati Department of Pediatrics. “It changed the landscape because of the pervasiveness of ACEs in the huge number of public health problems, expensive public health problems — depression, substance abuse, STDs, cancer, heart disease, chronic lung disease, diabetes.”

Adverse Childhood Experiences (ACEs) are categorized into three groups: abuse, neglect, and family/household challenges. Each category is further divided into multiple subcategories. Participant

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14 ("About the CDC-Kaiser ACE Study", 2016)
15 (Stevens, 2017)
demographic information is available by gender, race, age, and education. The prevalence of ACEs is organized by category.16

**Abuse**

**Emotional abuse:** A parent, stepparent, or adult living in your home swore at you, insulted you, put you down, or acted in a way that made you afraid that you might be physically hurt.

**Physical abuse:** A parent, stepparent, or adult living in your home pushed, grabbed, slapped, threw something at you, or hit you so hard that you had marks or were injured.

**Sexual abuse:** An adult, relative, family friend, or stranger who was at least 5 years older than you ever touched or fondled your body in a sexual way, made you touch his/her body in a sexual way, attempted to have any type of sexual intercourse with you.

**Household Challenges**

**Mother treated violently:** Your mother or stepmother was pushed, grabbed, slapped, had something thrown at her, kicked, bitten, hit with a fist, hit with something hard, repeatedly hit for over at least a few minutes, or ever threatened or hurt by a knife or gun by your father (or stepfather) or mother’s boyfriend.

16 (Stevens, 2017)
**Household substance abuse:** A household member was a problem drinker or alcoholic or a household member used street drugs.

**Mental illness in household:** A household member was depressed or mentally ill or a household member attempted suicide.

**Parental separation or divorce:** Your parents were ever separated or divorced.

**Criminal household member:** A household member went to prison.

**Neglect**

**Emotional neglect:** Someone in your family helped you feel important or special, you felt loved, people in your family looked out for each other and felt close to each other, and your family was a source of strength and support.

**Physical neglect:** There was someone to take care of you, protect you, and take you to the doctor if you needed it, you didn’t have enough to eat, your parents were too drunk or too high to take care of you, and you had to wear dirty clothes.

The ACE score, a total sum of the different categories of ACEs reported by participants, is used to assess cumulative childhood stress. Study findings repeatedly reveal a graded dose-response relationship between ACEs and negative health and well-being outcomes across the life course.

**As the number of ACEs increases so does the risk for the following**:  

<table>
<thead>
<tr>
<th>Alcoholism and alcohol abuse</th>
<th>Poor work performance</th>
<th>Early initiation of smoking</th>
</tr>
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<tbody>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>Financial stress</td>
<td>Early initiation of sexual activity</td>
</tr>
<tr>
<td>Depression</td>
<td>Risk for intimate partner violence</td>
<td>Adolescent pregnancy</td>
</tr>
<tr>
<td>Fetal death</td>
<td>Multiple sexual partners</td>
<td>Risk for sexual violence</td>
</tr>
<tr>
<td>Health-related quality of life</td>
<td>Sexually transmitted diseases</td>
<td>Poor academic achievement</td>
</tr>
<tr>
<td>Illicit drug use</td>
<td>Smoking</td>
<td>*This list is not exhaustive. For more outcomes see selected journal publications.¹⁷</td>
</tr>
<tr>
<td>Ischemic heart disease</td>
<td>Suicide attempts</td>
<td></td>
</tr>
<tr>
<td>Liver disease</td>
<td>Unintended pregnancies</td>
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</tbody>
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**Results**

The results of the ACE Study had two striking findings. First, ACEs are incredibly common—67 percent (two out of three people) of the study population had at least one ACE and 13 percent (one out of eight people) of the population had four or more ACEs. Secondly, there was a dose-response relationship between ACEs and numerous health problems. This means that the more ACEs a child has, the higher the

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¹⁷ (“About the CDC-Kaiser ACE Study”, 2016)
risk of developing chronic illnesses such as heart disease, chronic obstructive pulmonary disease (COPD), depression and cancer. Image Source

More than half of respondents reported at least one, and one-fourth reported more than two categories of childhood exposures. The study found a graded relationship between the number of categories of childhood exposure and each of the adult health risk behaviors and diseases that were studied (P < .001). Persons who had experienced four or more categories of childhood exposure, compared to those who had experienced none, had four- to 12-fold increased health risks for alcoholism, drug abuse, depression, and suicide attempt; a two- to four-fold increase in smoking, poor self-rated health, more than 50 sexual intercourse partners, and sexually transmitted disease; and a 1.4- to 1.6-fold increase in physical inactivity and severe obesity. The number of categories of adverse childhood exposures showed a graded relationship to the presence of adult diseases including ischemic heart disease, cancer, chronic lung disease, skeletal fractures, and liver disease. The seven categories of adverse childhood experiences were strongly interrelated and persons with multiple categories of childhood exposure were likely to have multiple health risk factors later in life.\(^\text{18}\)

The study found strong dose response relationship between the breadth of exposure to abuse or household dysfunction during childhood and multiple risk factors for several of the leading causes of

\(^{18}\) (Felitti, 1998)
death in adults. The findings suggest that the impact of these adverse childhood experiences on adult health status is strong and cumulative.\textsuperscript{19}

Because adverse childhood experiences are common and they have strong long-term associations with adult health risk behaviors, health status, and diseases, increased attention to primary, secondary, and tertiary prevention strategies is needed. These strategies include prevention of the occurrence of adverse childhood experiences, preventing the adoption of health risk behaviors as responses to adverse experiences during childhood and adolescence, and, finally, helping change the health risk behaviors and ameliorating the disease burden among adults whose health problems may represent a long-term consequence of adverse childhood experiences.\textsuperscript{20}

*Image Source*

Research over the last two decades confirms that children carry the effects of childhood experiences into adulthood. The challenges they face in school, life and, ultimately, the state of their health are often the symptoms of toxic stress. Toxic stress, unlike manageable stress, refers to the long-term changes in brain

\textsuperscript{19} ("About the CDC-Kaiser ACE Study", 2016)
\textsuperscript{20} ("About the CDC-Kaiser ACE Study", 2016)
architecture and organ systems that develop after extreme, prolonged and repeated stress goes untreated. Exposure to ACEs may put our children at higher risk for learning difficulties, emotional problems, developmental issues and long-term health problems.\textsuperscript{21}

Clearly, comprehensive strategies are needed to identify and intervene with children and families who are at risk for these adverse experiences and their related outcomes. Such strategies should include increased communication between and among those involved in family practice, internal medicine, nursing, social work, pediatrics, emergency medicine, and preventive medicine, and public health. Improved understanding is also needed of the effects of childhood exposure to domestic violence. Additionally, increased physician training is needed to recognize and coordinate the management of all persons affected by child abuse, domestic violence, and other forms of family adversity such as alcohol abuse or mental illness.\textsuperscript{22}

The ACE Study became even more significant with the publication of parallel research that provided the link between why something that happened to you when you were a child could land you in the hospital at age 50. The stress of severe and chronic childhood trauma — such as being regularly hit, constantly belittled and berated, watching your father often hit your mother — releases hormones that physically damage a child’s developing brain.\textsuperscript{23}

As early experiences shape the architecture of the developing brain, they also lay the foundations of sound mental health. Disruptions to this developmental process can impair a child’s capacities for learning and relating to others — with lifelong implications. By improving children’s environments — the relationships and experiences early in life -- society can address many costly problems, including incarceration, homelessness, and the failure to complete high school.\textsuperscript{24}

Significant mental health problems can and do occur in young children. Children can show clear characteristics of anxiety disorders, attention-deficit/hyperactivity disorder, conduct disorder, depression, posttraumatic stress disorder, and neurodevelopmental disabilities, such as autism, at a very early age. That said, young children respond to and process emotional experiences and traumatic events in ways that are very different from adults and older children. Consequently, diagnosis in early childhood can be much more difficult than it is in adults.\textsuperscript{25}

The interaction of genes and experience affects childhood mental health. Genes are not destiny. Our genes contain instructions that tell our bodies how to work, but the chemical “signature” of our environment can authorize or prevent those instructions from being carried out. The interaction between genetic predispositions and sustained, stress-inducing experiences early in life can lay an unstable foundation for mental health that endures well into the adult years.\textsuperscript{26}

Toxic stress can damage brain architecture and increase the likelihood that significant mental health problems will emerge either quickly or years later. Because of its enduring effects on brain development and other organ systems, toxic stress can impair school readiness, academic achievement, and both physical and mental health throughout the lifespan. Circumstances associated with family stress, such as persistent poverty, may elevate

\textsuperscript{21} ("Adverse Childhood Experiences", 2017)
\textsuperscript{22} ("About the CDC-Kaiser ACE Study", 2016)
\textsuperscript{23} (Stevens, 2017)
\textsuperscript{24} ("Early Childhood Mental Health", 2017)
\textsuperscript{25} ("Early Childhood Mental Health", 2017)
\textsuperscript{26} ("Early Childhood Mental Health", 2017)
the risk of serious mental health problems. Young children who experience recurrent abuse or chronic neglect, domestic violence, or parental mental health or substance abuse problems are particularly vulnerable.  

Some individuals demonstrate remarkable capacities to overcome the severe challenges of early, persistent maltreatment, trauma, and emotional harm, yet there are limits to the ability of young children to recover psychologically from adversity. Even when children have been removed from traumatizing circumstances and placed in exceptionally nurturing homes, developmental improvements are often accompanied by continuing problems in self-regulation, emotional adaptability, relating to others, and self-understanding. When children overcome these burdens, they have typically been the beneficiaries of exceptional efforts on the part of supportive adults. These findings underscore the importance of prevention and timely intervention in circumstances that put young children at serious psychological risk.

It is essential to treat young children’s mental health problems within the context of their families, homes, and communities. The emotional well-being of young children is directly tied to the functioning of their caregivers and the families in which they live. When these relationships are abusive, threatening, chronically neglectful, or otherwise psychologically harmful, they are a potent risk factor for the development of early mental health problems. In contrast, when relationships are reliably responsive and supportive, they can actually buffer young children from the adverse effects of other stressors. Therefore, reducing the stressors affecting children requires addressing the stresses on their families.

27 ("Early Childhood Mental Health", 2017)
28 ("Early Childhood Mental Health", 2017)
29 ("Early Childhood Mental Health", 2017)
Chapter 3- Epigenetics
Epigenetics

New research suggests that experiencing intense psychological trauma may have a genetic impact on a person’s future children.

A study examining the DNA of Holocaust survivors and their children found similar variations from the norm in both generations for the gene associated with depression and anxiety disorders. The findings imply that children of individuals who experience profound stress in life may be more likely to develop stress or anxiety disorders themselves.

The pattern — known as an epigenetic change because it affects the chemical marker for the gene rather than the gene itself — suggests that profound stress in the older generation translated into an adaptation that passed on to the next, said Dr. Rachel Yehuda, director of Mount Sinai’s Traumatic Stress Studies Division and leader of the study.

Scientists have long known that parents pass genetic traits down to their children, but Yehuda’s research suggests that life experiences can also produce chemical effects in DNA. Similar research has been done into the effects of famine on later generations, as well as stress levels in the children of women who survived the September 11th attacks in the United States.

Although the study involved just 32 Holocaust survivors and their offspring, Yehuda said the findings provide proof of concept that could lead to more research into exactly how the changes occur.

The findings may provide an explanation for why people like Karen Sonneberg struggle with anxiety and stress disorders despite having never experienced trauma themselves. Sonneberg’s Jewish parents both suffered under Nazi oppression in Germany at a young age. She said many of her friends with similar backgrounds experienced similar struggles with anxiety.
“There were definitely challenges that quote unquote ‘American’ kids didn’t seem to have experienced,” Sonneberg said.30

Since the 1970s, researchers had known that the tightly wound spools of DNA inside each cell’s nucleus require something extra to tell them exactly which genes to transcribe, whether for a heart cell, a liver cell or a brain cell.

One such extra element is the methyl group, a common structural component of organic molecules. The methyl group works like a placeholder in a cookbook, attaching to the DNA within each cell to select only those genes necessary for that particular cell’s proteins. Because methyl groups are attached to the genes, residing beside, but separate from, the double-helix DNA code, the field was dubbed epigenetics, from the prefix epi (Greek for over, outer, above).

Originally these epigenetic changes were believed to occur only during fetal development. But pioneering studies showed that molecular bric-a-brac could be added to DNA in adulthood, setting off a cascade of cellular changes resulting in cancer. Sometimes methyl groups attached to DNA thanks to changes in diet; other times, exposure to certain chemicals appeared to be the cause. Szyf showed that correcting epigenetic changes with drugs could cure certain cancers in animals.

Geneticists were especially surprised to find that epigenetic change could be passed down from parent to child, one generation after the next. A study from Randy Jirtle of Duke University showed that when female mice are fed a diet rich in methyl groups, the fur pigment of subsequent offspring is permanently altered. Without any change to DNA at all, methyl groups could be added or subtracted, and the changes were inherited much like a mutation in a gene.

