2016

THE SCIENCE OF THE DEVELOPING BRAIN, ACES & RESILIENCE:

A STRONG CASE FOR A PROSPEROUS MARYLAND

MARYLAND ESSENTIALS FOR CHILDREN

THE SCIENCE OF THE DEVELOPING BRAIN, ACEs & RESILIENCE: A Strong Case for a Prosperous Maryland[1]

1. **Healthy Development Builds a Strong Foundation – For Kids and For Society**
   Preparing Maryland for a prosperous future begins with recognizing that our youngest residents must get what they need today to become the adults who will strengthen our communities and build our economy. When Maryland invests wisely in children and families, the next generation will pay that back through a lifetime of productivity and responsible citizenship.

2. **Experiences Build Brain Architecture**
   Fortunately, what our children need is not a mystery. Recent advances in the science of early childhood development tell us that the basic architecture of the human brain is constructed through an ongoing process that begins before birth and continues into adulthood. Like the construction of a home, the building process begins with laying the foundation, framing the rooms and wiring the electrical system in a predictable sequence. Early experiences literally shape how the brain gets built, establishing either a sturdy or a fragile foundation for all of the learning, health and behavior that follows. A strong foundation in the early years increases the probability of positive outcomes. A weak foundation increases the odds of later difficulties. Getting things right early on is easier than trying to fix them later.

3. **Serve & Return Interactions Shapes Brain Circuitry**
   The interactive influences of genes and experience shape the developing brain. The active ingredient is the "serve and return" relationships children have with their parents and other caregivers in their family or community. Like the process of serve and return in games such as tennis and volleyball, young children naturally reach out for interaction. This process starts in infancy – with facial expressions and babbling-- and continues throughout the early years. If adults do not respond with the same kind of vocalizing and gesturing back to them-- or if the responses are unreliable or inappropriate-- the brain's architecture does not form as expected. This has negative implications for later learning and behavior. But when children develop in an environment of relationships that are richly responsive, back-and-forth interactions, these brain- building experiences establish a sturdy architecture on which future learning is built.

4. **Brains are Built from the Bottom Up, Skills Beget Skills**
   Just as a rope needs every strand to be strong and flexible, child development requires support and experiences that weave cognitive, emotional, and social capacities together. These capacities are inextricably intertwined throughout the life course. Emotional well-being and social competence provide a strong foundation for budding cognitive abilities, and together they comprise the foundation, the bricks and mortar, of human development. Science therefore directs us away from debating which capacities children need most, and toward the realization that they are all intertwined.

[1] The common language used in this section comes from a combination of sources: Harvard Center for the Developing Child, Frameworks Institute, CDC Essentials for Childhood and Tennessee's Building Strong Brains: ACEs Initiative.

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5. The Biology of Toxic Stress or Adverse Childhood Experiences (ACEs) Derails Healthy Development

Toxic stress or chronic, unrelenting stress in early childhood derails development by permanently setting the body's stress response system in high alert, weakening brain architecture, and impairing the development of all-important executive function skills. In the absence of the buffering protection of adult support, toxic stress becomes built into the body by processes that shape the architecture of the developing brain. These changes can lead to lifelong difficulties in learning, behavior, and physical and mental health.

5. Positive Stress Aids Healthy Development, Toxic Stress Impedes It

Learning to deal with stress is an important part of healthy development. Challenges, like learning to tie their shoes or to get along with new people or in new environments, set off a temporary stress response that helps children be more alert while learning new skills. But truly adverse childhood experiences – severely negative experiences such as the loss of a parent through illness, death or incarceration; abuse or neglect; or witnessing violence or substance abuse – can lead to a toxic stress response in which the body's stress systems go on "high alert" and stay there. This haywire stress response releases harmful chemicals into the brain that impair cell growth and make it harder for neurons to form healthy connections, damage the brain's developing architecture and increase the probability of poor outcomes. This exaggerated stress response also affects health and is linked to chronic physical diseases such as heart disease and diabetes.

7. The Presence of Responsive Adults at Home & in the Community Lessens the Impact of Toxic Stress

Science tells us that many children's futures are undermined when stress damages the early brain architecture. But the good news is that potentially toxic stressors can be made tolerable if children have access to stable, responsive adults – home visitors, child care providers, teachers, coaches, mentors. The presence of good serve-and-return acts as a physical buffer that lessens the biological impact of severe stress.

The factors children are exposed to affect how well they progress, and communities play a big role. A child's wellbeing is like a scale with two sides; one end can get loaded with positive things, while the other end can get loaded with negative things. Supportive relationships with adults, sound nutrition and quality early learning are all stacked on the positive side. Stressors such as witnessing violence, neglect or other forms of toxic stress are stacked on the other. This dynamic system shows us two ways we can achieve positive child outcomes: to tip to the positive side, we can pile on the positive experiences, or we can offload weights from the negative side. Children who have experienced several ACEs are carrying a heavy negative load, and to tip these children toward the positive, innovative states and communities have been able to design high-quality programs for children to prevent Adverse Childhood Experiences whenever possible, and respond to them with strong, nurturing supports to ameliorate their impact when they can't be prevented. These programs have solved problems in early childhood development and shown significant long-term improvement for children.

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8. Childhood Experiences Build the Foundation for a Skilled Workforce, a Responsible Community & a Thriving Economy: Executive Function & Self- Regulation Skills are Critical for Learning & for Life

Science has identified a set of skills that are essential for school achievement, for positive behavior, for good relationships, for preparation and adaptability or our future workforce, and for avoiding a wide range of health and relational problems. In the brain, the ability to hold onto and work with information, focus thinking, filter distractions, and switch gears is like an air traffic control system to manage the arrivals and departures of dozens of planes on multiple runways. Scientists refer to these capabilities as executive function and self-regulation—a set of skills that relies on three types of brain function: working memory, mental flexibility, and self-control.

9. These Essential "Air Traffic Control Skills" are Built in Relationships and the Place in which Children Live, Learn, and Play

Children are not born with these skills; they are born with the ability to develop them. These skills begin to develop in early childhood and mature through early adulthood. The quality of interactions and experiences provided in our families and communities either strengthens or undermines these budding skills.

10. Rethinking Our Policies

As Marylanders understand the impact of Adverse Childhood Experiences, they will realize that the future economic development and prosperity of the state depends on rethinking our policies in health, education, public safety, justice, public assistance, child welfare, and juvenile justice. To bring about population level change for children facing adversity and stem the tide of ever- more-costly social problems, focusing on building healthy brain architecture for every child and coordinating our efforts across all our child and family serving systems will prove to be key. We should focus on preventing these ACEs whenever possible; and, on wrapping services around children and families when they can't be prevented. There must be better collaboration across disciplines, departments, agencies and communities, with a focus on the infrastructure of services and supports that make a difference. When child abuse and domestic violence prevention, home visiting, mental health and substance abuse services for parents, and a variety of other services and supports are available for early intervention, they put in place a preventive system that improves serve-and-return before it breaks down. This kind of sound investment in our society's future is confirmed by brain science. It improves outcomes for children now, and is a significant foundation for solutions to many of the long-standing and nagging challenges we face as a state in our health, mental health, social services, child protection, and juvenile and criminal justice systems.

All children need someone in their corner. The shift from "What is wrong with you, or why are you a problem?" to "What has happened to you, and how we can we support you and help you heal from these experiences?" will result in a more effective, more empathetic service delivery system and a stronger Maryland.

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