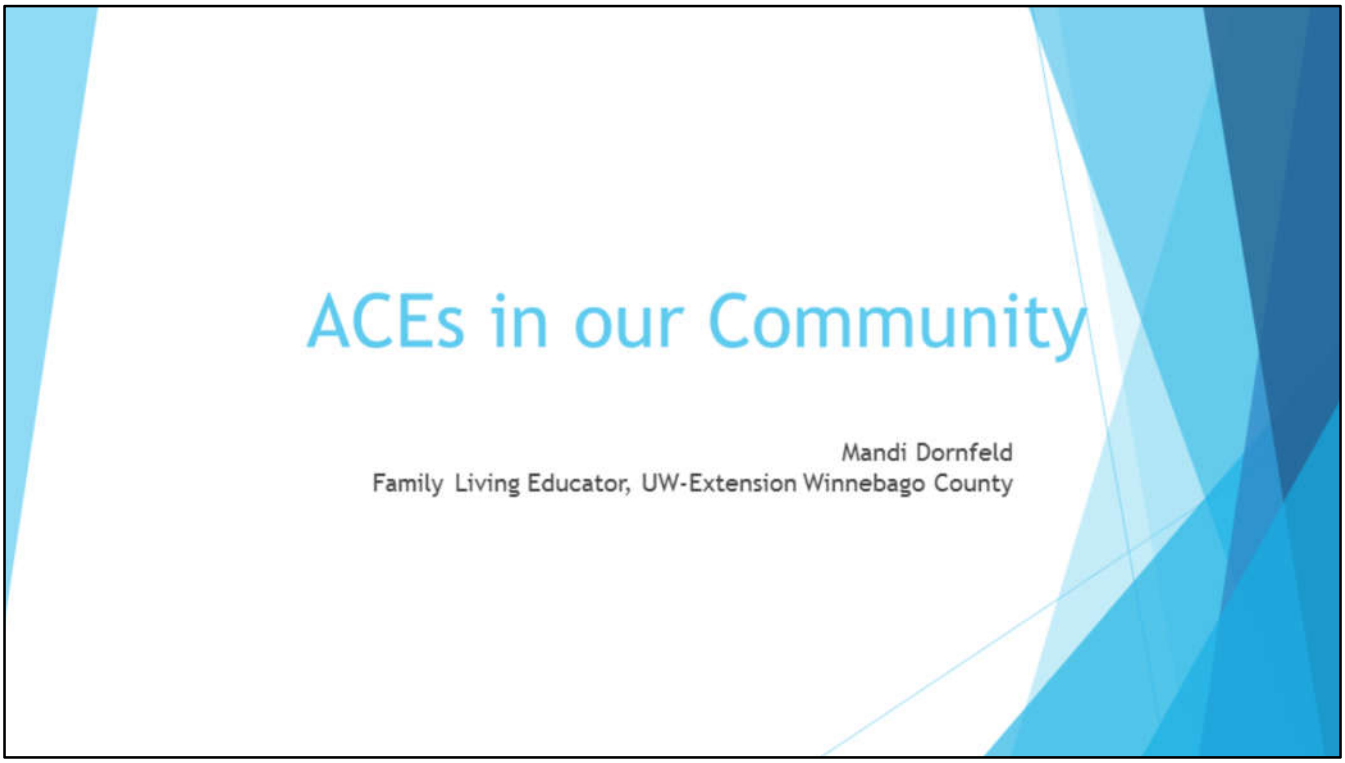
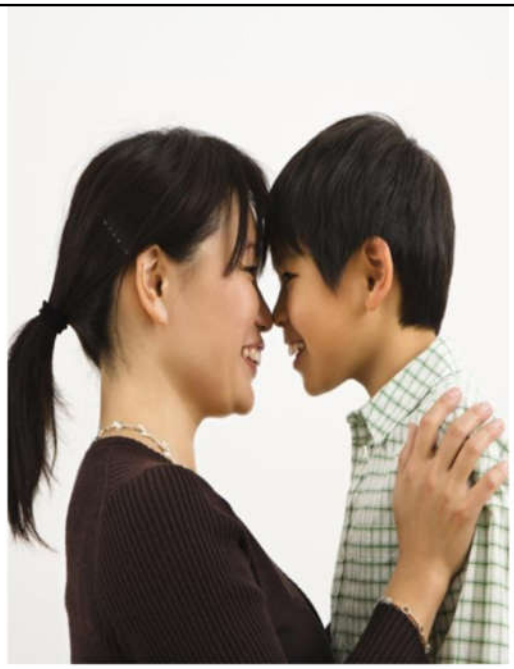

ACEs in our Community
Mandi Dornfeld
Family Living Educator, UW-Extension Winnebago County

What if the largest public health discovery of our time is about the smallest of us?



"The solution to all adult problems tomorrow depends in large measure upon the way our children grow up today."

- Margaret Mead, Anthropologist

Wisconsin ACE Interface Project 2014-17

- The Wisconsin ACE Interface Project proudly presents ACE Interface to a wide array of groups and communities throughout Wisconsin, using a curriculum created by Dr. Rob Anda, co-principal investigator of the ACE study and Laura Porter, of Washington state, co-founders of ACE Interface.
- Wisconsin has a cohort of master trainers authorized to present ACE Interface. The project is co-sponsored by Wisconsin Child Abuse and Neglect Prevention Board and SaintA and administered by SaintA.
- To request an ACE Interface training presentation, contact Sara Daniel of SaintA at sdaniel@sainta.org or 414-465-5711.

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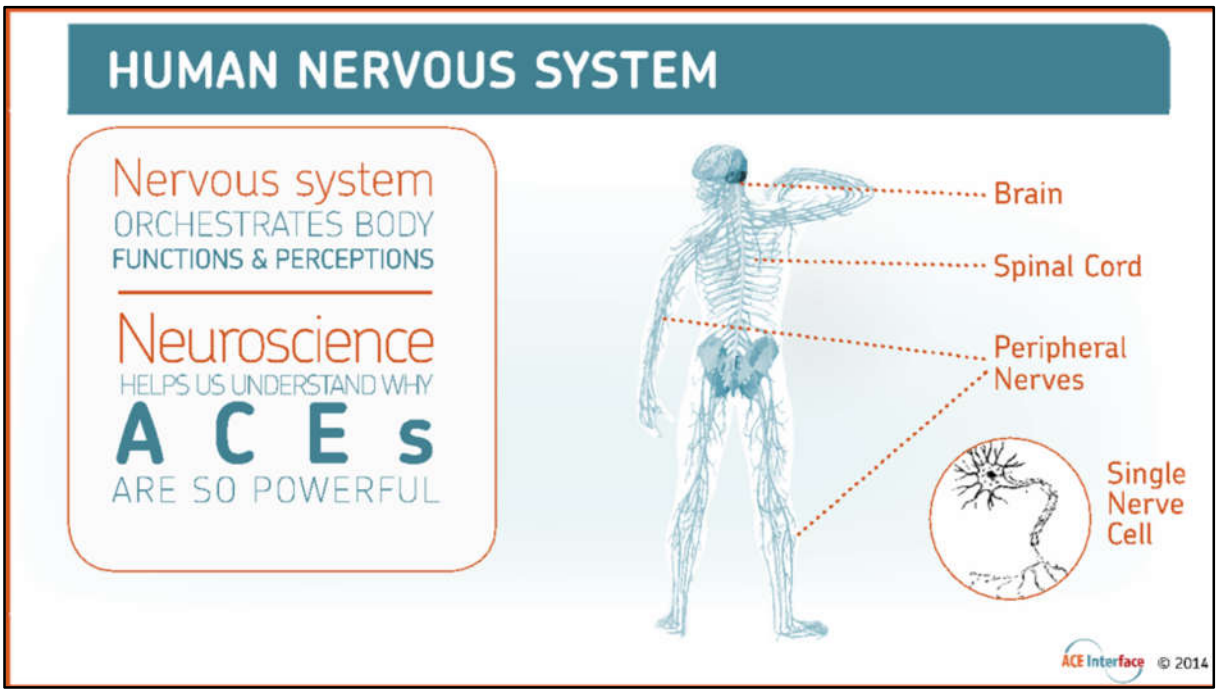
Wisconsin ACE Interface 2014 4

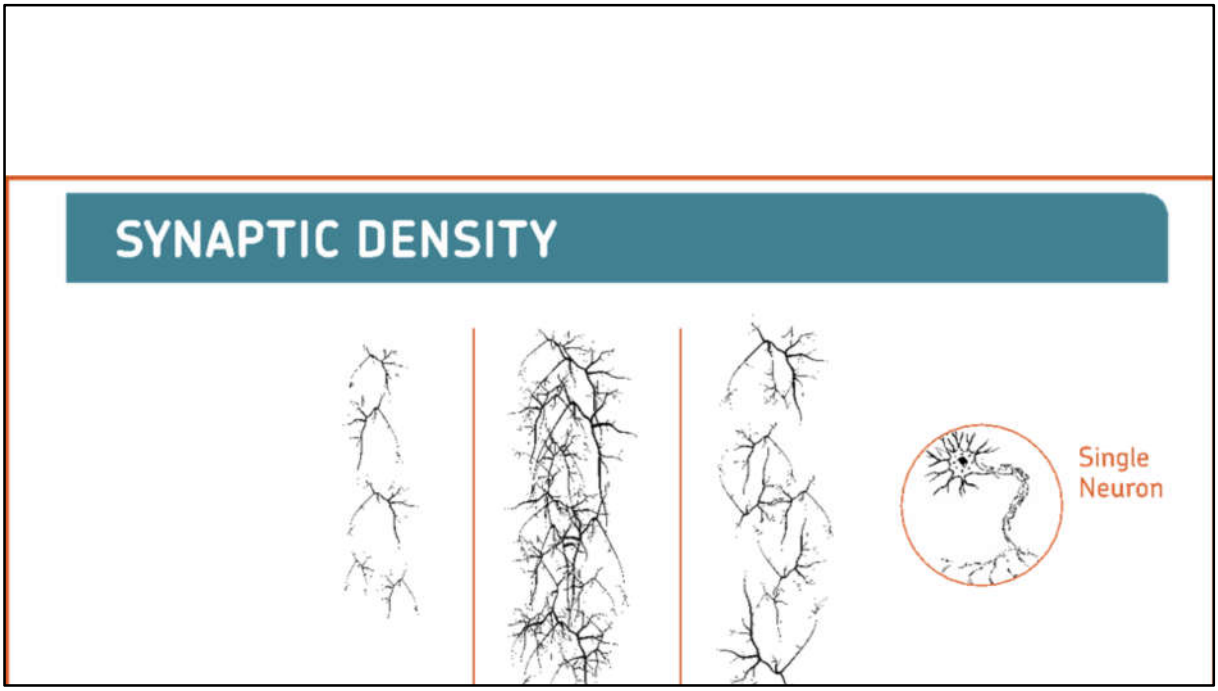


Before I introduce the ACE Study, I want to explain a little about brain development. The human central nervous system connects us to ourselves, to other people, and to the world around us.

The central nervous system consists of the brain and spinal cord that integrate all of our senses and information from receptors located throughout the human body. It regulates internal body functions and manages elaborate chemical and electrical signaling.

The nervous system considers sensory input in the context of each and every second, almost instantaneously, and determines our understanding of, and response to the world we live in. Cells in the nervous system are called neurons. They are stunningly effective at processing and transmitting information, and they have a central purpose in doing so: to adapt in ways that keep us alive.