If diet and chemicals can cause epigenetic changes, could certain experiences — child neglect, drug abuse or other severe stresses — also set off epigenetic changes to the DNA inside the neurons of a person’s brain? That question turned out to be the basis of a new field, behavioral epigenetics, now so vibrant it has spawned dozens of studies and suggested profound new treatments to heal the brain.

According to the new insights of behavioral epigenetics, traumatic experiences in our past, or in our recent ancestors’ past, leave molecular scars adhering to our DNA. Jews whose great-grandparents were chased from their Russian shtetls; Chinese whose grandparents lived through the ravages of the Cultural Revolution; young immigrants from Africa whose parents survived massacres; adults of every ethnicity who grew up with alcoholic or abusive parents — all carry with them more than just memories.

Like silt deposited on the cogs of a finely tuned machine after the seawater of a tsunami recedes, our experiences, and those of our forebears, are never gone, even if they have been forgotten. They become a part of us, a molecular residue holding fast to our genetic scaffolding. The DNA remains the same, but psychological and behavioral tendencies are inherited. You might have inherited not just your grandmother’s knobby knees, but also her predisposition toward depression caused by the neglect she suffered as a newborn.

Or not. If your grandmother was adopted by nurturing parents, you might be enjoying the boost she received thanks to their love and support. The mechanisms of behavioral epigenetics underlie not only

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30 (“Can trauma be passed to next generation through DNA? | PBS NewsHour Extra”, 2015)
deficits and weaknesses but strengths and resiliencies too. And for those unlucky enough to descend from miserable or withholding grandparents, emerging drug treatments could reset not just mood, but the epigenetic changes themselves. Like grandmother’s vintage dress, you could wear it or have it altered.

Last year researchers from Yale University published another study of human blood samples, comparing 14 children raised in Russian orphanages with 14 other Russian children raised by their biological parents. They found far more methylation in the orphans’ genes, including many that play an important role in neural communication and brain development and function.

“Our study shows that the early stress of separation from a biological parent impacts long-term programming of genome function; this might explain why adopted children may be particularly vulnerable to harsh parenting in terms of their physical and mental health,” said psychologist Elena Grigorenko of the Child Study Center at Yale. “Parenting adopted children might require much more nurturing care to reverse these changes in genome regulation.”

Sue Armstrong has been investigating recent developments in our understanding of the impact of severe trauma, how it affects not just the mind but also the body, creating physical changes that also need to be addressed. Those who lived through the Holocaust, for example, who were in prison camps or were forced to hide in dark, cramped, inhuman conditions perpetually afraid that at any moment they might be discovered, have been found to have low levels of cortisol.

This is the hormone that the body releases into the bloodstream as we experience panic and fear and whose main function is to mobilize our energy and will to survive. Much more significant, though, is the discovery that the descendants of those who have suffered war, violence, incessant fear also have lower levels of cortisol than average. Scientists now have proof that trauma is passed on, or rather its impact on how we feel, and how we behave, can be superimposed on the DNA of the next generation.

Dr Rachel Yehuda works in New York and had a critical opportunity to investigate the effects of trauma on body and mind after 9/11. “We heard from Cathy Langford, who woke up on the morning of 11 September and realized she was going into labor. It was a beautiful day and she and her husband at first thought what a perfect day on which to give birth. But they were living in an apartment within sight of the Twin Towers and as they ate breakfast their building shook and they heard a huge explosion. Looking out from their kitchen window they could see clouds of smoke turning to black, and on the ground the bodies of those who in desperation had jumped out of the building. How could she give birth now?”

Two hundred women were in labor on or around that day in the city and have been found, along with their babies, to have low levels of cortisol. Yehuda says these discoveries should alert us to the importance of how we react and respond to trauma survivors. Their prospects for recovery, she argues, are dependent on what happens to them immediately after the trauma.

Cortisol, or hydrocortisone, is a steroid hormone (glucocorticoid) that is vital to the endocrine system released by the adrenal cortex to combat stress. Maintaining healthy levels of cortisol is essential to

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31 (Hurley, 2013)  
32 (Chisholm, 2016)
keeping in good health. Low cortisol levels can greatly affect the quality of life, causing a plethora of unpleasant symptoms and health issues, both physical and psychological.

Cortisol is a steroid hormone produced by the zona fasciculata, the middle of three layers of the adrenal cortex located in the kidneys, and regulated by the pituitary gland in the brain. This hormone is important for the immune system, regulating blood pressure, the cardiovascular system, metabolism, and more.

Cortisol is nicknamed the “stress hormone” for its role in the fight or flight response, a physiological mechanism that releases hormones like adrenalin and cortisol to prioritize important body functions under stressful circumstances.

When the adrenal glands become inactive or fail to produce sufficient amounts of cortisol, the condition is called primary hypoadrenalism. Another name for this condition is Addison’s disease, an autoimmune disease in which antibodies are sent to attack the adrenal cortex. Because it is a chronic disorder, these hostile antibodies are detectable in the blood long before they begin to do significant, notable damage to the person’s adrenal cortex.

The symptoms of low cortisol, or hypoadrenalism, include:

- Mental and psychological ailments such as depression
- Faintness and dizziness
- Weakness and fatigue
- Heart palpitations
- Emotional hypersensitivity
- Inability to cope with stress
- Social anxiety
- Muscle weakness
- Headache, scalp ache, or general body ache
- Severe or dull lower back pain
- Extremely sensitive skin
- Nausea, diarrhea, and vomiting
- Abdominal pain and hunger pain despite an empty stomach
- Extreme craving for salty foods
- Anxiety and jitters
- Clumsiness and confusion
- Motion sickness
- Insomnia and dark circles under the eyes
- Low bladder capacity and symptoms of IBS
- Irregular or non-existent menstrual period

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33 (Paris, 2017)
Chapter 4: ACEs in Migrant Population
Trauma and Migrant Families and Youth

After making the decision to migrate to the US, immigrant parents and their children must next decide how best to migrate. Although the vast majority of immigrants (approximately 80%) enter the US with legal authorization on family, work, refugee, student or tourist visas, many Mexicans and other Central Americans have limited access to these visas and may enter without authorization. Even those who enter with legal authorization sometimes overstay their visas and join the ranks of the unauthorized population living in the US. Approximately 70% of the unauthorized immigrant population is of Mexican or other Central American origin.

Entry to the US without legal authorization can involve arduous journeys with exposure to extreme physical hardships as well as violence. Consequently, those who enter without authorization may be at substantial risk of trauma and the development of PTSD. Children immigrating at younger ages are particularly vulnerable to victimization during the migration journey (and can have fewer social resources to promote their resilience and forestall the development of mental health problems such as PTSD.) Alternatively, young children may sometimes be protected from developing PTSD after a traumatic exposure by lack of awareness due to cognitive immaturity. Adults can mitigate the risk of trauma during migration for themselves and their children by traveling as part of a larger family unit that can both offer protection from potential assailants and buffer family members from the effects of stress.34

A variety of factors influence parent’s decisions to migrate and to bring their children to the US. Among these, economic hardships in their home countries and previous experiences with migration to the US can critically shape their migration and settlement experiences. For children who immigrate, a protracted separation from parents who have immigrated earlier can add to the hardships experienced before and during migration and can result in family conflict when children are reunited with their parents in the US.

Many immigrants have lived in poverty prior to their migration to the US and/or have endured years of chronic stress and have been exposed to war and political violence. With limited education and income, these impoverished immigrants have few legal avenues for migrating to the US and often enter without authorization. Because of the clandestine nature of their migration, they are at increased risk for exposure to trauma and the development of PTSD.

While chronic poverty prior to migration can potentially increase the challenges of migration and settlement, previous visits to the US may facilitate migration and settlement. Immigrants learn through experience how best to navigate the migration process, avoid problems, and find work and resources to assist with their settlement. At the same time, each additional migration can lead to new trauma exposures and increase the risk of developing PTSD, especially for those entering without authorization.

Historically, males have undertaken the risk of migration while leaving their wives and children behind. In recent decades though, women have increasingly migrated alone or with their spouses while leaving their children in the care of friends or relatives. Researchers have estimated that almost one-third of foreign born children stay in their countries of origin with a relative before reuniting with their parents in the US. Scholars typically expect parent-child separation to increase the stress of migration and the risk of developing PTSD after exposure to trauma.

This may be especially true in the absence of an alternative caregiver with whom the child can form an emotional bond. Among refugee populations, forced family separation and the death of primary

34 (Perriera, & Ornelas, 2013)
caregivers result in the presence of unaccompanied children who display high levels of psychological distress.  

Upon entering the US, immigrants can be exposed to several additional hardships which both increase the likelihood that they will experience trauma and that trauma will result in subclinical or clinical levels of PTSD symptoms. In particular, research shows that immigrants with distinctive phenotypical characteristics or religious practices experience high rates of racial-ethnic discrimination in the US and elsewhere. Moreover, perceived racial-ethnic discrimination may act as a social stessor making some immigrants and ethnic minorities in the US feel threatened and powerless and as a biological stessor promoting biochemical changes that increase the risk of poor physical and mental health outcomes. Thus, some scholars argue that racial ethnic discrimination is not only stressful but potentially traumatizing.

As an economically disadvantaged group, Latino immigrants in the US find themselves often segregated into more impoverished and high-crime neighborhoods and schools where additional exposures to violence and discrimination can occur. These exposures can directly increase the risk for PTSD. Moreover, experiences of discrimination and neighborhood disorder marginalize immigrants and can keep them from accessing sources of institutional support in their communities which could alleviate the stresses of migration and settlement.

In contrast to discrimination and neighborhood disorder, the presence of strong family and social support systems typically protect parents and their children from exposure to trauma after migration and the development of PTSD. Household caregiving responsibilities and strict parental controls can leave immigrant children with little time or opportunity to engage in risky behaviors and imbue them with a sense of family obligation which motivates them to stay out of trouble. Additionally, family and social support systems can buffer immigrants from stress and promote resiliency across the life course. Thus, previous research consistently finds positive associations between familism (i.e. a strong connection and loyalty to family), social support, and mental health.

Finally, one of the most heavily researched aspects of the post-migration experience – acculturation – has an ambiguous theoretical influence on mental and physical health. Measured in a variety of ways (immigrant generation, years in the US, language usage, and scales measuring adaptation to US socio-cultural norms) acculturation cannot be expected to have a causual influence on exposure to trauma prior to or during migration. However, it may influence how immigrants deal with these stressful events and thus their risk for PTSD symptoms after migration. Years in the US can signal increased time since exposure to trauma for those exposed prior to or during migration; English language skills can provide a greater capacity to access health services and other institutional resources in the US; and adaptation to US socio-cultural norms can indicate a greater ease with navigating US social systems. Alternatively, time in the US can signal more cumulative exposure to post-migration discrimination and neighborhood disorder and the loss of Spanish-language skills can signal the weakening of protective ethno-cultural ties and diminished access to ethnocentric resources. Overall, too few studies with mixed results have considered the relationship between acculturation and PTSD to be conclusive.

Trauma occurs frequently in the lives of immigrant youth and their parents. More than anything else, extreme economic hardship, limited legal means for authorized entry to the US for poorer Mexicans and other Central Americans, and discrimination within the US increase the risk of trauma. These traumatic experiences can result in the development of acute and chronic mental health problems including PTSD, generalized anxiety, and depression.

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35 (Perriera, & Ornelas, 2013)
The consequences of poor mental health to parents and their children can be severe and include lower academic achievement among children, reduced employment opportunities and lost wages among parents, and stressful family relations. Thus, immigration policy reforms promoting safe and legal migrations and efforts to reduce discrimination and improve the settlement experiences of immigrants can promote civic engagement in their local communities as well as their health and ability to contribute to the US economy.\textsuperscript{36}

The Migration Process and the Risk for Trauma: Source: Report Painful Passages

\textsuperscript{36} (Perriera, & Ornelas, 2013)
Chapter 5: Understanding the effect of trauma on OSY
Understanding Our Brains

Brains are built over time, from the bottom up. The basic architecture of the brain is constructed through an ongoing process that begins before birth and continues into adulthood. Simpler neural connections and skills form first, followed by more complex circuits and skills. In the first few years of life, more than 1 million new neural connections form every second. After this period of rapid proliferation, connections are reduced through a process called pruning, which allows brain circuits to become more efficient.

Brain architecture is comprised of billions of connections between individual neurons across different areas of the brain. These connections enable lightning-fast communication among neurons that specialize in different kinds of brain functions. The early years are the most active period for establishing neural connections, but new connections can form throughout life and unused connections continue to be pruned. Because this dynamic process never stops, it is impossible to determine what percentage of brain development occurs by a certain age. More importantly, the connections that form early provide either a strong or weak foundation for the connections that form later.

The interactions of genes and experience shape the developing brain. Although genes provide the blueprint for the formation of brain circuits, these circuits are reinforced by repeated use. A major ingredient in this developmental process is the serve and return interaction between children and their parents and other caregivers in the family or community. In the absence of responsive caregiving—or if responses are unreliable or inappropriate—the brain’s architecture does not form as expected, which can lead to disparities in learning and behavior. Ultimately, genes and experiences work together to construct brain architecture.
Cognitive, emotional, and social capacities are inextricably intertwined throughout the life course. The brain is a highly integrated organ and its multiple functions operate in coordination with one another. Emotional well-being and social competence provide a strong foundation for emerging cognitive abilities, and together they are the bricks and mortar of brain architecture. The emotional and physical health, social skills, and cognitive-linguistic capacities that emerge in the early years are all important for success in school, the workplace, and in the larger community.

