

Another type of ACE, Adverse Childhood Experiences March 5, 2018

One of the most consistent findings, and yet one of the most perplexing, is that people who are of lower social and economic classes are not as healthy, nor do they live as long as those in the middle and upper classes. This is true even when we take into account all of the things we know to be important, such as nutrition, sleep, smoking and injuries — but why? The first big piece of the puzzle came to light in 1998 with the publishing of a study of thousands of people in the Kaiser HMO who answered questions about their experiences growing up and about their health or illnesses as adults. They were asked about abuse they experienced before they were 18 years old, using questions to uncover psychological, physical and sexual abuse. People were also asked questions aimed at 4 other categories: living with someone who used street drugs or abused alcohol, living with someone who was mentally ill, living in a home where the mother was treated violently and living in a home where a household member went to prison. These 3 categories of abuse and 4 categories of dysfunction are known as Adverse Childhood Experiences (ACEs). They turn out to be highly predictive of disease, disability and early death for those individuals who were exposed to 4 categories or more. In the study there were 3,859 people who reported no exposure in any category, 2,009 respondents had one, 1,050 people reported two and 590 reported exposures to 3 categories but these were not statistically different in terms of their likelihood of having cancer or heart attack or chronic bronchitis/COPD. However, the 545 people who had exposures to 4 or more categories were more than twice as likely to have a heart attack, twice as likely to have cancer and 4 times as likely to have chronic lung disease as those who had no ACE.

These abusive and dysfunctional situations may be many things, but they are always stressful. While stress is not always bad, stress that is of high intensity or long duration is toxic stress, and under these conditions the body produces hormones and neurotransmitters that have evolved to help humans live through stressful periods such as famines. According to one expert:

The result of this extended stress response is that a child's nervous system, immune system and even DNA are changed. Toxic stress causes the fear centers of the brain (limbic system, amygdala) to significantly increase in size, and the child can develop symptoms very similar to post-traumatic stress disorder (PTSD). Toxic stress decreases the size and impairs the functioning of the regions of the brain responsible for learning, memory, executive functioning (prefrontal cortex, hippocampus). As a result, the child is placed at risk for having learning and behavior problems. The child's immune system is suppressed and puts the child at risk for developing a variety of chronic, lifelong health conditions including asthma, heart disease, stroke, autoimmune disease and cancer. The DNA is changed in such a way that the child's gene expression affects bodily functions and can potentially be passed on to the next generation.

<https://www.texaschildrens.org/blog/2016/12/toxic-stress-and-child-development>

Evidently poor health is associated with low economic class because both are caused by the same thing. Exposure to four or more ACEs leads to both poor health and poor cognitive skills, which in turn results in low earning capacity. Next week we will look at what can be done, remembering...

“It is easier to build strong children than to repair broken men.” — Frederick Douglass

Last week we looked at Adverse Childhood Experiences (ACEs) and saw that there is a strong relationship between the experience of traumatic or abusive situations in childhood and the health behaviors and health outcomes those individuals have as adults. Because the topics of trauma and abuse in children are so important, and because doing something about them -- while maintaining the freedoms guaranteed by our Constitution -- is so difficult, we would like to have proof that what is proposed as a solution is actually going to work. Unfortunately, we are prevented by the very freedoms just mentioned as well as by common decency, from obtaining such proof. In order to actually prove that any treatment is effective in a population it is necessary to divide the population into two groups that are similar, then manage them in exactly the same fashion except that one group receives the study treatment while the other does not. Because we cannot exert the kind of control necessary to have proof, in this case, we have to settle for evidence.

Beginning in the late 1960s a series of simple but fascinating study was begun, evaluating the ability of various children to delay gratification. The basic design is as follows: A 4-year-old child is introduced to an experimenter who then says that he must step out for a few minutes. They offer to give the child two marshmallows when the experimenter gets back, if they can wait, or the child can ring a bell to summon the experimenter back early and get a single marshmallow. The aim is to measure how well different individuals can delay gratification at 4 years of age. The ability to delay gratification is related to the broader set of behaviors known as "self-regulation", and this in turn is tied to lots of behaviors that impact our health. These children, and many others in similar experiments around the world, were followed into adolescence and then into adulthood. It turns out that the children that were good at waiting when they were 4 were described by their parents as significantly more competent socially and academically at 14 years of age, when assessed by statistically valid questionnaires. In some variations of the testing, seconds of delay time in preschool were significantly related to their Scholastic Aptitude Test (SAT) when they applied to college. In another study, each additional minute that a preschooler delayed gratification predicted a 0.2-point reduction in Body Mass Index (BMI) in adulthood.

Self-regulation and the "executive functions" of the brain are the very things that are adversely affected by ACEs that seem to be responsible for the negative outcomes later in life. Cognitive flexibility and working memory, the ability to hold information in the mind and use it, are principal components of the brain's executive functions. The more ACEs present in a child's life, the more likely it is that the child will be deficient in the skills of executive function and self-regulation. The evidence suggests that by intervening to improve executive function and self-regulation, at least some of the effects of ACEs can be overcome. The Harvard Center for the Developing Child has excellent suggestions for doing just that at <https://developingchild.harvard.edu/science/key-concepts>. There you will find several short videos as well as literature for professionals and lay persons. These types of suggestions are for the people that are already involved in a child's life, however. What, if anything, can be done by people who are not parents? Providing treatment options for parents who suffer from addiction is one thing that can be effective. Also, making parenting classes available and supporting parenting classes, such as through work place policies that allow time for these activities, can be effective. There are several suggestions at websites of the CDC (<https://www.cdc.gov/violenceprevention/childmaltreatment/prevention.html>) and the National Child Traumatic Stress Network (<http://www.nctsn.org/>). Parenting classes are most effective in an environment where attending these classes is seen as normal, not unusual or remedial. Indeed, the most important role of the community may be in setting the expectation that parenting is

the most valuable job in the world, and no one is born knowing how to do it well. Therefore, training for that job is crucial.