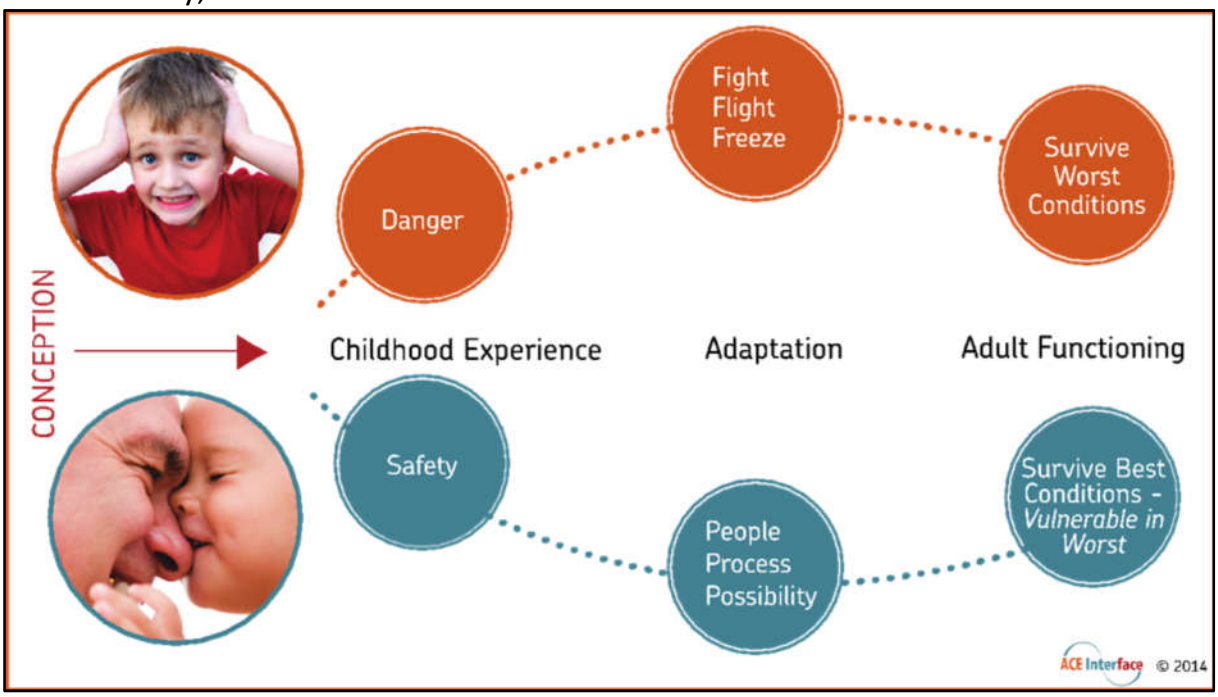
Dr. Martin Teicher of Harvard University reviewed and approved all of the brain science facts in this presentation.



On the far left we see a set of brain cells--or neurons--and what they might look like at the time of birth. There aren't many connections between these cells at birth; babies are born with only the connections and brain functions they need at that point in life.

Most of the wiring of our brains occurs as the result of life experience from our senses. By age six those same brain cells now have many connections. The wiring of the brain--or the making of complex neural networks is experience dependent. What gets experienced the most tends to lead to more robust connections between nerve cells that form networks. This is a process called branching or "arborization".

The last section of the slide represents age 14--about the time of puberty. Notice that there are now fewer connections between the brain cells than there were at age 6. This is because the least "experienced" connections tend to withdraw at about the time of puberty. This process is called "pruning". This phenomenon helps to explain why neglect--or not getting the experiences we need can have such a powerful negative impact on health and social functioning.



Every person's life is unique. But for illustration, let's imagine two worlds – one is mean and dangerous. The second is kind and generous.

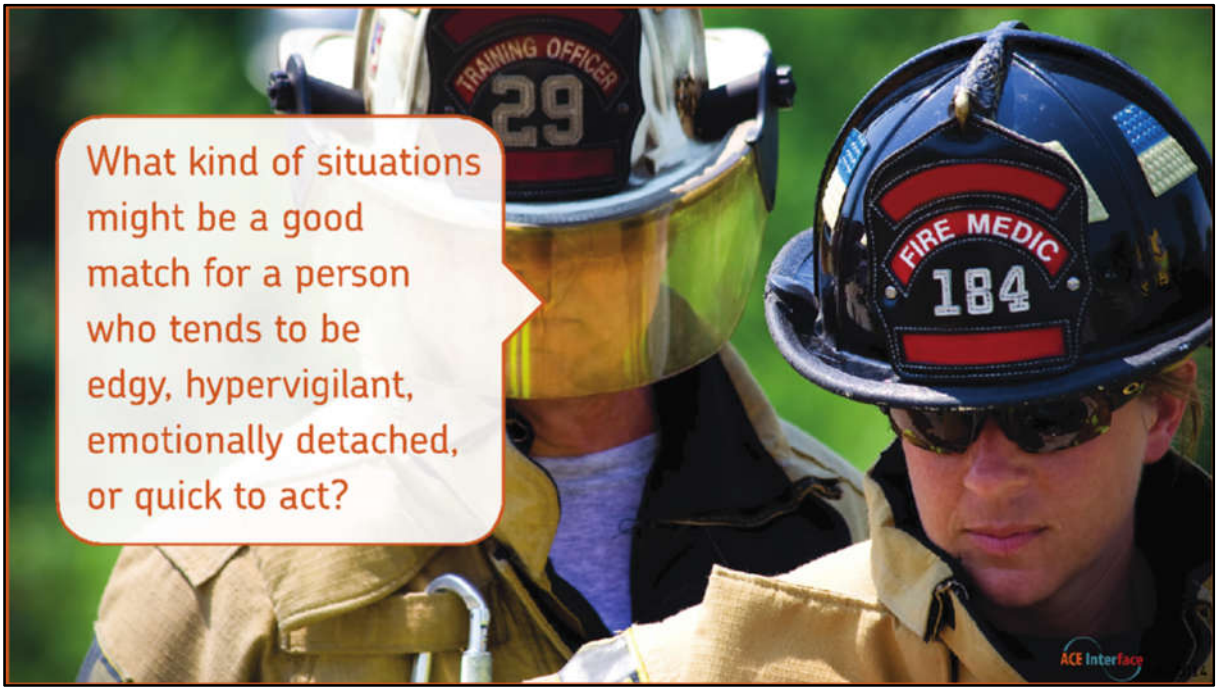
Traumatic experience during development – like abuse, neglect, and chaotic relationships– generates predictable patterns of brain architecture, behavior, and traits.

Humans are only really made to be under stress for about 20 minutes at a time – long enough to prepare for a fight, or to hide. So experiences that cause stress chemicals to be continuously produced, for example child abuse, neglect, or even being in a war zone, have a big impact on development. Under these circumstances, our bodies tend to prepare for life in a dangerous world.

Stress hormones exert influence on cells, chemicals and wiring. They sculpt brains that are wired for certain characteristics – like being edgy, hot tempered, impulsive and hypervigilant, or being withdrawn, dissociated, or numb. This is the path outlined on the top line of the slide. For example, people who have had traumatic stress from conception to the toddler years will likely have a higher baseline of the stress hormones like cortisol in their bodies. As a result, these folks may have a very short fuse, be self-focused, and may have a difficult time shifting gears from emotion to problem-solving. If there is more danger just around the corner, being focused on others and thinking through options wouldn't contribute to survival—readiness for a next danger would.

But the downside is that when stress hormones, like cortisol, hang around for a long time, they are toxic to brain cells. This toxicity includes making it difficult for brain cells to develop healthy neural networks and can even cause brain cells to die. That is why we call continuous stress, trauma, and episodic unpredictable stress: "toxic stress".

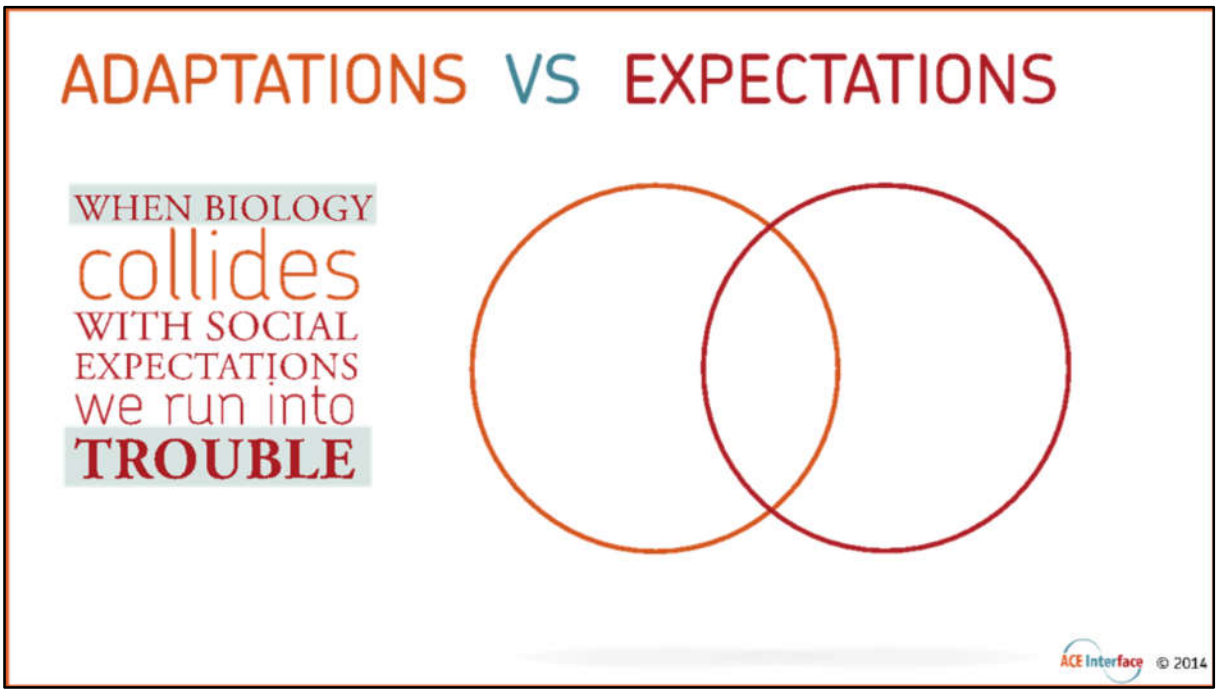
Dr. Teicher calls the lower path in this diagram the "benevolent-world" path. The world is kind, easy-going, helpful and free from traumatic stress. People growing up on this path are more likely to develop a brain—with cells and wiring and chemistry -- for being focused, flexible and relationship oriented.



What kind of situations might be a good match for a person who tends to be edgy, hypervigilant, emotionally detached, or quick to act? How might these kinds of adaptations be useful in this environment? ***(Take 5 minutes for popcorn response)***

One common belief in our society is that the people whose experience takes them on the top path are maladaptive and the people along the bottom path are adaptive. That's untrue…both pathways are adaptive. Both brains are adapting to their experience.

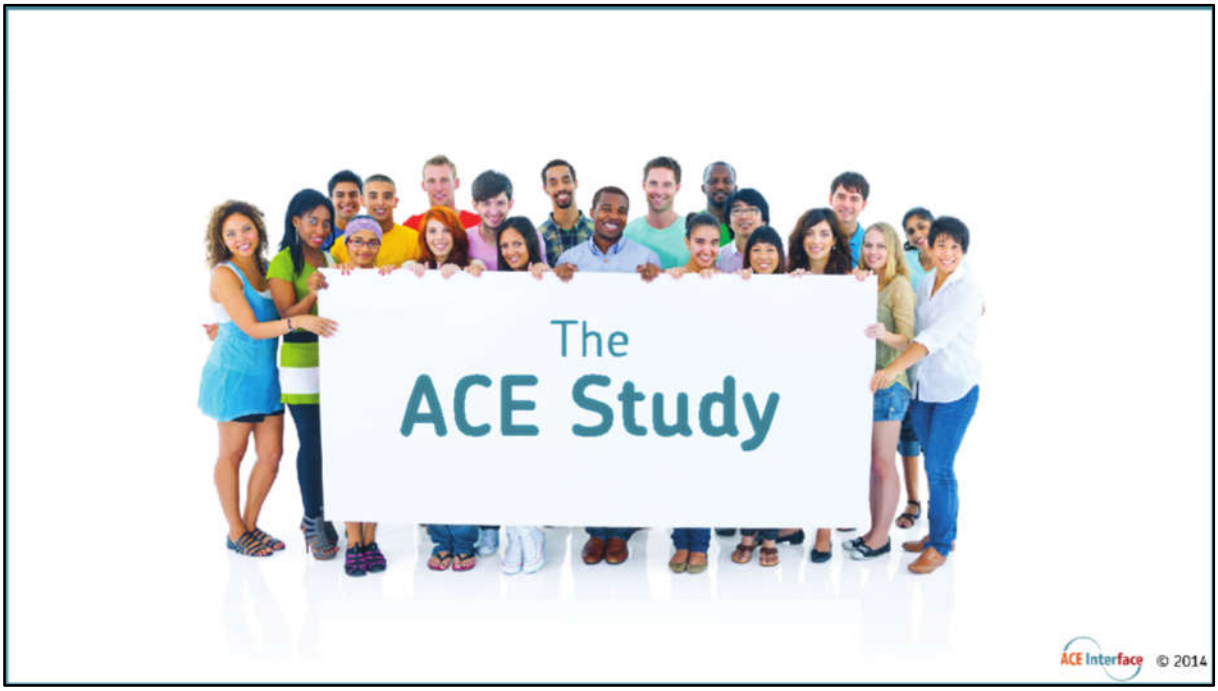
And that's good for us as a species. The people whose brains adapt to a dangerous or stressful world are more likely to survive when life is tough. The people whose brains adapt to a safe world are likely to be prepared to meet society's expectations in tranquil times. Our experiences get wired into our biology.