Toxic stress weakens the architecture of the developing brain, which can lead to lifelong problems in learning, behavior, and physical and mental health. Experiencing stress is an important part of healthy development. Activation of the stress response produces a wide range of physiological reactions that prepare the body to deal with threat. However, when these responses remain activated at high levels for significant periods of time, without supportive relationships to help calm them, toxic stress results. This
can impair the development of neural connections, especially in the areas of the brain dedicated to higher-order skills.”

For children and adolescents who have experienced trauma, the resulting impact on the brain is connected with difficulties in emotional regulation, behavior problems, poor concentration, and deficits in verbal memory. Special educators who work with traumatized children need to understand the neurological underpinnings of their students’ behavioral and learning challenges and how to enhance their learning potential.

Research on how emotions and the brain work together is relatively recent. Psychologists and neuroscientists have debated about the interactions among our “thinking” brain, the cortex, and our emotional brain. In the 1960s, studies emphasized the role of the cortex in analyzing and evaluating emotions. The cortex is involved in processing emotions; it helps us to evaluate a potentially threatening situation and to “look before we leap.” However, more recent research has shown that emotional reactions can take place without conscious awareness. The limbic system of our brains has been found to be the center of emotional processing. Two parts of the limbic system, the hippocampus and the amygdala, appear to help us keep emotionally laden events in our long-term memory. Researchers have concluded that we experience emotional feelings when three events occur in our brains: activation of the amygdala; activation of our arousal system by neurotransmitters; and bodily feedback, such as heart-pounding or other physical reactions. Therefore, the cortex, which helps with our ability to control our emotional reactions, is not necessarily involved in all emotional experiences.

**Axis HPA (Hypothalamus-Pituitary-Adrenal)**

*(Cycle of Panic)*

- **Amygdala**
  - (scans the senses for signs of threat, danger, change, or stress)

- **Hypothalamus**
  - CRF (corticotrophin releasing factor)

- **Pituitary Gland**
  - ACTH (adrenocorticotropic hormone)

- **Adrenal Glands**
  - Cortisol (adrenaline, stress hormones)

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37 ("Brain Architecture", 2017)
Early interactions between parent and infant are regulatory experiences, i.e., experiences that help the young child manage stress and proceed through development. Repeated interactions with a responsive caregiver support secure attachment and help young children’s brains organize sensory functioning and represent their social world.

Healthy emotional development requires each child to control personal feelings and behaviors as well as connect with caregivers. Developing the ability to manage behavior and feelings, that is, emotional regulation, is critical for a child’s mental and physical health. Healthy emotional regulation is connected with higher academic achievement, lower levels of negative emotionality, higher levels of empathy, and higher levels of social competence.

Dr. Allan Schore is on the clinical faculty of the Department of Psychiatry and Biobehavioral Sciences, UCLA David Geffen School of Medicine, and at the UCLA Center for Culture, Brain, and Development. Schore studied the neurological bases for the development of healthy emotional attachment and regulation. He found that the development of an infant’s orbito-frontal cortex, which has extensive connections with the limbic system, depends on interactive experiences with caregivers. He further discovered that positive emotional interactions between child and caregiver increased production of the neurotransmitter dopamine, which in turn led to growth spurts in the prefrontal cortex. Schore also found that norepinephrine helps in the growth of the pathways descending from the cortex to the lower brain in toddlers. Those descending pathways help exert cognitive control over emotional reactions arising from the limbic system.

Patterns of emotional regulation are evident very early in development. On one hand, for example, securely attached infants appear to seek out other people when presented with a stranger or coping with removal of and reunification with their primary caregiver. On the other hand, insecure and avoidant children use self-soothing or solitary play more often, which does not predict success. Healthy children follow developmental steps that require continual learning, including development of receptive and expressive language, problem-solving skills, and social competence. For the child who has limited capacity for emotional regulation, the effects of insecure attachment and emotional dysregulation are pervasive. When lack of attachment and emotional regulation is due to trauma, the effects are literally written into the child’s brain.38

Science tells us that meeting the developmental needs of young children is as much about building a strong foundation for lifelong physical and mental health as it is about enhancing readiness to succeed in school. This insight points to the importance of viewing a broad array of policies and programs—beyond

38 (Foran, 2017)
the provision of medical services—as potentially important vehicles for reducing the social burdens, human capital consequences, and medical-care costs of health impairments in the adult years. In other words, significant progress in lifelong health promotion and disease prevention could be achieved by reducing the burden of significant adversity on young children—and this progress could be accelerated through science-based enhancements in a wide range of policy domains, including child care and early education, child welfare, public assistance and employment programs for low-income parents, housing policies, and community development initiatives, to name just a few.

Driven by converging evidence from neuroscience, molecular biology, genomics, and advances in the behavioral and social sciences, this call for a broader perspective on health promotion and disease prevention is guided by the following three overarching concepts:

- Experiences are built into our bodies (for better or for worse) and significant adversity early in life can produce physiological disruptions or embedded biological “memories” that persist far into adulthood and lead to lifelong impairments in both physical and mental health.

- Genes and experiences interact to determine an individual’s vulnerability to early adversity and, for children experiencing severe adversity, environmental influences appear to be at least as powerful, if not more powerful, than genetic predispositions in their impact on the odds of having chronic health problems later in life.

- Health promotion and disease prevention policies focused on adults would be more effective if evidence-based investments were also made to strengthen the foundations of health and mitigate the adverse impacts of toxic stress in the prenatal and early childhood periods.” 39

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39 (“The Foundations of Lifelong Health Are Built in Early Childhood”, 2010)
This new scientific knowledge compels us to think and act creatively to enhance the healthy development of young children by reducing the disruptive effects of significant adversity on developing biological systems. Progress toward this goal will be most effective if innovative actions are guided by an understanding of four interrelated dimensions that together comprise a new framework for improving physical and mental well-being: (1) the biology of health (2) the foundations of health (3) caregiver and community capacities to promote health and prevent disease and disability, and (4) public and private sector policies and programs that can influence health outcomes by strengthening caregiver and community capacities.

"There is no more effective neurobiological intervention than a safe relationship"

-- Bruce Perry, PhD, MD, researcher & child psychiatrist

The foundations of health refer to three domains of influence that establish a context within which the early roots of physical and mental well-being are either nourished or disrupted:

- A stable and responsive environment of relationships. This domain underscores the extent to which young children need consistent, nurturing, and protective interactions with adults that enhance their learning and behavioral self-regulation as well as help them develop adaptive capacities that promote well-regulated stress response systems.

- Safe and supportive physical, chemical, and built environments. This domain highlights the importance of physical and emotional spaces that are free from toxins and fear, allow active exploration without significant risk of harm, and provide supports for families raising young children.

- Sound and appropriate nutrition. This domain emphasizes the foundational importance of health-promoting food intake, beginning with the future mother’s pre-conception nutritional status and continuing into the early years of the young child’s growth and development.”

Early childhood is a time of rapid development in the brain and many of the body’s biological systems that are critical to sound health. When these systems are being constructed early in life, a child’s experiences and environments have powerful influences on both their immediate development and subsequent functioning. These effects may appear early and be magnified later as children grow into adolescence and adulthood. Some have compared a child’s evolving health status in the early years to the launching of a rocket, as small disruptions that occur shortly after takeoff can have very large effects on its ultimate
trajectory. Thus, “getting things right” and establishing strong biological systems in early childhood can help to avoid costly and less effective attempts to “fix” problems as they emerge later in life.40

An extensive body of scientific evidence now shows that many of the most common chronic diseases in adults—such as hypertension, diabetes, cardiovascular disease, and stroke—are linked to processes and experiences occurring decades before, in some cases as early as prenatally. For example, longitudinal studies have demonstrated that lung disease in adulthood is commonly associated with a history of respiratory illness in childhood, particularly among premature infants and young children exposed to tobacco smoke. Chronic, life-threatening cardiovascular disease in adulthood can also be linked to nutritional deficits and growth impairments occurring as early as the prenatal period.

Early experiences or exposures can affect adult health in two ways—by the chronic wear and tear of repeated damage over time or by the biological embedding of specific physiological disruptions during sensitive developmental periods. If a physiological maladaptation occurs in response to cumulative exposure to adverse social and/or physical conditions, then an ensuing chronic disease can be seen as the consequence of repeated encounters with psychologically or physically toxic environments. When damaging exposures occur during sensitive periods in the early development of specific biological processes, the resulting disruptions can become biologically embedded and subsequent adult diseases appear as the latent (or delayed) outcomes of early environmental assaults. In either case, science shows that there can be a lag of many years, even decades, before early harm is expressed in the form of overt disease.41

Research on the biology of adversity illustrates how the body’s physiological equilibrium breaks down under cumulative conditions of chronic stress (or what has been called “allostatic load.”) The activation of stress management systems in the brain results in a tightly integrated repertoire of responses involving the secretion of stress hormones, increases in heart rate and blood pressure, elevation in blood sugar and inflammatory protein levels, protective mobilization of nutrients, redirection of blood flow to the brain, and the induction of vigilance and fear. The normal, healthy, temporary activation of these systems represents a “positive stress response” and is protective, even necessary, in the face of an acute threat. A “tolerable stress response” is a more serious and sustained activation that is mitigated by supportive adults, who help the child develop adaptive coping responses. A “toxic stress response” in early childhood can weaken developing brain architecture and recalibrate the threshold for activating the stress response system for life. It occurs under circumstances of chronic or overwhelming adversity without the buffering support of caring, consistent, and supportive relationships.42

As San Francisco pediatrician Nadine Burke Harris recently explained to host Ira Glass on the radio program, “This American Life”, if you’re in a forest and see a bear, a very efficient fight or flight system instantly floods your body with adrenaline and cortisol and shuts off the thinking portion of your brain that would stop to consider other options. This is very helpful if you’re in a forest and you need to run from a bear. “The problem is when that bear comes home from the bar every night,” she said.

40 (“The Foundations of Lifelong Health Are Built in Early Childhood”, 2010)
41 (“The Foundations of Lifelong Health Are Built in Early Childhood”, 2010)
42 (“The Foundations of Lifelong Health Are Built in Early Childhood”, 2010)
If a bear threatens a child every single day, his emergency response system is activated over and over and over again. He’s always ready to fight or flee from the bear, but the part of his brain – the prefrontal cortex – that’s called upon to diagram a sentence or do math becomes stunted, because, in our brains, emergencies – such as fleeing dangerous bears – take precedence over doing math. 43

Animal studies indicate that toxic stress also can have direct, negative, and persistent effects on brain circuits that control reward and motivation. For example, research on rodents has demonstrated that profound neglect during early development increases drug-seeking behavior in adult rats.

Recently documented patterns of allostatic load that parallel racial disparities in health outcomes suggest that chronic physiological stress may play a role in the premature and disproportionate burden of physical and mental illness experienced by African-Americans and other groups that experience discrimination. African-Americans, for example, sustain earlier deteriorations of health compared with Whites, leading to racial health disparities that increase with age and resulting in a life expectancy for Blacks in the United States that is four to six years less than for Whites. This finding is consistent with research suggesting that the “weathering” of the body under conditions of chronic stress reflects an acceleration of normal aging processes.” 44

Poor living conditions in early life (e.g., inadequate nutrition or recurrent exposure to infectious diseases) are associated with increased rates of chronic cardiovascular, respiratory, and psychiatric diseases in adulthood. Lower birth weight is associated with several risk factors for later heart disease, such as hypertension, central body fat distribution, insulin resistance, metabolic syndrome, and diabetes. 45

These findings are supported by evidence from a variety of animal and human studies. For example, lower birth weight in rats has been associated with higher blood pressure, and studies in humans have linked poor growth in utero to later problems with heart disease and hypertension. Research investigating the underlying mechanisms that explain these associations have found linkages between early experiences of child maltreatment and evidence of heightened inflammatory responses in adulthood that are known risk factors for the development of cardiovascular disease, diabetes, asthma, and chronic lung disease as well as new evidence of elevated inflammation as early as age 12 in children experiencing maltreatment and depression, regardless of their socioeconomic status. 46

Children who grow up in families or communities of low socioeconomic status appear to be particularly vulnerable to the biological embedding of disease risk. Researchers have hypothesized that this association may be the result of excessive stress related to high rates of neighborhood risk factors such as crime, violence, boarded-up houses, abandoned lots, and inadequate municipal services. Economically disadvantaged children also tend to live in housing that is crowded, noisy, and characterized by structural defects, such as leaky roofs, rodent infestation, and inadequate heating, and they are exposed to greater air pollution from traffic, industrial emissions, and caregiver smoking. Children raised in low-income environments, on average, also experience less and lower-quality parental responsiveness, and are more likely to experience conflictive and punitive parenting behavior. Together, these adverse conditions