Dr. Teicher says it's when our biology collides with social expectations that we run into trouble. If you put a person from the benevolent world into the chaotic and turbulent environment of, say, riot control, that person may struggle unless he has learned some very specific skills.

Likewise, a child adapted to a dangerous stressful world may not sustain patience. He or she may not share, cooperate or use words as a first choice.

When that child comes to school and we ask her to sit still, share, and cooperate, there can be a painful disconnect that is hard for everyone. The child will have to be actively taught the skills required to succeed in this context just as we would train a person from the benevolent path how to act in a chaotic and dangerous environment.

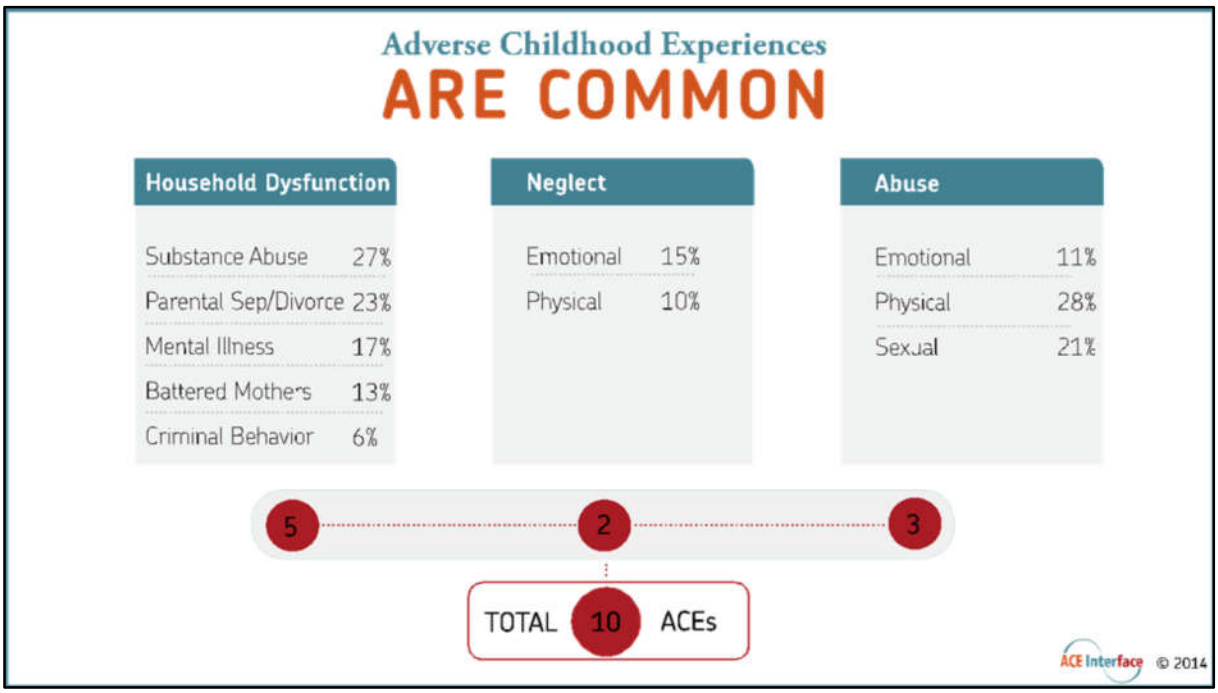


We have been talking about the effects of toxic stress on individuals. Now, we're going to switch gears and talk about the effects of toxic stress on the population as a whole. The field of epidemiology is where we'll turn.

Epidemiologists are scientists who study the origins of disease, disability, productivity and health in a population. They help us to focus our efforts on issues and processes that will make the most difference for the well-being of everyone.

We're going to talk about a large epidemiological study about the enduring effects of Adverse Childhood Experience. Dr. Rob Anda and Dr. Vincent Felitti are the co-principal investigators of the study, which they call "The ACE Study".

I'm going to share with you findings from the Adverse Childhood Experience Study… We'll call it "the ACE Study". The ACE Study confirms, with scientific evidence, that adversity early in life increases physical, mental and behavioral problems later in life. The ACE Study is the largest study of its kind, with over 17,000 participants. It was developed and co-sponsored by Kaiser Permanente (*managed care consortium*) of San Diego, California, and the Centers for Disease Control and Prevention in Atlanta, Georgia in the early '90s. Dr. Vincent Felitti and Dr. Rob Anda are the co-principal investigators of the ACE Study. Dr. Anda, who designed the ACE Study while he was working as a Senior Scientist at the CDC, reviewed and approved all the information from the study that I'll report to you today.

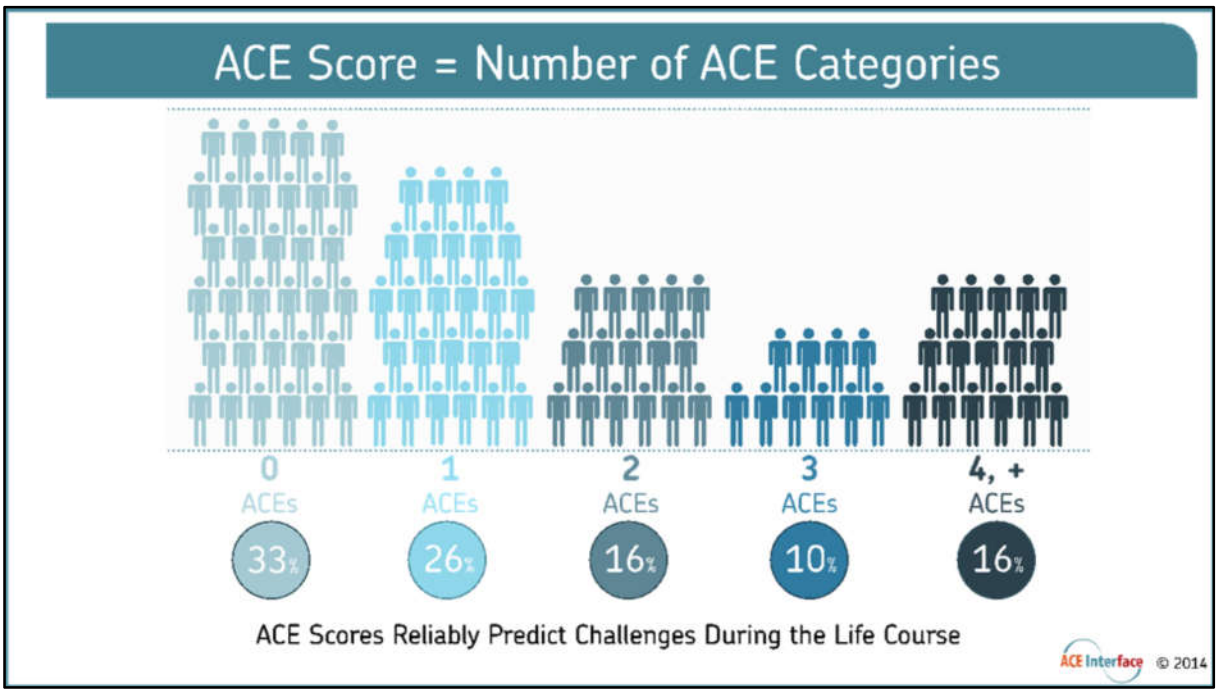


This slide shows the 10 categories of adverse childhood experiences that were studied.

The first group are indicators of Household Dysfunction, which include: growing up with substance abusing household members—alcohol or drugs, parental separation or divorce, growing up with mentally ill household members or caregivers, witnessing intimate partner violence—specifically having a battered mother, or criminal behavior as evidenced by having a household member imprisoned.

Three forms of childhood abuse were studied: emotional, physical, and sexual. And two forms of neglect were included: emotional and physical.

As you can see from the percentages on the slide, ACEs are common in this middle class well educated population.



Because adverse childhood experiences are so highly interrelated it did not make sense to look at how single categories of ACEs influenced health and social problems.
Instead Drs. Anda and Felitti developed an ACE Score.

This score is simply a count of the number of categories of ACEs that each person reported -- from 0 to 10. Each category counts as 1 point in the ACE Score. So, if a person experienced physical abuse, no matter how many times, or what the severity of the abuse, the ACE Score is 1; if the person experienced physical abuse and had a substance abusing parent, the ACE Score is 2, and so forth.

Think of the ACE Score as a measure of the childhood "biologic stress dose". As the ACE Score goes up—on average the exposure to the developmental effects of toxic stress increases.

In this illustration you see that only a third of people in the Study had an ACE Score of zero. 16% had scores of 4 or more.

Adverse Childhood Experiences are common; and they tend to cluster. ACEs are a hidden burden in the study population.

Toxic stress in <u>early</u> childhood has profound effects on brain structures and functions that develop later in childhood. These functions include the mediation of emotional responses, social interaction and abstract thinking. That's why people say that early childhood is so important – and they're right.

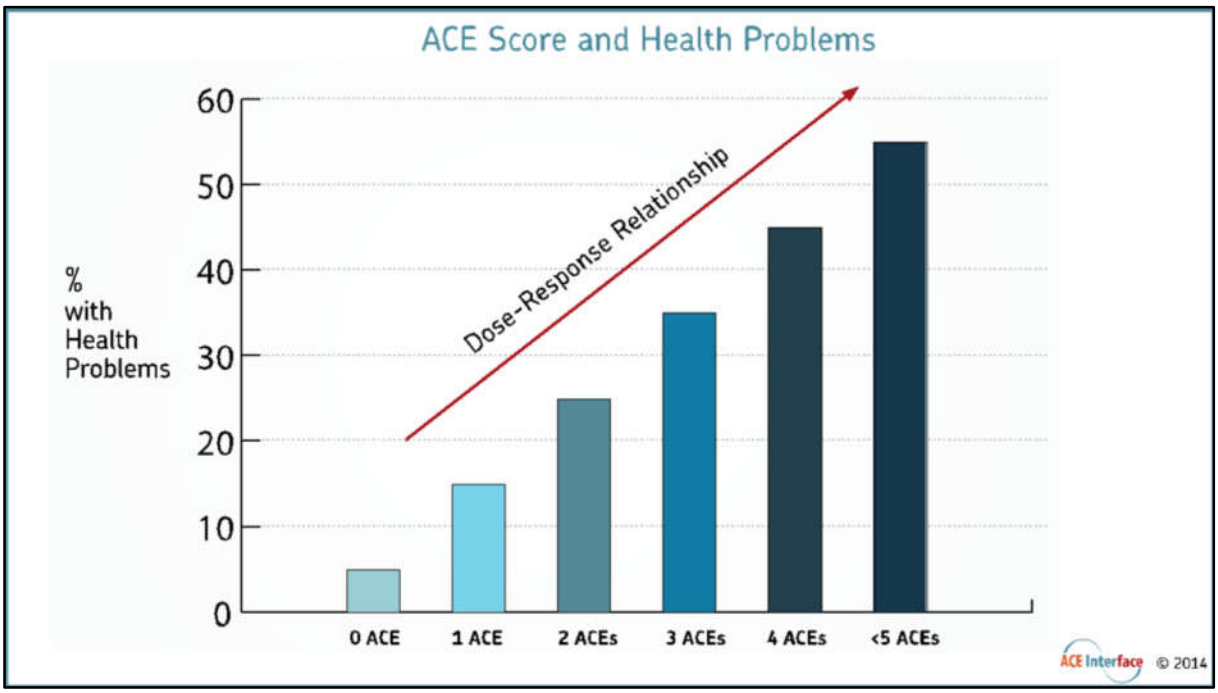
But, early childhood isn't the only sensitive developmental period, according to the latest research.