43 (Stevens, 2017)
44 (“The Foundations of Lifelong Health Are Built in Early Childhood”, 2010)
45 (“The Foundations of Lifelong Health Are Built in Early Childhood”, 2010)
46 (“The Foundations of Lifelong Health Are Built in Early Childhood”, 2010)
create repeated physiological and emotional disruptions that can have long-lasting effects on health and development. 47

Socioeconomically patterned differences in children’s emotional, cognitive, and social experiences have been linked to several aspects of brain development, particularly within those areas of the brain that are tied most closely to the regulation of emotion and social behavior, reasoning capacity, language skills, and stress reactivity. Children from lower socioeconomic backgrounds are more likely to show heightened activation of stress response systems, and some emerging research suggests that differences in caregiving related to income and education—such as responsiveness in parent-child interaction—can alter the maturation of selected brain areas such as the prefrontal cortex. Animal models of early, stress-related changes in brain circuitry show that such modifications can persist into adult life, altering emotional states, decision-making capacities, and bodily processes that contribute to substance abuse, aggression, obesity, emotional instability, and stress-related disorders. 48

“Bad behavior” is the way a child says “I’ve been traumatized”

Together, the two discoveries – the ACE epidemiology and the brain research — reveal a story too compelling to ignore:

Children with toxic stress live much of their lives in fight, flight or fright (freeze) mode. They respond to the world as a place of constant danger. With their brains overloaded with stress hormones and unable to function appropriately, they cannot focus on learning. They fall behind in school or fail to develop healthy relationships with peers or create problems with teachers and principals because they are unable to trust adults. Some kids do all three. With despair, guilt and frustration pecking away at their psyches, they often find solace in food, alcohol, tobacco, methamphetamines, inappropriate sex, high-risk sports, and/or work and over-achievement. They don’t regard these coping methods as problems. Consciously or unconsciously, they use them as solutions to escape from depression, anxiety, anger, fear and shame. 49

Brain science shows that toxic stress damages children’s developing brains. This is the kind of stress that comes from living day-in and day-out for months or years with a screaming alcoholic father or a severely depressed and neglectful mother or a parent who takes out all of life’s frustrations by whipping a belt across a child’s body. In these circumstances, kids need the stress hormones — a normal survival response — to remain hyper-vigilant in their terrifying and dangerous world. When they’re triggered, their survival brain takes over and literally shuts down their decision-making and learning brain. The slightest provocation — a teacher’s raised voice or another child’s accidentally bumping into them — may trigger them into fight, flight or freeze mode. They lash out with a punch, bite, throw chairs, run away, or withdraw into a near-catatonic state.

“Think of the ‘learning brain’ as the rider, and the ‘survival brain’ as the horse,” says Joyce Dorado, director of HEARTS and associate clinical professor at the University of California, San Francisco, School of Medicine. “When a student is triggered into survival mode by a trauma reminder, the ‘learning brain’ largely goes offline. The rider’s off the horse, and you’re just dealing with a really terrified horse.” In this

47 ("The Foundations of Lifelong Health Are Built in Early Childhood", 2010)
48 ("The Foundations of Lifelong Health Are Built in Early Childhood", 2010)
49 (Stevens, 2017)
state, a child is neurobiologically unable to learn. No amount of working harder will change things. The child’s behavior is a normal response to toxic stress; it is not “willful” or intentionally directed against a teacher. The good news is that the brain is plastic, and if toxic stress stops and is replaced by practices that build resilience, the brain can slowly repair much of the damage.50

What all this means, says Anda, is that we need to prevent adverse childhood experiences and, at the same time, change our systems — educational, criminal justice, healthcare, mental health, public health, workplace — so that we don’t further traumatize someone who has already traumatized. You cannot do one or the other and hope to make any progress.

“Dr. Putnam is right — ACEs changed the landscape,” Anda says. “Or perhaps the many publications from the ACE Study opened our eyes to see the truth of the landscape. ACEs create a ‘chronic public health disaster’ that until recently has been hidden by our limited vision. Now we see that the biologic impacts of ACEs transcend the traditional boundaries of our siloed health and human service systems. Children affected by ACEs appear in all human service systems throughout the lifespan — childhood, adolescence, and adulthood — as clients with behavioral, learning, social, criminal, and chronic health problems.”

But our society has tended to treat the abuse, maltreatment, violence and chaotic experiences of our children as an oddity instead of commonplace, as the ACE Study revealed, notes Anda. And our society believes that these experiences are adequately dealt with by emergency response systems such as child protective services, criminal justice, foster care, and alternative schools. “These services are needed and are worthy of support — but they are a dressing on a greater wound,” he says.

“A hard look at the public health disaster calls for the both the prevention and treatment ACEs,” he continues. “This will require integration of educational, criminal justice, healthcare, mental health, public health, and corporate systems that involves sharing of knowledge and resources that will replace traditional fragmented approaches to burden of adverse childhood experiences in our society.”

As Williamson, the epidemiologist who introduced Felitti and Anda, and also worked on the ACE Study, says: “It’s not just a social worker’s problem. It’s not just a psychologist’s problem. It’s not just a pediatrician’s problem. It’s not just a juvenile court judge’s problem.” In other words, this is everybody’s problem.

According to a CDC study released earlier this year, just one year of confirmed cases of child maltreatment costs $124 billion over the lifetime of the traumatized children. The researchers based their calculations on only confirmed cases of physical, sexual and verbal abuse and neglect, which child maltreatment experts say is a small percentage of what actually occurs.

The breakdown per child is:

- $32,648 in childhood health care costs
- $10,530 in adult medical costs
- $144,360 in productivity losses

50 (Stevens, 2013)
• $7,728 in child welfare costs
• $6,747 in criminal justice costs
• $7,999 in special education costs

In theory, the overwhelming amount of money spent on the fallout of adverse childhood experiences would have inspired the medical community, the public health community and federal, state and local governments to integrate this knowledge and fund programs that have been proven to prevent ACEs. But adoption of concepts from the ACE Study and the brain research has been remarkably slow and uneven.  

Source: Adverse Childhood Experiences Infographic

51 (Stevens, 2017)
ACES CAN HAVE LASTING EFFECTS ON BEHAVIOR & HEALTH...

Simply put, our childhood experiences have a tremendous, lifelong impact on our health and the quality of our lives. The ACE Study showed dramatic links between adverse childhood experiences and risky behavior, psychological issues, serious illness and the leading causes of death.

The following charts compare how likely a person with 1, 2, 3, or 4 ACEs will experience specified behaviors than a person without ACEs.

*Having an ACE score of zero does not imply an individual could not have other risk factors for these health behaviors/diseases.

Source: Adverse Childhood Experiences Infographic
Continued Studies

Many states are collecting information about Adverse Childhood Experiences (ACEs) through the Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is an annual, state-based, random-digit-dial telephone survey that collects data from non-institutionalized U.S. adults regarding health conditions and risk factors. Since 2009, a total of 32 states plus the District of Columbia have included ACE questions for at least one year on their survey.\(^5\)

![ACE Study Continues]

**ECONOMIC TOLL**

The Centers for Disease Control and Prevention (CDC) estimates that the lifetime costs associated with child maltreatment at $124 billion.

![Economic Toll]

Image Source: [Adverse Childhood Experiences Infographic](#)

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\(^5\) ("About Behavioral Risk Factor Surveillance System ACE Data", 2017)
Understanding Trauma’s Effects

Adverse Childhood Experiences (ACEs) are a key risk factor for negative health outcomes. Scores of articles have long demonstrated a relationship between exposure to childhood adversity and a range of negative outcomes throughout the life span. The disproportionate exposure of low-income children to abuse, neglect, and other adversities has been implicated as an important contributor to health disparities. Preventing and mitigating the impact of ACEs is critical to decreasing health disparities.53

Exposure to chronic, prolonged traumatic experiences has the potential to alter children’s brains, which may cause longer-term effects in areas such as:

**Attachment:** Trouble with relationships, boundaries, empathy, and social isolation

**Physical Health:** Impaired sensorimotor development, coordination problems, increased medical problems, and somatic symptoms

**Emotional Regulation:** Difficulty identifying or labeling feelings and communicating needs

**Dissociation:** Altered states of consciousness, amnesia, impaired memory

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Cognitive Ability: Problems with focus, learning, processing new information, language development, planning and orientation to time and space

Self-Concept: Lack of consistent sense of self, body image issues, low self-esteem, shame and guilt

Behavioral Control: Difficulty controlling impulses, oppositional behavior, aggression, disrupted sleep and eating patterns, trauma re-enactment\(^{54}\)

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Trauma Informed Care (TIC)

- Essentials of TIC
  - Connect – Focus on Relationships
  - Protect – Promote Safety and Trustworthiness
  - Respect – Engage in Choice and Collaboration
  - Redirect (Teach and Reinforce) – Encourage Skill-Building and Competence

  - Hummer, V., Crosland, K., Dollard, N., 2009

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\(^{54}\) (Cook, 2005)
Chapter 6: Strategies for helping students with ACEs
Strategies to Use in the Classroom with Students Affected by Trauma

Every day, children enter classrooms bringing backpacks, pencils, paper—and their unique views of the world. Every child has his or her own expectations and insights, formed from experiences at home, in the community, and at school. When children witness violence between their adult caregivers or experience abuse or neglect, they can enter the classroom believing that the world is an unpredictable and threatening place.

There is nothing new about the presence of traumatized children in our schools. Often without realizing it, teachers have been dealing with trauma’s impact for generations. What is new is that trauma researchers can now explain the hidden story behind many classroom difficulties plaguing our educational system. Recent psychological research has shown that childhood trauma from exposure to family violence can diminish concentration, memory, and the organizational and language abilities that children need to function well in school.

Teachers can use their existing expertise more effectively when they understand that many of the academic, social, and behavioral problems of traumatized children involve such difficulties as failing to understand directions, overreacting to comments from teachers and peers, misreading context, failing to connect cause and effect, and other forms of miscommunication.

When staff have a better understanding of trauma, they can form effective linkages with mental health professionals who have an expertise in that field, make full use of available resources, and advocate for new resources and particular interventions that directly meet the needs of their students.55

Neena McConnico, Director of Boston Medical Center’s Child Witness to Violence Project states, “One in every four students currently sitting in American classrooms have experienced a traumatic event, and the number is even greater for those living in impoverished communities,” and, “Young children exposed to more than five adverse experiences in the first three years of life face a 75 percent likelihood of having one or more delays in language, emotional, or brain development.”

McConnico further explained that children who witness violence often have trouble in the classroom because their post-traumatic stress can manifest itself as inattention, sleep dysfunction, distractibility, hyperactivity, aggression, and angry outbursts. Alternately, these children may withdraw and appear to be unfazed by their trauma. “These children,” McConnico added, “are the children I worry about the most, the ones who sneak under the radar and don’t get the help they need.”56

Researchers Stein and Kendall recommend helping children process experiences through as many modalities as possible, including visual images, thoughts, movement, emotions, and sensations. Children in treatment are taught to use relaxation methods, meditation, and comforting routines. Not all emotions are processed through the cortex. Emotionally dysregulated children seem to “go from zero to 60” in seconds. Frequently, we expect traumatized children to learn quickly new ways to express their feelings. Research has shown that it takes repeated efforts to re-wire the brain to experience and manage feelings more consciously so that the thinking part of the brain can come into play.57

55 ("Helping Traumatized Children Learn", 2005)  
56 (Lahey, 2014)  
57 (Foran, 2017)
Students who are battling tough odds on the home front need a clear invitation to learn. William Purkey and John Novak (1978/1984) maintain that many traditional teacher practices—such as punishing students or judging student work with the goal of winnowing out low performers—are “disinviting.” Often unintentionally—and sometimes even intentionally—such practices exclude struggling youth from the learning community.

A better way to reach students is to proactively cultivate “intentionally inviting” practices that welcome all students into the culture of learning. Typical inviting practices include greeting students at the classroom door or immediately acknowledging a student asking for help—even in your busiest moments—and providing assistance as soon as feasible.\textsuperscript{58}

The Impact of Trauma

A traumatized brain can be tired, hungry, worried, rejected, or detached, and these states are often accompanied by feelings of isolation, worry, angst, and fear. The neurobiological changes caused by negative experiences trigger a fear response in the brain. When we feel distress, our brains and bodies are flooded with emotional messages that trigger the question, “Am I safe?” We react physiologically with an agitated limbic system that increases blood pressure, heart rate, and respiration as the levels of the hormones cortisol and adrenaline increase in our bodies. Chronic activation of the fear response can damage those parts of the brain responsible for cognition and learning.

When the brain has experienced significant adversity, it becomes fundamentally reorganized. Past experiences can live on in the body and may be experienced as flashbacks, memories, or repetitive thoughts about the painful event.