The brain research that has been introduced although accurate is simplified and limited in scope. Each brain region has sensitive periods when experience has powerful effects on brain mass and functioning. For example, during middle childhood – around ages 7 to 13 – emotional and verbal abuses can affect the centers for processing sound, developing verbal language and perceiving social cues. Effects can be different for boys than for girls – for example both neglect and sexual abuse affect boys and girls. But neglect in infancy and through the toddler years for boys has a large effect on cross-brain communication; while cross-brain communication is profoundly affected in girls through sexual abuse of girls around ages 7-10.

By the time we reach our mid to late 20's our central nervous system, with the brain as its command center, orchestrates everything from our automatic body functions, like breathing and heartbeat, to complex goal oriented behavior and abstract analytical thinking.

The elaborate signaling system in our brains is well practiced. In a fraction of a second, it determines whether sensory information from sight, sound, touch, taste or smell should come into the brain and be processed, or whether the information must be filtered out in favor of survival.

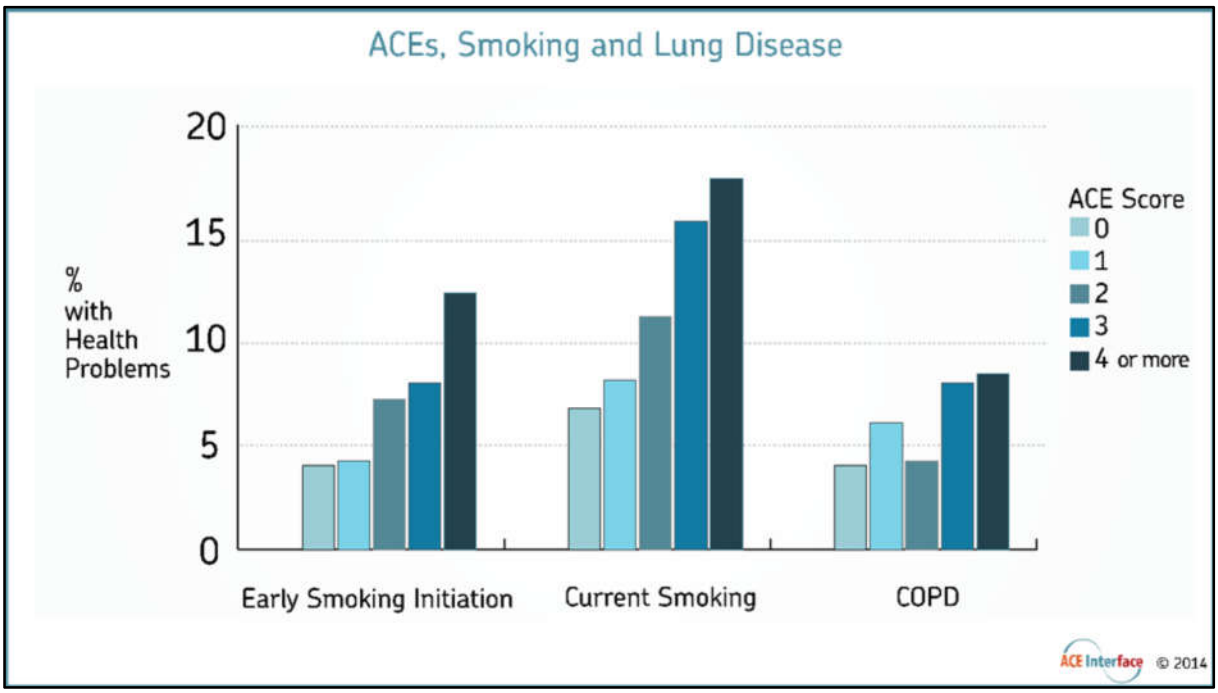
Stress may be interpreted by the brain as something we can tolerate and work through or as something that is overwhelming. Our set-points for that interpretation are largely in place by early adulthood.



People who report higher ACE scores are more likely to have health and social problems – in fact, as the ACE Score goes up the percentage of people with health and social problems also goes up.

We call this a dose-response relationship. You know dose-response; the more gas you put into your car, the more miles you can drive.

In this case, where there is a higher dose of Adverse Childhood Experiences, the higher the percent of people with health problems.



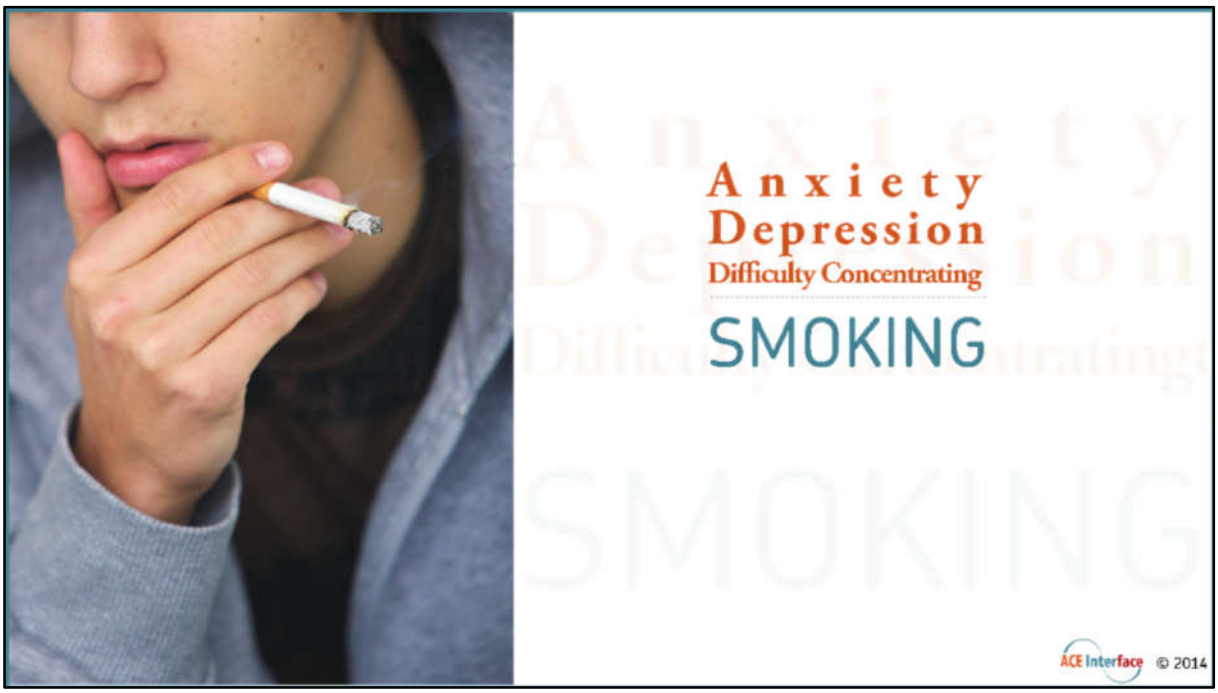
All of the data slides from the ACE Study that I'll show you today are formatted in this same way. Along the bottom – horizontal axis – are the ACE scores, from zero on the left to 4 or more on the right. The vertical axis is the percent of people who have the disease or condition.

So, in this first set of bars -- on the far left, we see that the percent of people who became regular cigarette smokers by age 12 goes up as each level of the ACE Score goes up.

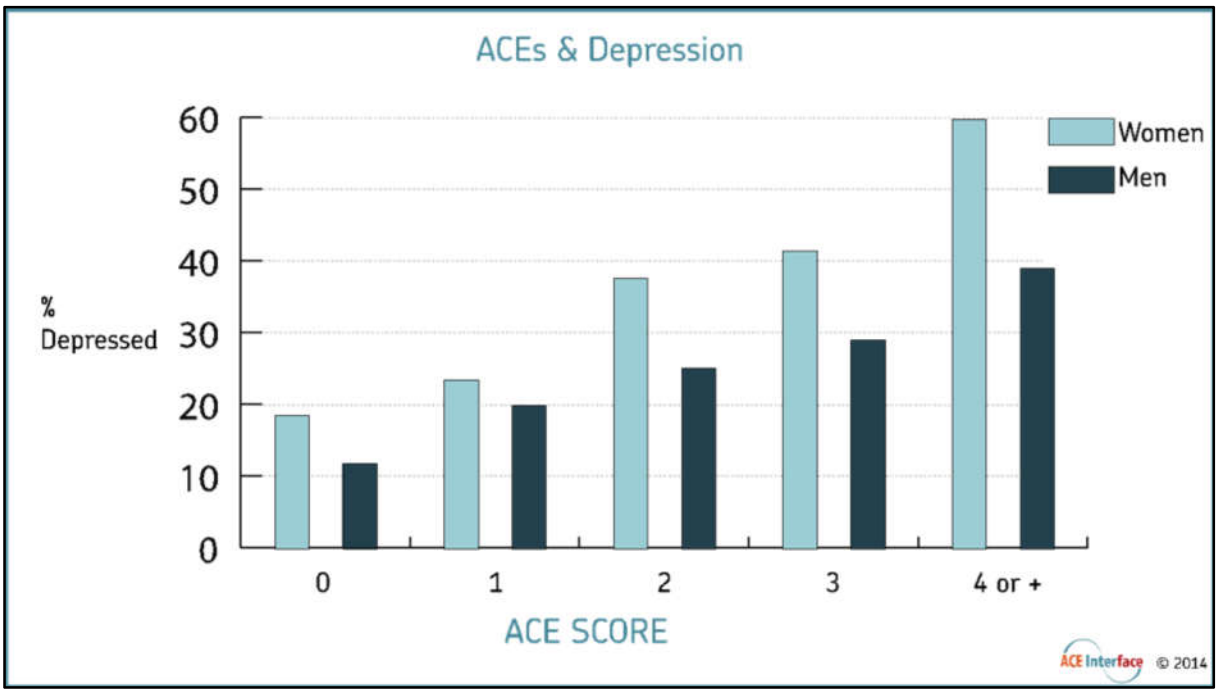
In the second set of bars, we see the percent who were smokers as adults also goes up in a stepwise fashion as the Score goes from 0 to 4 or more.

People with higher ACE scores have increased risk of chronic obstructive pulmonary disease, or COPD. About 4% of people with an ACE score of zero developed COPD; while more than double that percent of people - about 9% - with an ACE score of 4 or more developed COPD.

ACEs lead to early onset of smoking, which is sustained throughout adulthood and eventually leads to a high risk of smoking-related lung disease.

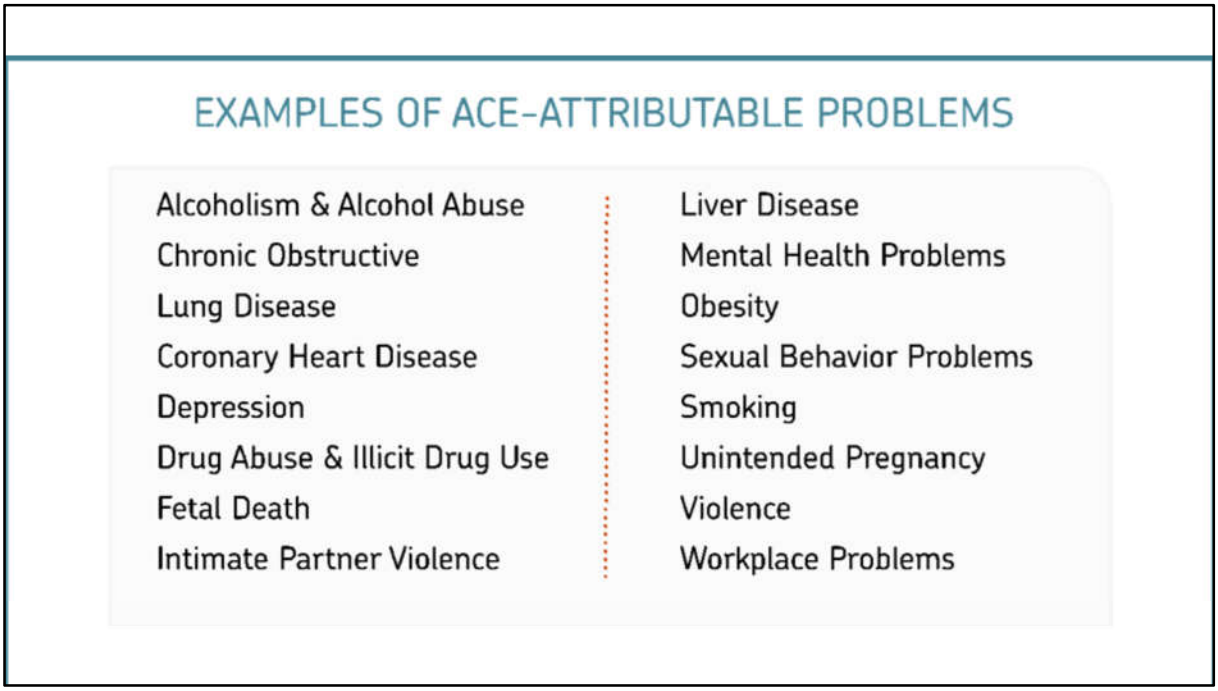


ACEs can result in depression and anxiety. Nicotine can reduce symptoms of depression and anxiety; so the benefits of nicotine in reducing these unpleasant emotions might help to explain why knowledge of health risks due to smoking are not enough for some people to quit.



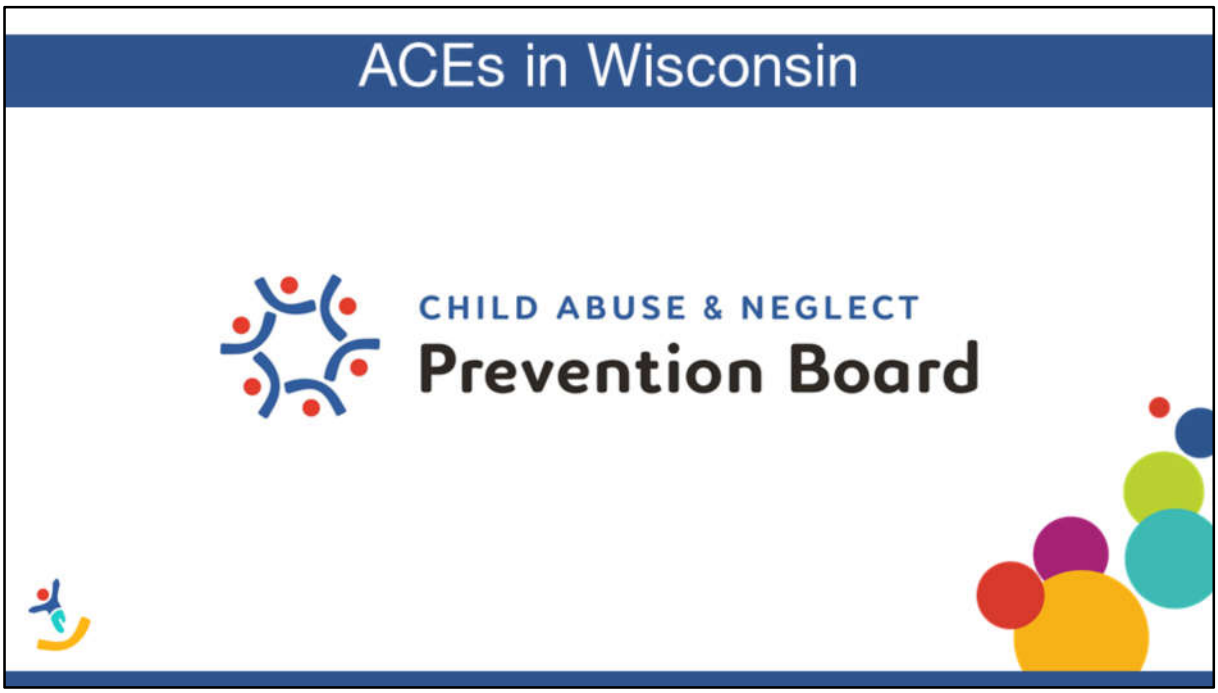
Depression is the leading cause of disability in developed countries.
Here we see that the risk of depression increases for both men and women in a "dose-response" fashion as the ACE Score goes up.

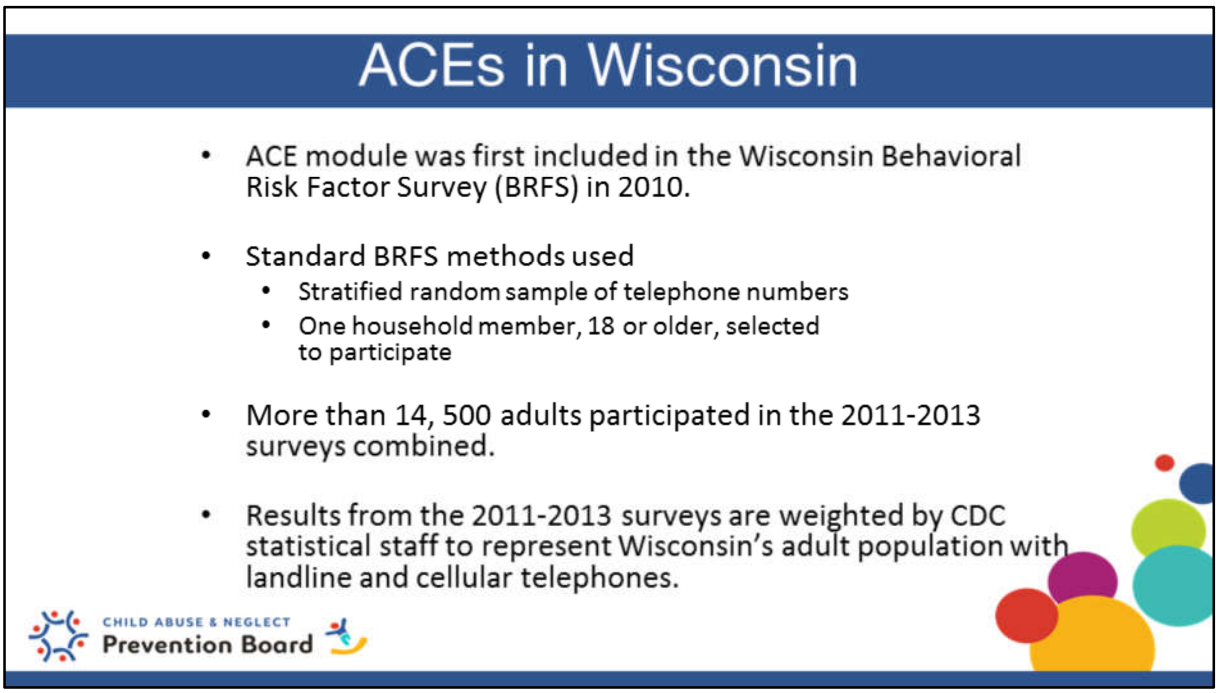
ACEs are held in the body, leading to mental, physical, behavioral health problems in adulthood. Some of those problems are unintentionally handed to the next generation. Becoming an alcoholic, marrying an alcoholic, and suffering from depression are a part of the intergenerational transmission of Adverse Childhood Experiences.



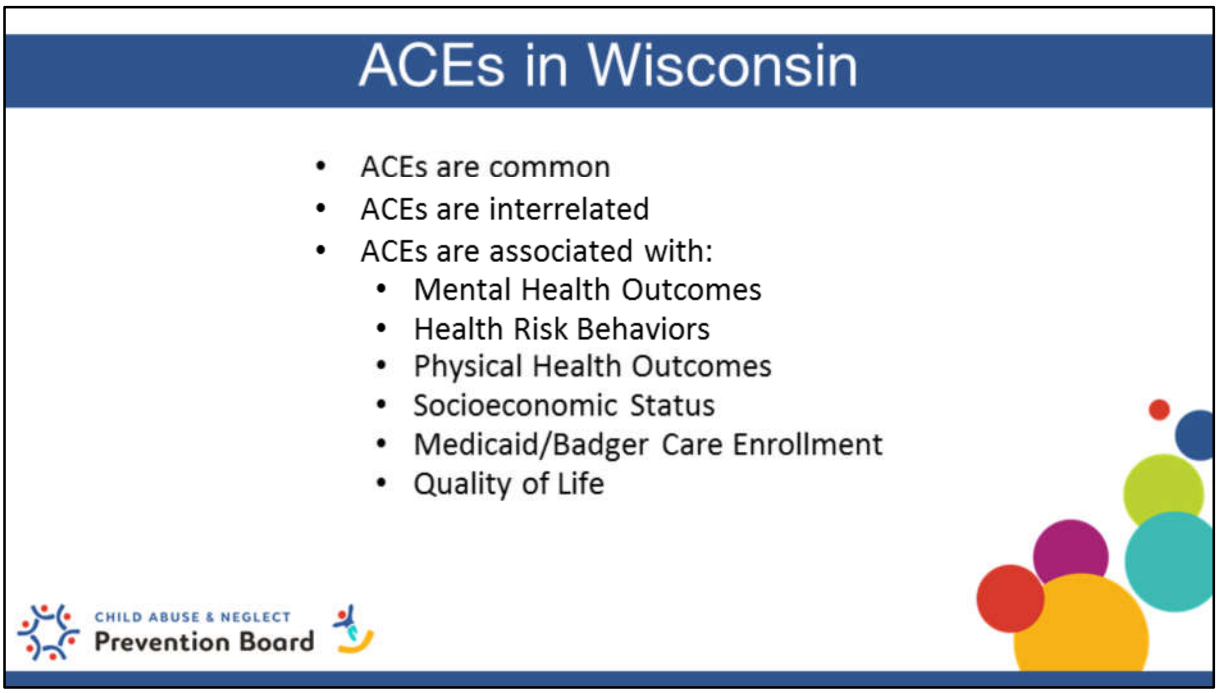
Here is a list of some of the health and social problems documented by ACE Study publications.
Because ACEs have a powerful impact on many health and social problems, the ACE researchers concluded that ACEs are the leading cause of health and social problems in our nation. And this should lead to thinking about prevention.

We are living in a time with stunning potential for shifting the trajectory of health and wellbeing for generations to come.