Many children and adolescents come to school with a deep mistrust of adults because they have never formed healthy attachments. These young people have brains in a constant state of alarm.\textsuperscript{59}

Biomedical research shows that toxic stress releases inflammatory chemicals that do long-term damage to our systems — gastrointestinal system, immune system, cardiac, respiratory, etc. One could say that this is the human version of climate change. Climate change is difficult to grasp, because its causes (tons of carbon dioxide gases) are invisible, and there are not sudden changes. But there are clear indicators — Superstorm Sandy, Hurricane Katrina, the Midwest drought — that the Earth is suffering. Climate change is already affecting all of us economically. And, if we act quickly enough, we can avoid world-wide catastrophe that will drastically affect our lives and especially the lives of our children.

Childhood adversity is invisible — it usually takes place behind closed doors or within the impenetrable family bubble. But skyrocketing chronic health problems, prison populations, mental illness, high school discipline and dropout rates show clearly that most humans are suffering the short- and long-term effects of toxic stress. Even those without ACEs are affected by health costs, prison costs, workplace costs and increasing poverty. This is an epidemic. It affects us all. The good news is that we can do something about it.\textsuperscript{60}

\textsuperscript{58} (Zapf, 2010)
\textsuperscript{59} (Desautels, 2016)
\textsuperscript{60} (Stevens, 2013)
Take a Bit of Time

When Paul Kilkenny, a mentor teacher in East San Jose, California, works with teachers, he occasionally finds himself in the role of cheerleader. He notes, “My teachers work with kids who are often in tough situations, and the kids can bring that same toughness into the classroom.” He continued, “When the teachers find themselves focusing extensively on student misbehavior, sometimes my job is simply to remind them to continually assume the best about their students.”

“Assuming the best is essential for long-term learning and positive connections to take place in our classrooms. When it comes to classroom-management, there are no exotic new consequences that teachers can use to get students on task. The most effective classroom management comes in the form of strategies that prevent acting out before it occurs. And those strategies arise primarily from assuming that our students want to be here, want to participate, and, specifically, want to learn good behavior. When we internalize and act from this assumption, our students behave better and learn more.”

Psychiatrists Bruce Perry and Bessel van der Kolk are pioneers in the study of trauma. Their research looks at the critical issue of how traumatized people can find a sense of safety within their own bodies. Younger children need our help to do that—to process that lump in their throat, that rapid heartbeat, or that sensation around their eyes when they are about to cry. The best approach, according to Perry and van der Kolk, is to acknowledge the negative reactions by giving these students a safe place for a few minutes, allowing the brain and body to calm down.

It probably would take little effort for you to identify your most difficult student. This child is active, disruptive, and frustrating. Researcher Raymond Wlodkowski investigated a strategy called Two-by-Ten and found very successful results. With the strategy, the teachers focus on their most difficult student. For two minutes each day, ten days in a row, teachers have a personal conversation with the student about anything in which the student is interested (as long as the conversation is appropriate for school). Wlodkowski found an 85% improvement in that one student’s behavior. In addition, he found that the behavior of all the other students in class improved.

Many teachers utilizing the Two-by-Ten strategy found similar results. Their worst student became an ally in the class when they formed a strong personal connection with that student. Though this seems counterintuitive, the students who seemingly deserve the most punitive consequences we can deliver are actually the ones who most need a positive and personal connection with the teacher. Often when they act out, they are letting us know that they are seeking a positive connection with an adult authority figure and that they need that connection first, before they can or will focus on academic content. One teacher using the Two-by-Ten strategy said, “Not only does it help with the toughest students, but also it helps the teachers remember their humanity as they attempt to survive and thrive in the classroom.”

“Whenever students walk into the classroom, assume they hold an invisible contract in their hands, which states, ‘Please teach me appropriate behavior in a safe and structured environment.’ The teacher also has

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61 (Smith, & Lambert, 2008)
62 (Desautels, 2016)
63 (“Two By Ten Strategy”, 2017)
This approach can radically change our perspective on student misbehavior. To illustrate, in the beginning of the school year, Mark decides to test his teacher, whom we will call Mrs. Allgood. Mark looks at his invisible contract and thinks, "This contract is important. Let's see whether Mrs. Allgood is going to uphold her end of it." So Mark breaks a small rule to see what will happen. If Mrs. Allgood is harsh or punitive to Mark for breaking the rule, he says to himself, "This class isn't safe; she isn't honoring the contract." However, if Mrs. Allgood ignores Mark and he gets away with breaking the rule or if she enforces it inconsistently, Mark says to himself, "This class isn't structured; she isn't honoring the contract."

Either way, Mark is not satisfied. So he thinks to himself, "To communicate the importance of this contract and give the teacher another chance, I'll break a slightly larger rule." He will continue to break larger and larger rules until Mrs. Allgood comes through consistently with both safety and structure. When she is consistent over time, Mark says to himself, "Oh good, she's honoring the contract. Now I can relax and focus on learning."

The bottom line is that when students test us, they want us to pass the test. They are on our side rooting for us to come through with safety and structure. When students act out, they are really saying, "We don't have the impulse control that you have. We are acting out so that you will provide us with safety and structure—be soft yet firm—so that we can learn the behavior we need to learn to be happy and successful." 64

**Strategy 1: Use Volume, Tone, and Posture**

When we assume that students want to learn behavior, we can readily see that we are here to teach behavior. This changes our interactions with students. For example, Mrs. Allgood is teaching a lesson; in the back of the classroom, Mark is disturbing his neighbors by showing them his new *Sports Illustrated*. He needs to stop. If Mrs. Allgood assumes that she is only here to teach content—to stay on task—she will go so quickly through the discipline piece that Mark will probably not understand, and so he will continue to act out. Some teachers jokingly refer to this as "drive-thru discipline."

On the other hand, if Mrs. Allgood assumes that she is here to teach behavior, she will pause in her lesson and address Mark's behavior. Her first option is to walk up to him and quietly state her request, "Please put that away and have a seat." If that is not possible because of time or furniture constraints, she will shift from "content mode" to "behavior mode," facing Mark squarely as she softens her voice and lowers her tone. Knowing that Mark is committed to both learning appropriate behavior and wanting to look good in front of his friends, she will not publicly humiliate him. Her shift in volume, tone, and posture will firmly but softly communicate what she expects of him, deescalating possible tension.

By taking these extra moments to address Mark's behavior, Mrs. Allgood will have more time to focus on teaching content because Mark will most likely get it the first time around. And if he says something

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64 (Smith, & Lambert, 2008)
under his breath, she knows that she can let him have the last word. It's his way of saving face as he refocuses on learning content.

Strategy 2: Implement the Two-by-Ten Strategy

Martha Allen, an adjunct professor at Dominican University's Teacher Credential Program in San Rafael, California, asked her student teachers to use the Two-by-Ten Strategy with their toughest student. The results? Almost everyone reported a marked improvement in the behavior and attitude of their one targeted student, and often of the whole class.

Strategy 3: Break Things into Steps

Just as students often need complex math problems broken down into small, digestible lessons, so they need small, manageable steps when it comes to learning behavior and classroom procedures.

For example, if Mark has a hard time putting his art supplies away on time, instead of punishing him Mrs. Allgood can meet with him, and together they can practice putting the supplies away. Instead of one step—"Put your things away"—the teacher can guide the student through several steps: "Pick up the scissors and place it in the scissors tray; return the colored paper to the stack in the back of the room; put your project in your folder." By practicing each of the steps, Mark has a better sense of what to do and is more likely to succeed when Mrs. Allgood announces clean-up time to the class.

Instead of throwing up our hands and saying, "These kids don't care" or "These kids can't succeed," we should assume they are committed to success in both content and behavior. We can then put our energy into breaking down the behaviors we want to see into simple steps so that students clearly understand what we expect of them.

Strategy 4: Use Behavior Rubrics

Rubrics work great for content—and equally great for procedures and behavior. For example, if a particular student is inappropriately loud, Mrs. Allgood can provide the student with a 1–5 volume rubric. A 1 would indicate a whisper, a 3 would indicate a normal conversational tone, and a 5 would indicate a yell. The student can practice all five numbers, and the teacher can then assign different numbers to different school and social situations: A 1 would be appropriate if the student asked a classmate to borrow a pencil while the rest of the class was engrossed in a writing task; a 3 would be appropriate for students conversing during group work; a 5 would be appropriate on the playground. Rubrics work well for many classroom behaviors, such as lining up, settling down to learn, and getting ready for dismissal.

Strategy 5: Use Visuals

Visuals also serve as great road maps for student success. If, for example, students have difficulty getting their textbooks and homework on their desks when the bell rings at the beginning of class, Mrs. Allgood can use visuals to clarify exactly what she expects. She can use a diagram, drawing, or photograph of the surface of the desk, with the textbook open to the proper page and the homework on the upper left-hand corner of the desk. At the start of class, using PowerPoint or an overhead, she can flash the picture on the
board or screen in front of the room, giving the students "17 seconds to be ready to start." Visuals work well for such activities as setting up labs, putting supplies away, and clarifying the school dress code. 65

The Power of Positive Language- Conversations that Matter

Because these children may not have experienced many positive relationships with other adults, the student-teacher bond can be the most important gift educators have to offer. Teachers who are reliable, honest, and dependable can offer the stability these students so desperately need. 66

Teacher language influences students’ identities as learners. Five principles keep that influence positive.

Think back to your childhood and recall the voices of your teachers. What kinds of words did they use? What tone of voice? Recall how you felt around those teachers. Safe and motivated to learn? Or self-doubting, insecure, even angry?

Teacher language—what we say to students and how we say it—is one of our most powerful teaching tools. It permeates every aspect of teaching. We cannot teach a lesson, welcome a student into the room, or handle a classroom conflict without using words. Our language can lift students to their highest potential or tear them down. It can help them build positive relationships or encourage discord and distrust. It shapes how students think and act and, ultimately, how they learn.

Our words shape students as learners by affecting students’ sense of identity. Five-year-old Don loves to sing but isn’t good at it—yet. His music teacher says, "Let’s have you move to the back row and try just mouthing the words." Such language can lead Don to believe not only that he is a bad singer, but also that he will always be a bad singer.

But suppose the teacher says, "Don, you really love to sing, don’t you? Would you like to learn more about it? I have some ideas." Such words support Don’s budding identity as one who loves to sing and is learning singing skills.

Helping students understand how they work and play is important. For example, an educator might comment on a student’s writing by saying, "These juicy adjectives here give me a wonderful sense of how

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65 (Smith, & Lambert, 2008)
66 (Lahey, 2014)
your character looks and feels." Naming a specific attribute—the use of adjectives—alerts the writer to an important strength in her writing and encourages her to build on that strength.

Influencing our relationships with students matters. To a student who—once again—argued with classmates at recess, we might say either, "Emory, if you don't stop it, no more recess!" or "Emory, I saw you arguing with Douglas and Stephen. Can you help me understand what happened from your point of view?" The former would reinforce a teacher-student relationship based on teacher threats and student defensiveness, whereas the latter would begin to build a teacher-student relationship based on trust.

The Responsive Classroom approach, developed by Northeast Foundation for Children, offers language strategies that enable elementary teachers to help students succeed academically and socially. Strategies range from asking open-ended questions that stretch students' thinking to redirecting students when behavior goes off-track. These strategies are based on the following five general principles.

1. **Be Direct**

   When we say what we mean and use a kind, straightforward tone, students learn that they can trust us. They feel respected and safe, a necessary condition for developing self-discipline and taking the risks required for learning.

   It is easy to slip into using indirect language as a way to win compliance. For example, teachers sometimes try to get students to do the right thing by pointing out other students' behavior. "I like the way May and Justine are paying attention," the teacher cheerfully announces while impatiently eyeing Dave and Marta fooling around in the corner.

   When this strategy works, it is because students mimic the desired behavior so that they, too, will win praise from the teacher, not because they have developed self-control or internal motivation.

   Moreover, comparative language can damage students' relationships. By holding May and Justine up as exemplars, the teacher implies that the other class members are less commendable. This can drive a wedge between students.

   As teachers, it is better to speak directly. To call the students to a meeting, for example, ring a chime to gain their attention and then say firmly, "Come to the meeting rug and take a seat now." To Dave and Marta in the previous example, simply say, "It's time to listen now." The difference in students' response can be remarkable.

   Sarcasm, another form of indirect language, is also common—and damaging—in the classroom. Sometimes teachers use sarcasm thinking it will provide comic relief; other times out of exhaustion, and it often slips in without the teacher knowing it. If a teacher says, "John, what part of 'Put your phone away' don't you understand?" students will likely laugh, and the teacher may think she has shown that she's hip and has a sense of humor. But John will feel embarrassed, and his trust in this teacher will diminish. The position of this teacher may shift in the other students' eyes as well: They no longer see her as an authority who protects their emotional safety but as someone who freely uses the currency of insult. Much better to simply say, "John, put your phone away." If he does not, try another strategy, such as a logical consequence.

2. **Convey Faith in Students' Abilities and Intentions**
When words and tone convey faith in students' desire and ability to do well, students are more likely to live up to the teacher’s expectations of them.

"When everyone is ready, I'll show you how to plant the seeds." "You can look at the chart to remind yourself of our ideas for good story writing." "Show me how you will follow the rules in the hall." These teacher words, spoken in a calm voice, communicate a belief that students want to—and know how to—listen, cooperate, and do good work. This increases the chance that students will see themselves as respectful listeners, cooperative people, and competent workers, and behave accordingly.