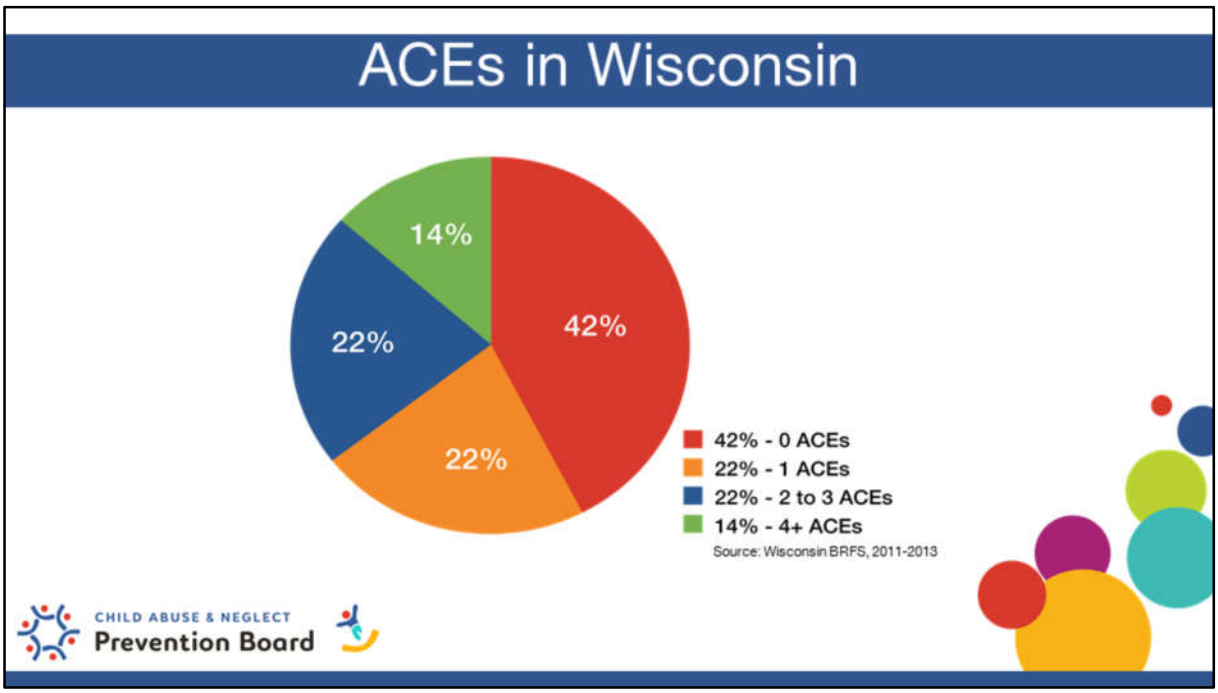

ACEs in Wisconsin
CHILD ABUSE & NEGLECT
Prevention Board



- In 2010, the Child Abuse and Neglect Prevention Board (then known as the Children's Trust Fun) and Children's Hospital of Wisconsin Community Services raised funds to include the ACE module in the Wisconsin Behavioral Risk Factor Survey.
- The BRFS is a telephone survey of state residents ages 18 and older.
- Versions of this type of survey are conducted in all 50 states and address behaviors related to smoking, alcohol use, physical activity, and chronic disease.
- Wisconsin's survey is administered through the state Department of Health Services and conducted by the UW-Madison Survey Center.
- More than 4,000 Wisconsin residents participated in the initial 2010 survey. However, their responses cannot be combined with the data from 2011 and beyond, since individuals with cell phones were not included in 2010.
- In the subsequent years of 2011 to 2013, 14, 551 individuals have completed the questions in the ACE module.
- The results are weighted by CDC to represent Wisconsin's adult population. The Child Abuse and Neglect Prevention Board contracts with the UW-Madison School of Social Work to analyze Wisconsin's data.



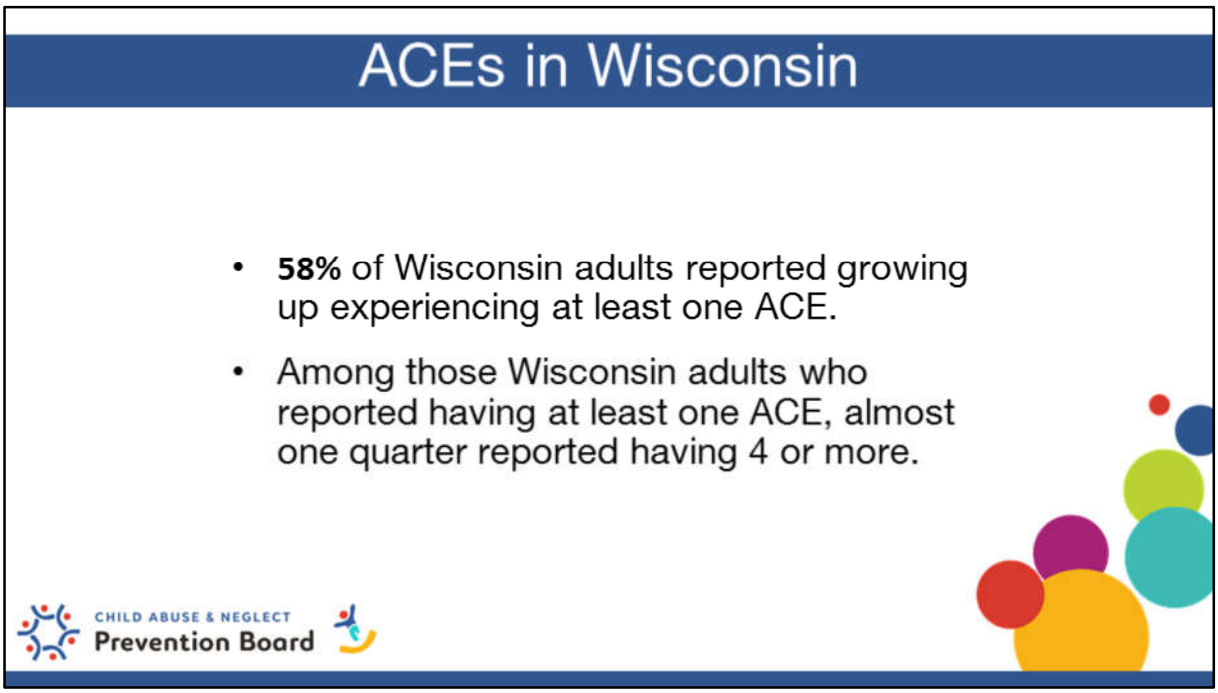
- Wisconsin's findings mirror those found in the Original ACE study, as well as all of the other states that have collected ACE data through their state BRFS….
- The data represented in the next several slides comes from the combined total of responses to the ACE questions from the 2011, 2012 and 2013 Surveys.



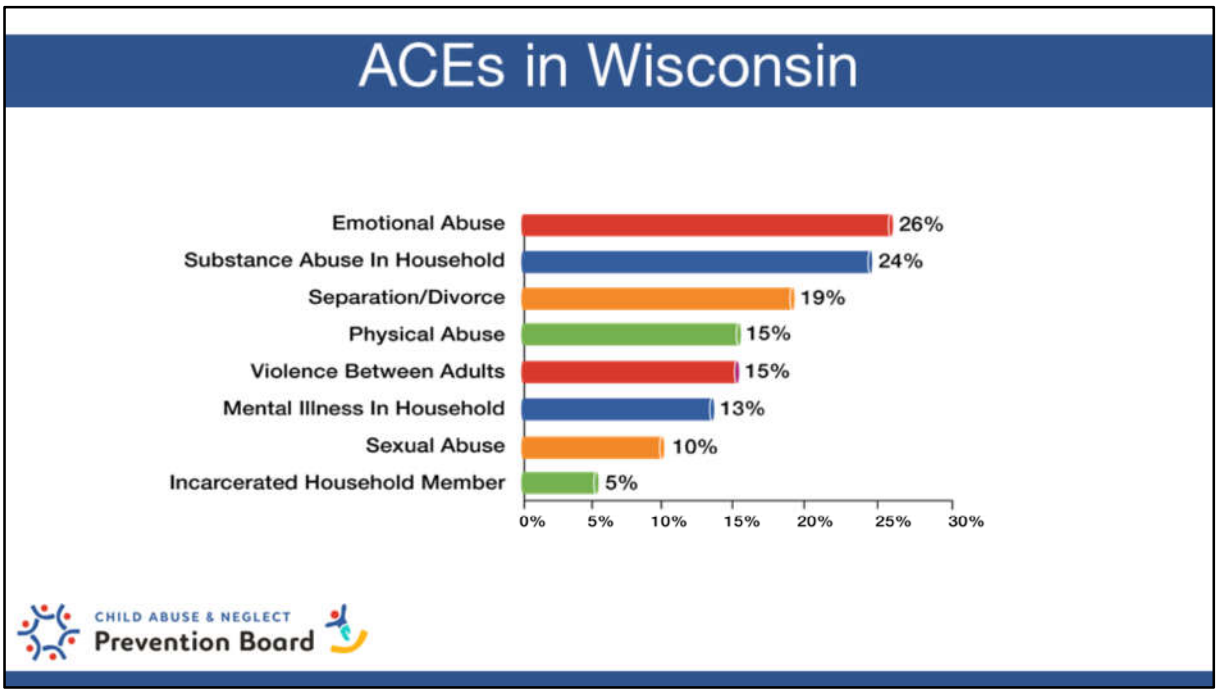
This pie chart indicates the percentage of those surveyed in Wisconsin from 2011-2013 who indicated that they had 0, 1, 2-3 or 4 or more ACEs.

At first glance it appears that Wisconsinites are doing pretty well with the majority of respondents experiencing no ACEs and, therefore, falling into the red portion of the pie.

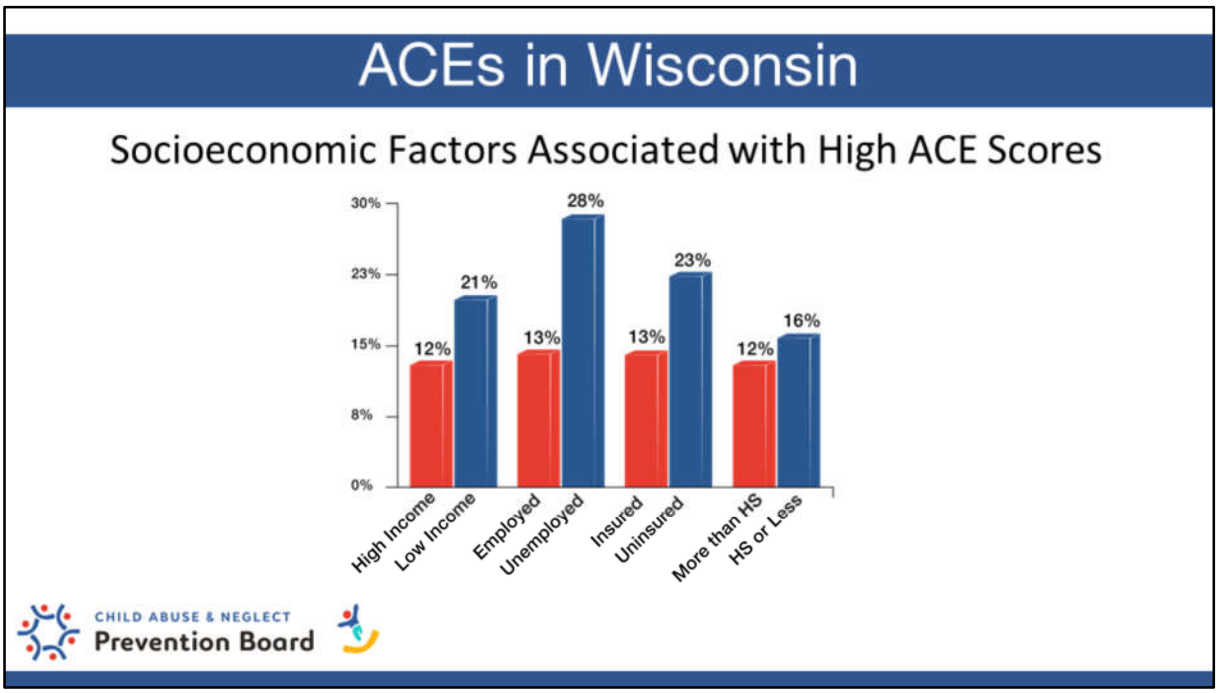
However, when you combine the percentages for those who have experience 2 or more ACEs, it turns out that more than one third of respondents have experienced multiple ACEs in their lives.