Take the time to notice and comment on positive behavior, being quite specific, "You're trying lots of different ideas for solving that problem. That takes persistence." Such observations give students hard evidence for why they should believe in themselves.

3. Focus on Actions, Not Abstractions

Because elementary-age children tend to be concrete thinkers, teachers can communicate most successfully with them by detailing specific actions that will lead to a positive environment. For example, rather than saying, "Be respectful," it is more helpful to state, "When someone is speaking during a discussion, the rest of us will listen carefully and wait until the speaker is finished before raising our hands to add a comment."

Sometimes it is effective to prompt students to name concrete positive behaviors themselves. To a student who has trouble focusing during writing time, a teacher might say matter-of-factly, "What will help you think of good ideas for your story and concentrate on writing them down?" The student might then respond, "I can find a quiet place to write, away from my friends."

There is a place, of course, for such abstract terms as respectful and responsible, but we must give students plenty of opportunities to associate those words with concrete actions. Classroom expectations such as "treat one another with kindness" will be more meaningful to students if we help them picture and practice what those expectations look like in different situations.

Focusing on action also means pointing to the desired behavior rather than labeling the learner's character or attitude. It is more helpful in such situations to issue a positive challenge that names the behavior we want, "Your job today is to record five observations of our crickets. Think about what you'll need to do before you start." This moves the focus to what the student can do.

4. Keep It Brief

It is hard for many young children to follow long strings of words like this:

“When you go out to recess today, be sure to remember what we said about including everyone in games, because yesterday some kids had an issue with not being included in kickball and four square, and we've talked about this. You were doing really well for a while there, but lately it seems like you're getting kind of careless, and that's got to change or …”

By the end of this spiel, many students would be thinking about other things. Few could follow the entire explanation. Students understand more when we speak less. Simply asking, "Who can tell us one way to include everyone at recess?" gives them an opportunity to remind themselves of positive behaviors. If
you have taught and led students in practicing the class's expectations for recess, students will make good use of such a reminder.

5. Know When to Be Silent

The skillful use of silence can be just as powerful as the skillful use of words. When teachers use silence, we open a space for students to think, rehearse what to say, and sometimes gather the courage to speak at all.

We can see the benefit of silence if, after asking a question, we pause before taking responses from students. Researchers have found that when teachers wait three to five seconds, more students respond, and those responses show higher-level thinking.

Three to five seconds can feel uncomfortably long at first. But if we stick to it—and model thoughtful pausing by waiting a few seconds ourselves to respond to students' comments—we'll set a pace for the entire classroom that will soon feel natural. Our reward will be classroom conversations of higher quality.

Remaining silent allows us to listen to students and requires us to resist the impulse to jump in and correct students' words or finish their thoughts. A true listener tries to understand a speaker's message before formulating a response. When we allow students to speak uninterrupted and unhurried, we help them learn because speaking is an important means of consolidating knowledge.67

Teachers do not need to solve children’s problems in order to help. Listening to students when they want to talk can make all the difference to a child struggling with a chaotic home life. “Listen, reflect back to them that they have been heard, validate the child’s feelings without judgment, and thank the child for sharing with you” advised Neena McConnico, Director of Boston Medical Center’s Child Witness to Violence Project.68

Identifying Trauma Exposure

The information found in this section is directly excerpted from the Child Trauma Toolkit for Educators from the National Child Traumatic Stress Network.

What you might observe in Preschool Children:

Remember, young children do not always have the words to tell what has happened to them or how they feel. Behavior is a better gauge and sudden changes in behavior can be a sign of trauma exposure.

- Separation anxiety or clinginess towards teachers or primary caregivers
- Regression in previously mastered stages of development (e.g., baby talk or bedwetting/toileting accidents)
- Lack of developmental progress (e.g., not progressing at same level as peers)
- Re-creating the traumatic event (e.g., repeatedly talking about, “playing” out, or drawing the event)
- Difficulty at naptime or bedtime (e.g., avoiding sleep, waking up, or nightmares)

67 (Denton, 2017)
68 (Lahey, 2014)
• Increased somatic complaints (e.g., headaches, stomachaches, overreacting to minor bumps and bruises)
• Changes in behavior (e.g., appetite, unexplained absences, angry outbursts, decreased attention, withdrawal)
• Over- or under-reacting to physical contact, bright lighting, sudden movements, or loud sounds (e.g., bells, slamming doors, or sirens)
• Increased distress (unusually whiny, irritable, moody)
• Anxiety, fear, and worry about safety of self and others
• Worry about recurrence of the traumatic event
• New fears (e.g., fear of the dark, animals, or monsters)
• Statements and questions about death and dying

Some children, if given support, will recover within a few weeks or months from the fear and anxiety caused by a traumatic experience. However, some children will need more help over a longer period of time in order to heal and may need continuing support from family, teachers, or mental health professionals. Anniversaries of the events or media reports may act as reminders to the child, causing a recurrence of symptoms, feelings, and behaviors.

Mental health counseling that has been demonstrated to be effective in helping children deal with traumatic stress reactions typically includes the following elements:

• Helping children and caregivers reestablish a safe environment and a sense of safety
• Helping parents and children return to normal routines
• An opportunity to talk about and make sense of the traumatic experience in a safe, accepting environment
• Explaining the trauma and answering questions in an honest but simple and age-appropriate manner
• Teaching techniques for dealing with overwhelming emotional reactions
• Helping the child verbalize feelings rather than engage in inappropriate behavior
• Involving primary caregivers in the healing process
• Connecting caregivers to resources to address their needs—young children’s level of distress often mirrors their caregiver’s level of distress.

What you might observe in Elementary School students:

• Anxiety, fear, and worry about safety of self and others (clinger with teacher or parent)
• Worry about recurrence of violence
• Increased distress (unusually whiny, irritable, moody)
• Changes in behavior:
  • Increase in activity level
  • Decreased attention and/or concentration
  • Withdrawal from others or activities
  • Angry outbursts and/or aggression
  • Absenteeism
  • Distrust of others, affecting how children interact with both adults and peers
  • A change in ability to interpret and respond appropriately to social cues
  • Increased somatic complaints (e.g., headaches, stomachaches, overreaction to minor bumps and bruises)
• Changes in school performance
• Recreating the event (e.g., repeatedly talking about, “playing” out, or drawing the event)
• Over- or under-reacting to bells, physical contact, doors slamming, sirens, lighting, sudden movements
• Statements and questions about death and dying
• Difficulty with authority, redirection, or criticism
• Re-experiencing the trauma (e.g., nightmares or disturbing memories during the day)
• Hyperarousal (e.g., sleep disturbance, tendency to be easily startled)
• Avoidance behaviors (e.g., resisting going to places that remind them of the event)
• Emotional numbing (e.g., seeming to have no feeling about the event)

Some children, if given support, will recover within a few weeks or months from the fear and anxiety caused by a traumatic experience. However, some children need more help over a longer period of time in order to heal, and may need continuing support from family, teachers, or mental health professionals. Anniversaries of the event or media reports may act as reminders to the child, causing a recurrence of symptoms, feelings, and behaviors.

Mental health counseling that has been demonstrated to be effective in helping children deal with traumatic stress reactions typically includes the following elements:

• Education about the impact of trauma
• Helping children and caregivers re-establish a sense of safety
• Techniques for dealing with overwhelming emotional reactions
• An opportunity to talk about and make sense of the traumatic experience in a safe, accepting environment
• Involvement, when possible, of primary caregivers in the healing process

What you might observe in Middle School students:

• Anxiety, fear, and worry about safety of self and others
• Worry about recurrence or consequences of violence
• Changes in behavior:
  • Decreased attention and/or concentration
  • Increase in activity level
  • Change in academic performance
  • Irritability with friends, teachers, events
  • Angry outbursts and/or aggression
  • Withdrawal from others or activities
  • Absenteeism
• Increased somatic complaints (e.g., headaches, stomachaches, chest pains)
• Discomfort with feelings (such as troubling thoughts of revenge)
• Repeated discussion of event and focus on specific details of what happened
• Over- or under-reacting to bells, physical contact, doors slamming, sirens, lighting, sudden movements
• Re-experiencing the trauma (e.g., nightmares or disturbing memories during the day)
• Hyperarousal (e.g., sleep disturbance, tendency to be easily startled)
Avoidance behaviors (e.g., resisting going to places that remind them of the event)
Emotional numbing (e.g., seeming to have no feeling about the event)

Mental health counseling that has been demonstrated to be effective in helping children deal with traumatic stress reactions typically includes the following elements:

- Education about the impact of trauma
- Helping children and caregivers re-establish a sense of safety
- Techniques for dealing with overwhelming emotional reactions
- An opportunity to talk about and make sense of the traumatic experience in a safe, accepting environment
- Involvement, when possible, of primary caregivers in the healing process

What you might observe in High School Students

- Anxiety, fear, and worry about safety of self and others
- Worry about recurrence or consequences of violence
- Changes in behavior
- Withdrawal from others or activities
- Irritability with friends, teachers, events
- Angry outbursts and/or aggression
- Change in academic performance
- Decreased attention and/or concentration
- Increase in activity level
- Absenteeism
- Increase in impulsivity, risk-taking behavior
- Discomfort with feelings (such as troubling thoughts of revenge)
- Increased risk for substance abuse
- Discussion of events and reviewing of details
- Negative impact on issues of trust and perceptions of others
- Over- or under-reacting to bells, physical contact, doors slamming, sirens, lighting, sudden movements
- Repetitive thoughts and comments about death or dying (including suicidal thoughts, writing, art, or notebook covers about violent or morbid topics, internet searches)
- Heightened difficulty with authority, redirection, or criticism
- Re-experiencing the trauma (e.g., nightmares or disturbing memories during the day)
- Hyperarousal (e.g., sleep disturbance, tendency to be easily startled)
- Avoidance behaviors (e.g., resisting going to places that remind them of the event)
- Emotional numbing (e.g., seeming to have no feeling about the event)

Mental health counseling that has been demonstrated to be effective in helping adolescents deal with traumatic stress reactions typically includes the following elements:

- Education about the impact of trauma
- Helping adolescents and caregivers re-establish a sense of safety
- Techniques for dealing with overwhelming emotional reactions
An opportunity to talk about and make sense of the traumatic experience in a safe, accepting environment
Involvement, when possible, of primary caregivers in the healing process

Identifying Traumatic Grief in Students

Children at different developmental levels may react differently to a loved one’s traumatic death. But there are some common signs and symptoms of traumatic grief that children might show at school. Teachers may observe the following in the student:

• Being overly preoccupied with how the loved one died
• Reliving or re-enacting the traumatic death through play, activities, and/or artwork
• Showing signs of emotional and/or behavioral distress when reminded of the loss
• Attempting to avoid physical reminders of the traumatic death, such as activities, places, or people related to the death
• Withdrawing from important aspects of their environment
• Showing signs of emotional constriction or “numbing”
• Being excessively jumpy or being easily startled
• Showing signs of a lack of purpose and meaning to one’s life

How School Personnel Can Help a Student with Traumatic Grief

Inform school administration and school counselors/psychologists about your concerns regarding the student. Your school district or state may have specific policies or laws about dealing with emotional issues with children. If you feel a student could benefit from the help of a mental health professional, work within your school’s guidelines and with your administration to suggest a referral.

Answer a child’s questions. Let the child know that you are available to talk about the death if he or she wants to. When talking to these children, accept their feelings (even anger), listen carefully, and remind them that it is normal to experience emotional and behavioral difficulties following the death of a loved one. Do not force a child to talk about the death if he or she does not want to. This may be more harmful than helpful for the child. 69

TIPS for Practitioners

Maintain usual routines. A return to “normalcy” will communicate the message that the child is safe and life will go on. Give children choices. Often traumatic events involve loss of control and/or chaos, so you can help children feel safe by providing them with some choices or control when appropriate. 70

These children crave control and it can often be seen as manipulative behavior if they are not given enough outlets to exercise control over their experiences. Provide safe opportunities for them to make their own choices, perhaps at meal time they can pick between two different options, or let them choose a book, or a place to sit in a room. Be cautious, however, in providing too many options or choices as this

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69 (“Child Trauma Toolkit for Educators”, 2008)
70 (“Child Trauma Toolkit for Educators”, 2008)
can become overwhelming for certain children. Work toward finding the right balance for each child’s needs between structure and choice (control) when supporting a child with trauma history.

Discover their passions, strengths, talents and interests and build on those. Everyone has something that gives a sense of joy, happiness, strength, and confidence. Spend time discovering what that is for each child and encourage their development in that area.

Make a safe place – it can be an actual place or a portable tool kit, but create a place where the child can go whenever he or she wants with no repercussions. If children start to feel overwhelmed, triggered, overstimulated or lost, they can go to their safe place to calm down and regulate themselves again. Empowering children to use a safe place with no repercussions is a great step toward them learning to recognize what their body needs and learning proper self-awareness and self-care. In the safe place, you can provide items that will help them regulate. A certain book, toy, blanket, or fiddle toys such as Lego, puzzles, coloring sheets, or play dough, all can be helpful in regulating a child.  