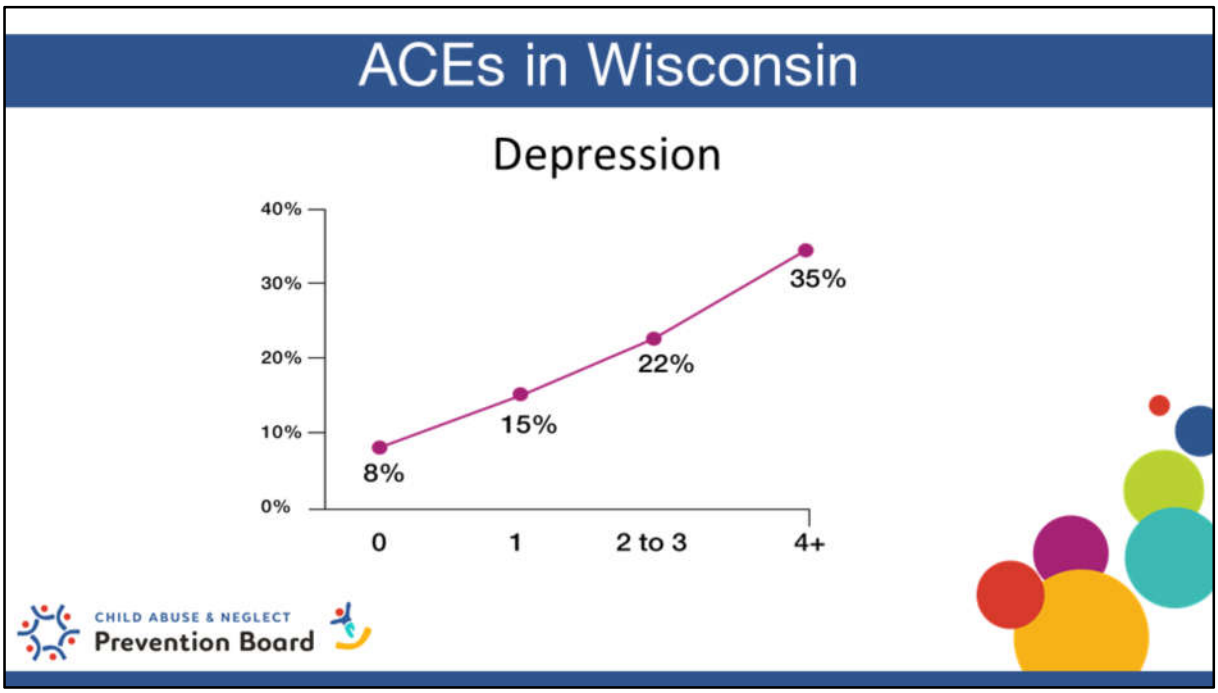
- When you combined the percentages of respondents who reported having one or more ACEs, 58% of Wisconsinites reported having at least one adverse childhood experience.
- Of the individuals who comprise that 58% experiencing one or more ACEs, 24% reported having 4 or more ACEs. So *one in four Wisconsinites* who report having experienced ACEs have experienced four *or more*.



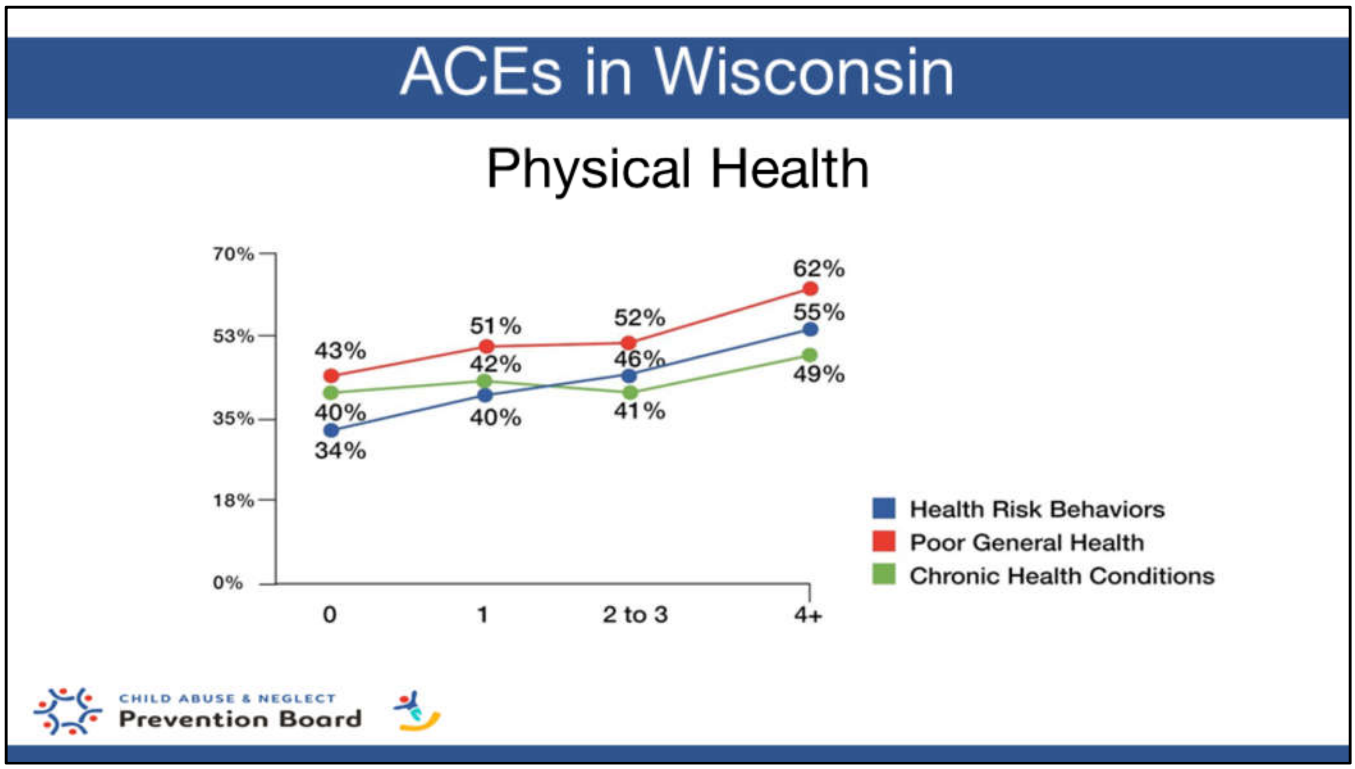
This graph indicates the percentage of Wisconsinites who reported experiencing each specific ACE and shows us the relative prevalence of each ACE.



- This graph shows the percentage of respondents who report experiencing four or more ACEs, according to their socioeconomic status. Specifically, 21% of respondents who experienced 4+ ACEs report low incomes (less than $25,000) compared to 12% of respondents with 4+ ACEs who reported higher incomes (more than $25,000). This trend is evident with other markers of socioeconomic status: a higher percentage of those who experienced 4+ ACEs report being unemployed, uninsured, and having3 less education.



This slide indicates how the percentage of individuals ever diagnosed with depression increases as the number of ACEs increase.



- The cumulative 2011-2013 data indicates a significant relationship between ACEs and multiple physical health indicators.
- Physical health is divided into three categories: health risk behaviors, poor general health and chronic health conditions.
- 1) “Health Risk Behavior” is any behavior undertaken by individuals with a frequency or intensity that it increases their risk of disease or injury. Examples include tobacco use, heavy drinking (5 or more drinks for men and 4 or more drinks for women on at least one occasion in the past month) and HIV risk behaviors.
- 2) “General Health” refers to the quality of health in daily life. The Wisconsin BRFS asks for self-reports on general health indicators, which have been shown to closely align with documented health status including obesity, fair or poor health, 10 or more bad mental and/ or physical health days in the past month or 6 or more permanent teeth lost or removed.
- 3) “Chronic Health Conditions” include chronic or severe illnesses for which ACE science has demonstrated causal links between the adversity in childhood and the disease in adulthood. Examples of chronic illnesses include kidney disease, stroke, angina, cancer, COPD, Adult-onset diabetes, asthma, arthritis.

- This graph depicts the prevalence of each health category indicator by the number of reported ACEs. An increase in the number of ACEs is generally accompanied by an observable increase in the prevalence of concerning behaviors and health conditions. Although not linear, there is a jump in the prevalence of chronic conditions from those reporting 0-3 ACEs to those reporting 4 or more ACEs.

ACEs are Common. ACEs are highly interrelated. ACEs have a cumulative impact that is captured by the ACE Score.

And… People with higher ACE Scores are more likely to have multiple health and social problems, some of which increase the odds of their children having high ACE scores.

The discoveries about the effects of toxic stress on the developing brain provide biologic plausibility for the ACE Study findings. So, this information makes a strong case for concluding that the relationship between the ACE Score and health problems is a "cause and effect" relationship.

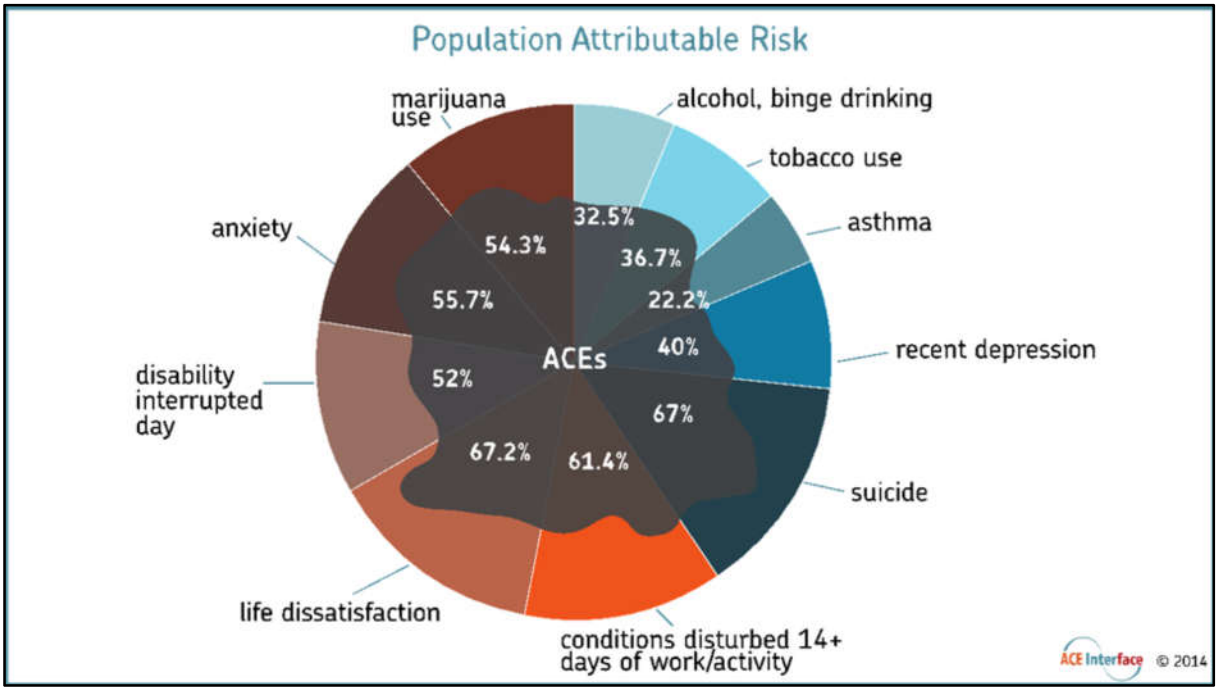
We've talked about sensitive developmental periods when toxic stress has profound effects on human development. But these childhood times are also windows of opportunity for building resilience – after all, the developing brain is sensitive to all kinds of experience.

By paying attention to sensitive developmental periods, we can do a better job protecting children and providing the kinds of challenges and supports that may remediate earlier periods of toxic stress and promote life-long health and well-being.

We have a collective choice: we can actively develop skills and accommodations that enable everyone to contribute to community, or we can continue our societal pattern of rejecting people when they have normal adaptive responses to childhood adversity.

If you remember only one thing from this information about brain development, I hope it will be that toxic stress can be hardwired into biology.

Before we assume that a person's behaviors are a rebellious choice, let's think about the possibility that adversity may be at the heart of the challenges we see.