Be sensitive to the cues in the environment that may cause a reaction in the traumatized child. For example, victims of natural storm-related disasters might react very badly to threatening weather or storm warnings. Children may increase problem behaviors near an anniversary of a traumatic event.

Anticipate difficult times and provide additional support. Many kinds of situations may be reminders. If you are able to identify reminders, you can help by preparing the child for the situation. For instance, for the child who doesn’t like being alone, provide a partner to accompany him or her to the restroom. Warn children if you will be doing something out of the ordinary, such as turning off the lights or making a sudden loud noise. 

“It is important to be aware of both the children who act out and the quiet children who don’t appear to have behavioral problems. These children often “fly beneath the radar” and do not get help. For instance, many behaviors seen in children who have experienced trauma are nearly identical to those of children with developmental delays, ADHD and other mental health conditions. Without recognition of the possibility that a child is experiencing childhood traumatic stress, adults may develop a treatment plan that does not fully address the specific needs of that child with regard to trauma.”  

Everyone can benefit from opportunities for mental rest, daydreaming, and opportunities to process new information, but traumatized children in particular need downtime in order to regroup, relax, and get a break from both the cognitive exertion of the academic day and the emotional stress of a chaotic home life.

For the 25 percent of American children who experience trauma at home, school may be their only harbor from that tempest, and teachers represent so much more than purveyors of facts and figures. To these kids, teachers offer reassurance that not all adults are harmful, that even if they are not made to feel worthy at home, there are people in the world who will value, support, and love them.

71 (“Supporting a child with trauma history - essential tips”, 2014)
72 (“Child Trauma Toolkit for Educators”, 2008)
73 (“Child Trauma Toolkit for Educators”, 2008)
74 (Lahey, 2014)
There are Good Days and Bad Days – One of the most confusing aspects of working with children who have undergone trauma is that their abilities vary almost daily. Some days they will seem to be doing great and understand everything you teach, but other days they will seem completely shut off, or regress years in their ability. This is normal and to be expected. Allow space and time to deal with these changes and variations in their abilities. Focus on teaching to where they are at on any particular day, or moment. Regression can be especially evident around the anniversaries of a trauma event.

Eat healthy and drink plenty of water – For some children their traumas are around neglect. Hunger can be a big trigger since infants and small children are so reliant on adults for their food. Providing access to drinks and snacks can help eliminate hunger and thirst as a trigger.

“I’m here” – It’s a simple phrase that can have a powerful impact on a child who has experienced trauma and loss. If you are supporting a child with trauma history this is one of the most important things you can offer, yourself. But don’t just say it, do it. Be there for the child. Fully and completely. No matter what the child throws at you, no matter how hard some days are, be there, and come back the next day ready to try again. This can be so hard. Showing up every day when behaviors are out of control can seem daunting, but it is so important for these children to learn that there are adults in their lives that will show up. That will be there for them. That are reliable and consistent. People that believe in them and are supportive, no matter what. Adults that quite simply live the motto: I’m here.75

When reactions are severe (such as intense hopelessness or fear) or go on for a long time (more than one month) and interfere with a child’s functioning, give referrals for additional help. As severity can be difficult to determine—with some children becoming avoidant or appearing to be fine (e.g., a child who performs well academically no matter what)—don’t feel you have to be certain before making a referral. Let a mental health professional evaluate the likelihood that the child could benefit from some type of intervention.76

Use Music

Music as therapy was originally used in rehabilitation settings in the United States for returning veterans of World War II. From the first, music therapy was reported effective for persons with traumatic brain injury, neurological conditions and diseases, and battle fatigue, later termed posttraumatic stress disorder (PTSD). Work with music has been widely judged helpful in cases of psychological trauma, yet we do not know why it’s helpful. The origins of music as an emotional experience, how it’s processed in the brain, and why it stays in the memory so long remain largely a mystery.

For children and adolescents who have experienced trauma, the resulting impact on the brain is connected with difficulties in emotional regulation, behavior problems, poor concentration, and deficits in verbal memory). Special educators who work with traumatized children need to understand the neurological underpinnings of their students’ behavioral and learning challenges and how to enhance their learning potential.

Recent development in neuroscience has shown that brain development is ongoing: life experiences affect brain circuitry. Connections between neurons in turn affect behavior. About one-fourth of human

75 (“Supporting a child with trauma history - essential tips”, 2014)
76 (“Child Trauma Toolkit for Educators”, 2008)
genetic material depends on environmental stimulation for its activation. Interactions with the environment can produce either positive or negative changes in gene expression. By activating genes, positive experiences can strengthen healthy neural connections and promote cognitive and emotional development. In contrast, neglect and abuse bring about chemical and hormonal changes that prevent the development and integration of brain systems.

An important method of establishing emotional regulation in trauma survivors involves music and movement. Recently, Daniel J. Levitin, a neuroscientist and former musician and record producer, has investigated in detail how music affects brains, thoughts, and emotions. The regions of the brain that develop into the auditory cortex, the sensory cortex, and the visual cortex are all undifferentiated in the human infant. Levitin finds that music engages all the sensory areas and facilitates their differentiation and development. By engaging the cerebellum, the motor cortex, and the frontal lobes, music also plays an important role in language development. Music activates both hemispheres of the brain and helps with transferring information from one side to another. Listening to music activates the motor cortex, subcortical structures, and the cerebellum. Research has shown that children with high levels of music training have increased ability to manipulate information in working and long-term memory. Children who practice music have better skills in geometric representation and reading. Children appear to process music in both hemispheres, regardless of whether they are formally trained.

Fran Herman, a music therapist, described a case in which a nine-year-old boy with a trauma history responded to music therapy after other therapies had been unsuccessful. Severe depression, aggressive acting out, and emotional dysregulation had prevented the child from participating in school. Initial music-therapy sessions focused on increasing his attention span and helping him to enjoy self-expression. Gradually, he improved his ability to take turns and curbed his impulsivity. Herman reported that after completing the formal music-therapy sessions, the boy was able to attend school and learn to read. Another music therapist reported the case of a thirteen-year-old rape victim who had low intellectual functioning and PTSD. Five sessions of music therapy that encouraged her to improvise music were found to have improved her confidence and helped her manage her extreme anxiety.

Teachers are seldom music therapists, and very few of them are trained musicians. How can they add music to classroom experiences for children with PTSD? Some classrooms start the day with three to five minutes of classical music as a soothing and attention-focusing tool. Other classrooms are learning math using “Math Songs” or practicing reading with music and movement. Classical music such as that of Mozart, Haydn, Vivaldi, Bach, or Handel can help students concentrate; more romantic classical music, such as Debussy’s or Ravel’s, is suggested for creative assignments. Popular music and jazz, as long as they possess predictable rhythms and dissonant notes are not used, can also aid attention, emotional regulation, and memory.

The need to regulate emotions in children’s trauma recovery is paramount. Failure to self-regulate has been connected with later diagnoses of major mental illnesses, including psychosis, borderline personality disorder, and drug and alcohol abuse, among others. In contrast, developing or repairing emotional regulation brings great rewards for the child or adolescent trauma victim. Children’s ability to self-regulate predicts high social competence, high academic success, low levels of negative emotion, and even higher SAT test scores.
We are fundamentally emotional and social creatures. The role of emotion in education is gaining increased attention as neuroscience demonstrates what good teachers already know: emotions affect student performance.

Researchers agree that emotional processes are required for the skills and knowledge taught in school to enter into long-term memory and to transfer to real-life situations. When a student is anxious, stressed, and emotionally reactive, the amygdala responds by blocking the absorption of sensory input. Under those circumstances, information taught cannot enter long-term memory processed in the hippocampus.

Teachers are learning that they need to activate the brain’s emotional systems to help students remember and apply what is being taught. Students with trauma histories are primed to over- or under-react to emotional experiences; their immediate tendency is to make connections to their trauma experiences. The enormous challenge of teaching students with PTSD is to help them manage their emotional responses when they are asked to focus their attention, call up relevant memories, and make associations in order to learn. If a classroom music program could help improve emotional regulation for those students, the benefits would support increased learning and better outcomes as adults. The evidence to date supports music’s positive role in helping traumatized children, particularly in therapeutic and classroom settings, manage their emotions, activate brain pathways, and learn new cognitive and emotional information.  

Resilience

Mirena was born in 1955, the year that an experiment began. Mirena’s family, like all families on Kauai who had babies in that year, was approached by two researchers: Emmy Werner and Ruth Smith. Werner and Smith were psychologists who had become interested in which factors in a child’s early life set them off on a positive trajectory, and which ones really get in the way of them reaching their full potential.

Little did the families or the researchers know that this would turn into one of the longest studies of child development and childhood adversity that there has ever been.

“We were not even born when the initial investigations started,” says Mirena. “There were 698 families that said, ‘Yes, we’ll support whatever you need.’” The researchers monitored the families from before the babies’ birth, following them and checking in at ages one, two, 10, 18, 32 and 40. They managed to track most of the cohort. “When you come from an island such as Kauai, people don’t move away,” explains Mirena. “And if they do move away, chances are you’re going to find somebody, some relative, who knows where they are … they were pretty successful in tracking us down.”

The researchers followed first the parents and then the children, finding out all sorts of things about how the cohort were doing and what sort of background they had come from. They used a mix of semi-structured interviews, questionnaires and community records of mental health, marriage, divorce, criminal convictions, school achievement and employment.

“My recollection of being a participant, I think the first time, age 18, I was already a young mother,” says Mirena. “I got a phone call from Dr Ruth Smith… she introduced herself and said, ‘Can I come and talk story?’ – which is interview. We’re talking story right now.”

77 (Foran, 2009)
Mirena spent her childhood in a three-bedroom house, with her parents and six siblings. The children walked the mile to and from school, arriving back home to a house they were responsible for keeping clean and tidy. She recalls the black-and-white TV with a piece of shaded paper stuck on the front to make it look like color.

Hawaii back then was a mix of plantations and a growing hotel industry. Mirena’s father worked for the coastguard. Her mother worked for Aloha Airlines as an entertainer, hula dancing and singing. Mirena’s family had very little money to feed the seven children, and her father drank heavily. Her parents’ marriage was often difficult and sometimes physically violent. “We were very poor, my father was an alcoholic,” Mirena says.

The researchers in the Kauai study separated the nearly 700 children involved into two groups. Approximately two-thirds were thought to be at low risk of developing any difficulties, but about one-third were classed as “high-risk”: born into poverty, perinatal stress, family discord (including domestic violence), parental alcoholism or illness.

“Well, my family definitely fell in the ‘at-risk’ category,” says Mirena. “And you know, I didn’t fully... when you live in an environment, that’s just where you are. You don’t ever stand back and say, ‘Well, I was at risk.’”

The researchers expected to find that the “high-risk” children would do less well than the others as they grew up. In line with those expectations, they found that two-thirds of this group went on to develop significant problems. But totally unexpectedly, approximately one-third of the “high-risk” children didn’t. They developed into competent, confident and caring individuals, without significant problems in adult life. The study of what made these children resilient has become as least as important as the study of the negative effects of a difficult childhood. Why did some of these children do so well despite their adverse circumstances?

The study of how some of these Kauai children thrived despite early adversity is still ongoing. Lali McCubbin is the current principal investigator. The daughter of Hamilton McCubbin, who worked with the original researchers, she knows the history of the project well and has some Hawaiian heritage herself.

“This was a really groundbreaking study,” she says. “What made the study unique was that despite these risk factors ... that wasn’t a guarantee ... that you would be on a certain trajectory. And in fact, what we found was there was resilience. These children were able to thrive, were able to grow, were able to develop ... able to live productive and fulfilling lives.

“A lot of these risk factors are what my father grew up with,” McCubbin adds. “Alcoholism, strict discipline, domestic violence. And I was very fortunate, I didn’t grow up with that, I had a stable home, a very loving home. None of those risk factors. So I was fascinated with how you can take a risk factor intergenerationally and create not intergenerational trauma but intergenerational resilience.”

Three clusters of protective factors tended to mark out the children who did well despite being “high-risk”: aspects of the child’s temperament, having someone who was consistently caring (typically but not necessarily a family member), and having a sense of belonging to a wider group.

Overall, the third of “high-risk” children who showed resilience tended to have grown up in families of four children or fewer, with two years or more between them and their siblings, few prolonged
separations from their primary caregiver, and a close bond with at least one caregiver. They tended to be described positively as infants, with adjectives such as “active,” “cuddly” or “alert” and they had friends at school and emotional support outside of their families. Those who did better also tended to have more extracurricular activities and, if female, to avoid pregnancy until after their teenage years.

The picture was complex, though, with different factors seeming to be important at different ages, McCubbin explains. At age 10, doing well was linked to having been born without complications and having parents with fewer difficulties such as mental health problems, chronic poverty or trouble parenting. At age 10 and 18, positive individual personality traits seemed to help, as well as the presence of positive relationships, though not necessarily with the parents. At age 32 and 40, having a stable marriage was protective, as was participation in the armed forces.

Strikingly, even some children who had “gone off the rails” in their teenage years managed to turn things around and get their lives back on track by the time they were in their 30s and 40s, often without the help of mental health professionals.

Many of the factors involved in such turnarounds, and several of the factors associated with resilience throughout the children’s lives, involve relationships of some kind, whether within the context of a larger community—a school, a religion, the armed services—or in the context of one important person.

“Our relationships really are key,” says McCubbin. “One person can make a big difference.”

Wider research suggests that the more risk factors children face, the more protective factors they are likely to need to compensate. But as McCubbin says, “A lot of the research supports this idea of relationships, and the need to have a sense of someone that believes in you or someone that supports you—even in a chaotic environment, just having that one person.”

“Children don’t know what goes on in the lives of the adults who care for them,” says Mirena. “They’re subject to that life and not by choice. No child chooses to be poor, no child chooses to have alcoholism in their home. It just is, and you deal with it.”

Mirena has done a lot of thinking about her parents’ role in her life, and the importance of having caring and supportive people and environments outside the immediate family home. As the eldest child, Mirena often felt responsible for trying to resolve family rows. She has memories of her parents’ violent arguments. “I saw my mom just raging with my dad. He’s in the kitchen, sitting, she’s busted all the bottles all over the kitchen … There’s blood everywhere and I’m thinking, ‘What can I do? I’m just a kid.’”

Mirena thinks her grandmother played a pivotal role. “Luckily for me, we had a gran-ma down the street,” she says. “My mother’s parents lived nearby. They made a huge difference for me, just knowing that somebody loved me no matter what. And I was not always the easiest child. I was sometimes very aggressive and you become that when you have to defend your family. And we spent most of our days outside, so dirty, we were always dirty. Long, tangled hair.

“When things were really bad I would end up at my gran-ma’s house. She was not living that far away … I cut through the park and cut through the cane fields and by the time I got to her there was red dirt and mud everywhere. And my gran-ma was immaculately clean. Her house was spotless … And so when I showed up, on her doorstep, full of Anahola red dirt and mud … I just think, what did my gran-ma think when she saw me, coming her way?
“But not once do I remember being turned away from her home, not once. What she would do is she would take me in the outside cement tub. And she would wash the mud off me. And then she’d take me in the inside bathtub and I remember my gran-ma is the only one who would scrub me clean.”

Mirena also thinks the boarding school she went to when she was 12 helped. “I realized when I came here and I lived in the dorm, with all these different people, that families didn’t have to be like this,” she says. The school’s sense of community was important for her, and she remains working there today. It’s also where she met her future husband, with whom she now has seven children and 15 grandchildren of her own. She says she recalls her grandmother often, particularly when thinking how she wants to be with her family.

“I remember on some of my darkest hours, raising these children in my life, thinking about her and knowing that I need to give as much as she gave to me. There is nothing that surpasses for me that example of love and caring. So, I do my best to be that kind of gran-ma to my own.”

It seems blindingly obvious that how we are cared for by our parents or primary caregivers is crucial, but the growing realization of just how important love and affection are to children has only come about in the last century. Many of the studies that helped us to understand how childhood experiences can affect our adult selves hadn’t been published back when Mirena and the rest of the Kauai cohort were born.

Some of what we know about the effect of parenting comes from watching animals. At Stanford University in the 1930s, in a series of experiments that would be unlikely to get through an ethics committee today, Harry Harlow separated baby rhesus monkeys from their mothers, and raised them in separate cages. He allowed the baby monkeys access to two models of a larger monkey: one made only of wire, but with a bottle of milk attached, and one with no milk attached but which was covered in a soft terry towel type of material. The young monkeys spent all their time on the soft model mother, craving the comfort, and only went to the wire one for food, before quickly returning to the toweled surrogate. This put into question all previous ideas about food and shelter being the primary drives for an infant, and suggested that the role of comfort might be much more important than was previously thought.

We often talk about “getting attached” to someone or something, but the psychological understanding of attachment is more specific. The father of attachment theory was John Bowlby, a psychiatrist, psychologist and psychoanalyst, who defined it as a “deep and enduring emotional bond that connects one person to another across time and space.” Most babies and their caregivers form an attachment, and the quality of this attachment can be affected by the sort of care the baby experiences. We know now that these early attachment relationships can form the basis, to some degree, for the way we relate to others as we grow up, even in adult romantic relationships.

Bowlby was interested in what happened to children who were separated from their caregivers early on. One of his earliest studies was of 88 adolescent patients from his clinic in London. Half had been referred for stealing, and half had emotional troubles but had not shown delinquent behavior. Bowlby noticed that the “44 thieves,” as he called them, were much more likely than the control group to have lost a caregiver when they were young, which led him to think about how early experiences of loss can have profound effects.

Bowlby went on to write extensively about the importance of attachment and loss of attachment figures, influencing his colleague Mary Ainsworth to develop a way of measuring the quality of attachment
between a caregiver and child, which is still used today. The “strange situation,” as it’s called, involves observing a child’s reaction to their caregiver leaving the room and later returning, and also their reaction to a stranger. Based on their reactions, their attachment can be classified in ways that can partly predict their later development. The most worrying classification, “disorganized attachment,” tends to be seen in children whose attachment figures have caused them harm, and has been linked to much poorer abilities to relate to others and regulate emotions in later life.

In the Kauai study, the children living in adverse circumstances largely remained in their homes, and some of them thrived regardless. But across the other side of the world, anyone in Europe old enough to watch TV in 1990 is likely to have a memory of the Romanian orphans. Images of children found in orphanages after the collapse of Nicolae Ceausescu’s rule are deeply sad: bleak rooms, packed full of small children with big eyes, pulling themselves up on their cot bars to see the Western camera operators filming them.

Under Ceausescu, abortion and contraception had been banned, leading to a massive rise in birth rates. Children without anyone to care for them had been left in institutions, to experience immense emotional deprivation and neglect. They had very little individualized care, no one to hug them or comfort them, no one to sing them to sleep. Their basic physical needs were met in terms of being given food and kept warm, but their basic emotional needs for affection and comfort were not. They learned not to even bother reaching out when adults were around.

The discovery of the conditions in the orphanages prompted a rush of compassion and charity initiatives to adopt the children. The UK Department of Health contacted a researcher at King’s College London’s Institute of Psychiatry, Psychology & Neuroscience, Michael Rutter, to ask him to measure what was going on.

“Like everyone else, I saw the media,” explains Rutter, sitting with me in his light and airy office at the Social Developmental and Genetic Psychiatry Centre in south London. “But [the research] all started because the Department of Health contacted me, to say they didn’t know what was going to happen to these kids, would it be possible to do a study, follow them through, and find out what were the policy and practice implications? ... So I said, let’s have a go.”

For Rutter, this was a scientific opportunity as well as a practical one: “This was a natural experiment.” All previous studies of children in care had involved groups of children who had entered institutions at a range of ages, meaning that variation in their behavior and wellbeing might be related to things that had happened before they were in care. The Romanian orphans, though, had all been admitted within the first two weeks of life. “It’s a horrible thing to have happened,” says Rutter, “but given that it did happen, one may as well learn as much as possible.”

Rutter’s study assessed the children over time as they settled into new adoptive families. “The findings were surprises all along the line,” he says. Prevailing wisdom at the time was that serious adversity in childhood led to a range of emotional and behavioral problems. Rutter’s research found something different when the children were followed up: apart from a minority who had specific patterns of extreme social difficulties, such as autistic spectrum disorders, “There was no increase in the ordinary emotional and behavioral problems,” he says. “So that was one surprise.” Another surprise was that if the children were adopted out of care early enough—within six months—then they seemed to go on to develop well.
Rutter sees this resilience in the face of adversity as a dynamic process: “Resilience initially was talked about as if it were a trait, and it’s become clear that’s quite the wrong way of looking at it,” he says. “It’s a process, it’s not a thing.”

“You can be resilient to some things and not others,” he explains. “And you can be resilient in some circumstances and not others.” He acknowledges that “children, or for that matter adults, who are resilient to some sorts of things are more likely to be resilient to others,” but he stresses that resilience is not a fixed trait.

Rutter offers a medical analogy: “The way to protect children against infections is either to allow natural immunity to develop or to immunize.” Either way, children benefit from limited early exposure to pathogens. To prevent this from happening is, in the long term, harmful. Likewise, children need some stress in their lives, so they can learn to cope with it. “Development involves both change and challenge and also continuity,” says Rutter. “So to see the norm as stability is wrong.”

This suggests that there is something about the way that some children adapt to and cope with adverse circumstances that enables them to be emotionally resilient. It’s not the stress itself that inevitably causes problems, although in the face of enormous adversity it would be much harder to remain resilient, but it’s the interaction between the stress and the ways of coping that is really important. Maybe some ways of coping are more helpful than others, and maybe some protective factors mean that the stress gets managed better.

If we think of it as an adaptive process, how do our brains, our thought processes and our behaviors change to help us to cope with adverse early circumstances? Eamon McCrory, professor of developmental neuroscience and Psychopathology at University College London, is investigating just this.

McCrory and his team are collecting a combination of brain images, cognitive assessments, DNA and perceptual data, from children who have been maltreated and allocated a social worker, and also from a control group who have not. The two groups have been painstakingly matched by age, pubertal development, IQ, socioeconomic status, ethnicity and sex. The researchers aim to follow their cohort for as long as funding allows, trying to unpick what would predict which of the children who have been maltreated will go on to develop difficulties and which will be resilient.

McCrory used to work clinically for the National Society for the Prevention of Cruelty to Children and he understands the clinical challenges that are involved with this population: “Resources are very limited,” he explains, “so if you have a hundred children referred to social services who experienced maltreatment, we know that the majority of them actually won’t develop a mental health problem. But then a minority are at significantly elevated risk … At the moment, we have no reliable way of knowing which kid is which.”

McCrory’s research is searching for reliable clues that a child will go on to develop difficulties, so that we can begin to know who to target to help. So far, McCrory has identified three main areas where there are likely to be differences: threat processing, brain structure, and autobiographical memory.

Studies of war veterans as well as maltreated children reveal that areas of the brain involved in processing threats, such as the amygdala, are more responsive both in the soldiers coming back from war and in children who have experienced early abuse. It makes sense that if you have been in danger a lot,
then your brain may have adapted to be very sensitive to threat. “Our main theoretical proposal at the moment is around a concept of latent vulnerability,” McCrory says, “which is the idea that maltreatment ... leads a number of biological and neurocognitive systems to adapt to a context characterized by early stress, threat and unpredictability, and adaptations to those systems may be adaptive and helpful in that context, but embed vulnerability in the longer term.”

The team are also scanning the children’s brains to try to see whether difference in brain structure in maltreated children are stable over time or changea. “We know very little about malleability of brain structure over time,” explains McCrory. “We know there are structural differences in the orbitofrontal cortex and the mediotemporal lobe, for example, which are quite robust, but we’ve no idea whether they are static or whether they may shift over time, at least in certain children.”

The third area the team think is important is autobiographical memory. The brain system involved in thinking about and processing memories of personal history might also be shaped by early traumatic experiences in a way that is adaptive in the short term but unhelpful in the longer term.

Autobiographical memory is the process whereby you record and encode your own experiences and make sense of [them],” explains McCrory. “We know that individuals who have depression and PTSD [post-traumatic stress disorder] have... an over-general autobiographical memory pattern, where they lack specificity in their recall of past experience ... We also know that kids who have experienced maltreatment can show higher levels of this over-general memory pattern. And longitudinal studies have shown that a pattern of over-general memory can act as a risk factor for future disorder.

“One hypothesis is that the over-general memory limits an individual’s ability to effectively assimilate and negotiate future experiences, because we draw on our past experiences to be able to predict the contingencies and likelihood of events in the future, and use that knowledge to negotiate those experiences well. So... over-general memory might limit one’s ability to negotiate future stressors.”

It makes sense that if horrible things have happened to you in the past, you will want to avoid thinking about and remembering them, which might lead to a tendency to have a memory that’s light on detail. McCrory’s team are finding reliable associations between over-general memory patterns and childhood maltreatment.

Back to Mirena in Hawaii, and she finds it hard to know whether her memory has been affected by her early experiences: “from a personal perspective I wouldn’t know,” she says. “We don’t know what we don’t remember.”

In an ideal world, we wouldn’t have to work out how to best to help children who have been abused or neglected; we would instead be able to remove those risks. Admitting that we don’t live in that ideal world, and trying to understand what we can do to prevent the negative effects of childhood adversity and to boost individual resilience, is perhaps the next best thing.

The idea of resilience as an adaptive process rather than an individual trait opens up the potential for other people to be involved in that process. McCubbin sees the importance of relationships as being wider than only protective relationships with people, and she and her team have created a new measure of “relational wellbeing” to try to capture this. “We think of relationship as with a person,” she says. “But
what we really found was that it was relationship with the land, relationship with nature, relationship with God, relationship with ancestors, relationship with culture.”

Mirena is clear about the importance of human connection, and so is the research, although we have a way to go before what we are learning about how to best care for children who have survived childhood maltreatment is clearly understood and communicated to all those working with children. For Mirena, the vital thing is still “that there’s somebody they know cares about them. Just one person, it can make all the difference.” 78

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78 (Maddox, 2016)
Bibliography