So how do we put this all together to make a case for understanding ACEs as powerful pathway to health and wellbeing?

Now we understand that ACEs are common and have a strong cumulative impact on the risk of common health and social problems. Preventing ACEs and their intergenerational transmission is the greatest opportunity for improving the well-being of human populations. In fact, the ACE Study team and ACE Interface believe this is the greatest opportunity of our time… perhaps of all time.

This slide shows the percentage of various health and social problems that epidemiologists estimate are caused by ACEs. The calculation that is commonly used to do this in public health studies is called Population Attributable Risk; this is displayed as a percentage as an "oil spill" on this slide. The percentage of a problem coated by the oil spill represents the percentage of each problem that is potentially preventable by preventing ACEs.

The percentages are quite large. In fact the high percentages on this chart are rarely seen in public health studies.

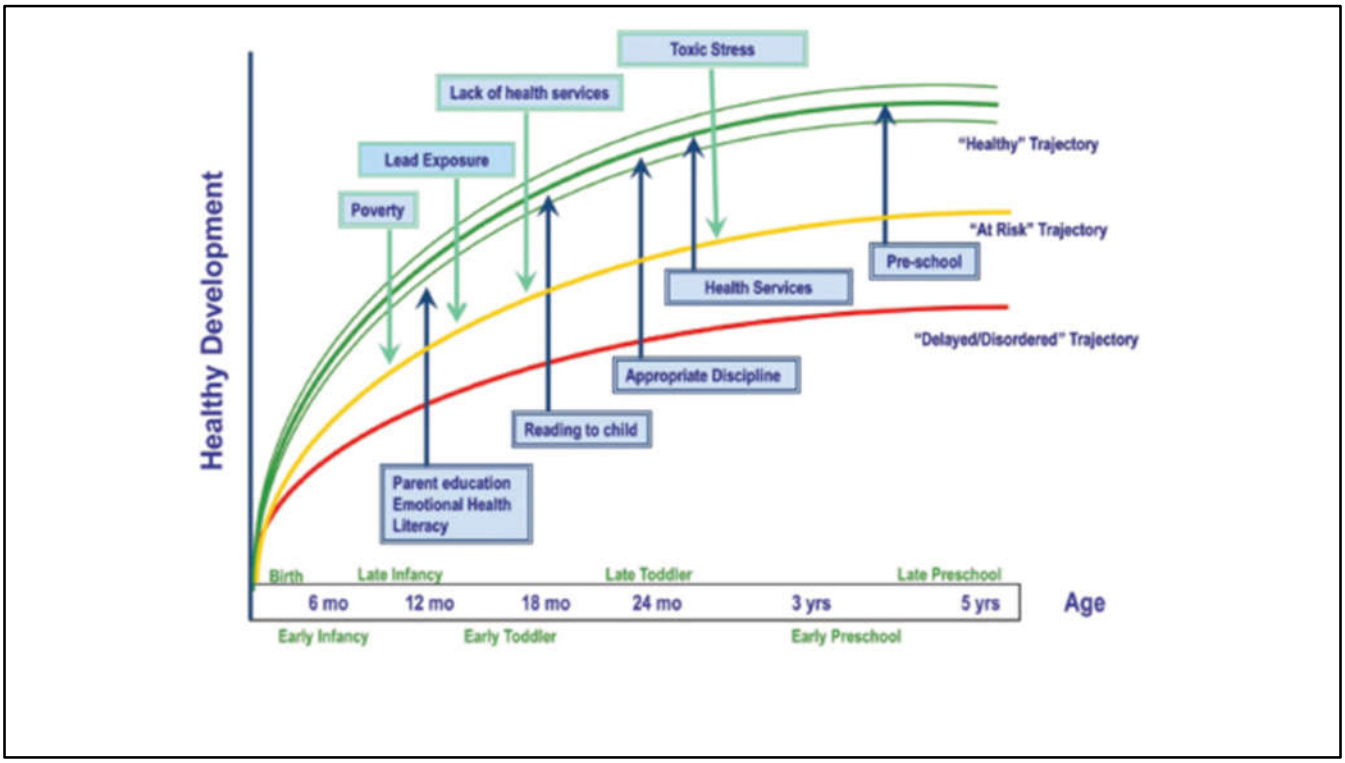
The cumulative effects of ACES reflect a powerful opportunity for prevention – no matter if you are working to prevent heart disease or cancer, end homelessness or hopelessness, or improve business profitability – as we align a portion of our work around a common goal of preventing the accumulation of ACEs and moderating their effects, we will reduce all of these problems, and many others, all at once!

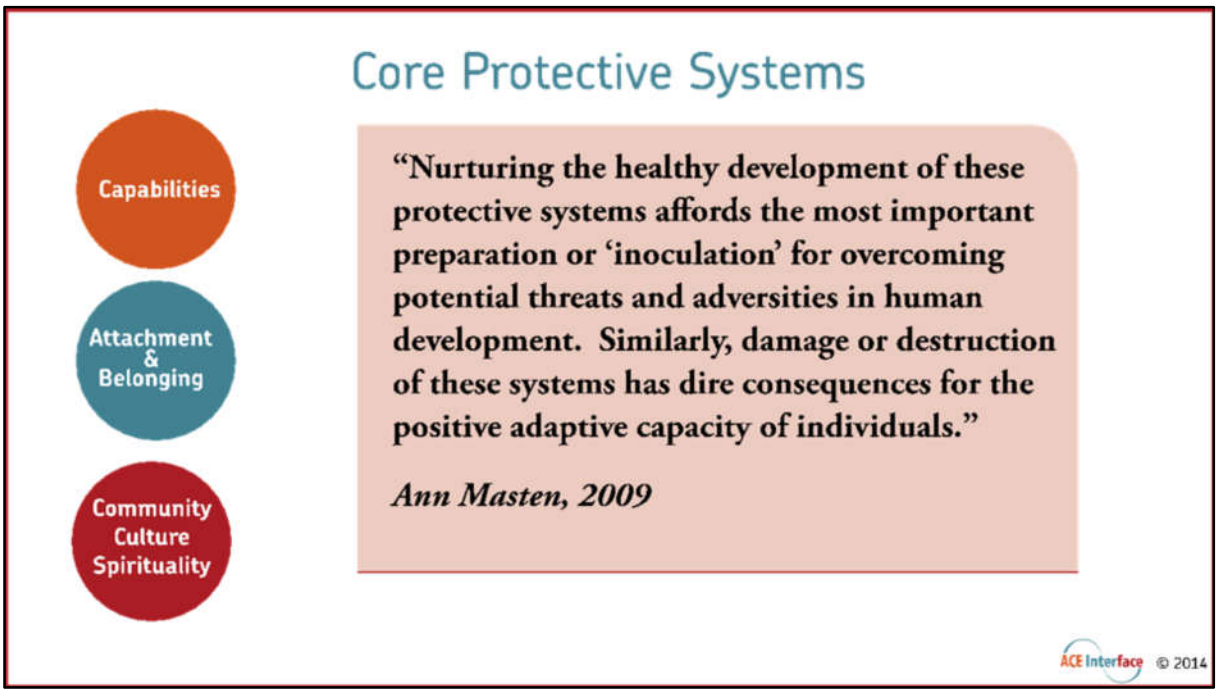
The ACE study provides us with straight-forward information about the consequences of toxic stress during childhood.

This scientific research gives us powerful information we can use every day to improve health, safety, prosperity and longevity. But the ACE study isn't a detailed roadmap of services or programs; it is an invitation for us to be pioneers.

This news is simply too important to wait for someone else to design a detailed roadmap.

Through our collective knowledge and action, we are the ones with the power to shift the dynamics within our own families, communities and society that lead to high ACE scores.


Toxic Stress
Lack of health services
Lead Exposure
Poverty
"Healthy" Trajectory
"At Risk" Trajectory
Pre-school
Health Services
"Delayed/Disordered" Trajectory
Appropriate Discipline
Reading to child
Parent education
Emotional Health
Literacy
Healthy Development
Birth
Late Infancy
Late Toddler
Late Preschool
6 mo
12 mo
18 mo
24 mo
3 yrs
5 yrs
Age
Early Infancy
Early Toddler
Early Preschool



When people hear about the ACE Study findings, they often ask about what can be done to help mitigate the impact of childhood adversity
The need to address the far reaching issues associated with childhood adversity reminds us that our supportive actions matter.

Our desire for healing and resilience naturally leads us to a search for ways to help families and communities.

Three protective systems interact and guide positive adaptation. These powerful systems are individual capabilities, attachment and belonging with caring and competent people, and protective community, faith, and cultural processes.

What do we know about individuals who do well despite adversity? We know that the three protective systems are nested:
people do best when they are living in thriving families and communities. We can help one another to develop personal attributes that help us all weather life's storms.

How can our efforts support these core protective systems?

The second protective system we can nurture is belonging. Many people talk about the importance of people in their lives – people who recognize and encourage our unique talents, interests and strengths.

Relationships with caring and competent people are vital contributors to resilience and recovery. Sometimes this message gets shortened and only includes caring relationships, but competency requires learning new skills and practicing safety in all of its forms when relating to people who are hard-wired for survival in a dangerous or unpredictable world. People who have difficulty with emotional regulation, picking up social cues, problems with addiction and family bonds, and other consequences of developmental trauma, can be challenging friends and neighbors.

Relationships that provide security and belonging will become the norm as we learn and improve our skills and competencies to be relevant and helpful during times of stress and challenge as well as during celebration and rest.

If we've decided to dramatically improve health and safety for this and future generations, we must foster thriving communities. Fostering thriving communities is about empowerment – it's about investing in the people who have the most at stake so they can be the expert leaders of their own community's change. As we invest in community capacity, we can systematically providing education about neurobiology, ACEs and resilience so local people have a common language for cross-sector and multi-disciplinary work.

Building community capacity is about helping people learn, manage and improve their efforts systematically, and about providing flexible funding, state of the art education, and direct supports that help mobilize everyone who wants to help. Public and private partners that foster thriving communities learn from those communities and celebrate exceptional results from their work.

To learn more about capacity building processes, we look to communities that have changed the way people work together to solve tough problems, and had stunning success. Success doesn't happen overnight, it's a journey that intentionally builds new capacities and supports healing and prevention.

Supporting healthy community processes that respect cultural traditions and values, is a high leverage activity. Just as a rising tide lifts all boats, a high capacity community lifts all beings. People living in high capacity communities are less likely to have high Adverse Childhood Experience scores, less drug and alcohol abuse, less depression and serious and persistent mental illness, and fewer problems in school and at work.

There's a predictable pattern to transformative change. It begins with discovery and communication, which leads people to clarify their values and thinking. With new knowledge and new habits of thinking, people change the actions they take in every-day life.

The collective actions of many people shape a new reality that is ratified in organizational and policy change. <u>The truth is that people create a new reality long before new laws are passed!</u>

Change is up to us –It is shaped by our thoughts, our conversations, the way we relate with one another in relationships, in families, and in communities.

What's next for us?

- How does what we learned about ACEs affect our community?
- What is one thing we can do to create high capacity communities though:
  - Enhanced leadership
  - Coming together
  - Shared learning
  - Results-oriented decision making
- My personal commitment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CASA
Court Appointed Special Advocates
FOR CHILDREN
MANITOWOC COUNTY CASA PROGRAM
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As we work to prevent accumulation of ACEs, – Let's keep in mind that we don't have to get to ACE Scores of zero – bringing scores down any amount will have huge effects.
We might not be able to prevent a first ACE from occurring in a family. But we certainly can notice when children have five ACEs and make sure that number doesn't go to ten!

As we thread through all of our work a new focus of supporting adults – particularly adults who, through no fault of their own, experienced many ACEs when they were children – we will prevent ACEs for the next generation.

We live at a time of great hope and promise. The largest public health discovery of our time – perhaps of <u>all</u> time – is about family, community, children – it's about us. <u>Our</u> action to prevent ACEs – whether large or small – can <u>profoundly</u> improve our future.

Thank you.