

Child and Adolescent Mental Health and the Role of Brain Development

NCSL HHS Chairs Meeting

June 6, 2023, 1:15—2:30 p.m. MT

Session Overview



Presentation



Idea Sharing



Participant Q&A



Legislative Planning





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Dr. K. Ron-Li Liaw

Director, Division of Child and Adolescent
Mental Health, Children's Hospital
Colorado

Areas of expertise include:

- Child and family stress and resiliency
- Mental health integration within children's health care
- Family-centered care and co-production
- Diversity and health equity
- Staff engagement and well-being





University of Colorado
Anschutz Medical Campus

Child and Adolescent Mental Health and the Role of Brain Development

K. Ron-Li Liaw, MD

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June 6, 2023

Disclosures

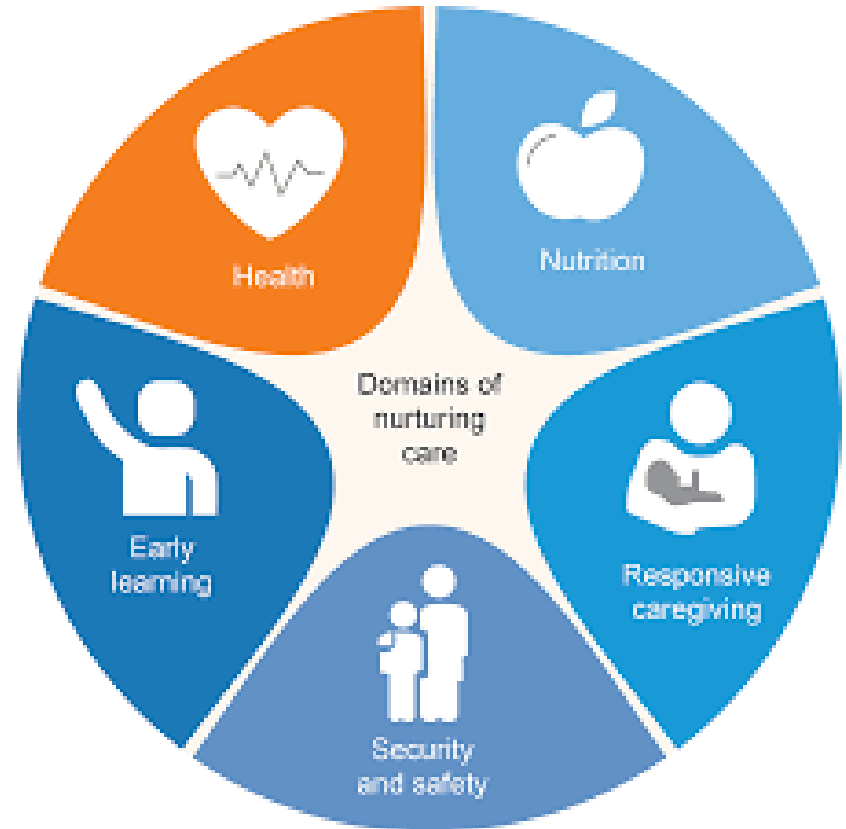
- Serve as a clinical advisor for Little Otter.

Agenda

- Introduction to human development and core concepts
 - Brain development
 - Stress, trauma & resiliency
 - Factors that shape mental health
- Development through the lifecycle
 - Prenatal and early childhood
 - Childhood development
 - Adolescent and young adulthood
- Policy implications, examples, and collaborators

“Young children’s healthy development depends on **nurturing care** — care which ensures health, nutrition, responsive caregiving, safety and security, and early learning.”

Advancing Early Childhood Development:
From Science to Scale (*The Lancet*, 2016)



Social Determinants of Health

Social determinants of health (SDOH) are the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.

Social Determinants of Health



Youth Mental Health Landscape

50%

Of lifetime cases of mental illness begin by age 14;
75% by age 24

Suicide

A leading cause of death nationally for ages 10-24

2x

Increase in proportion of mental health visits to pediatric EDs over the last 10 years

10 years

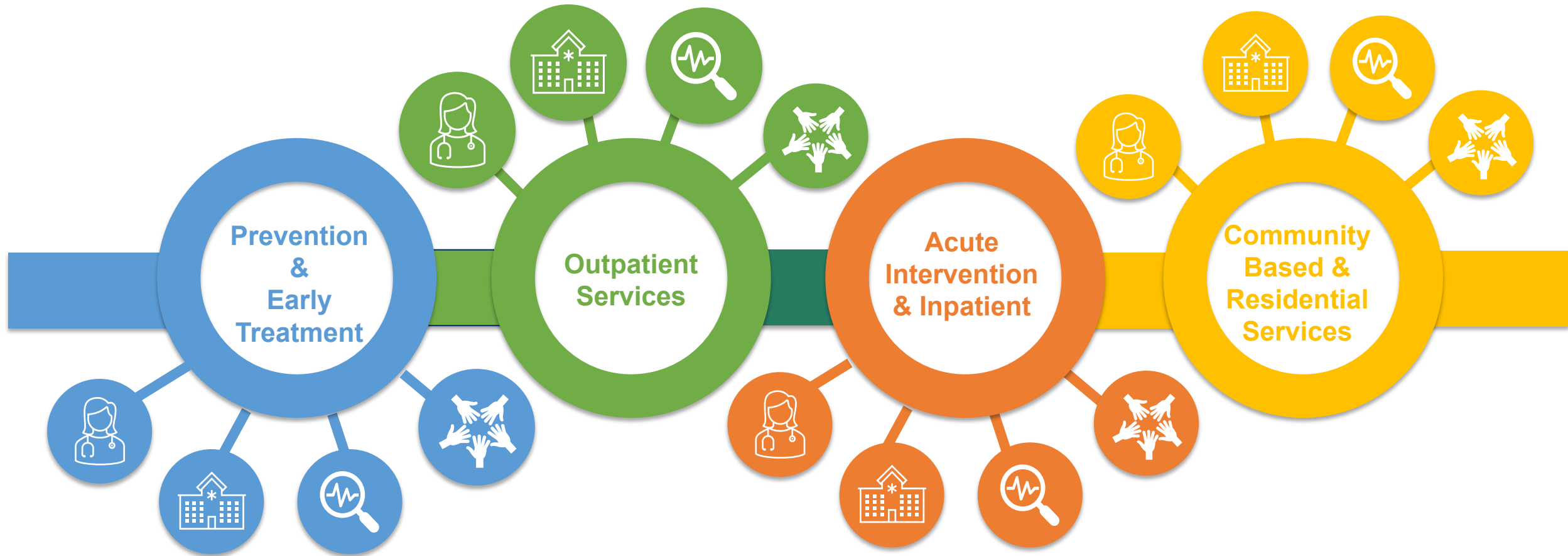
Average delay between onset of symptoms and intervention is 8-10 years

<50%

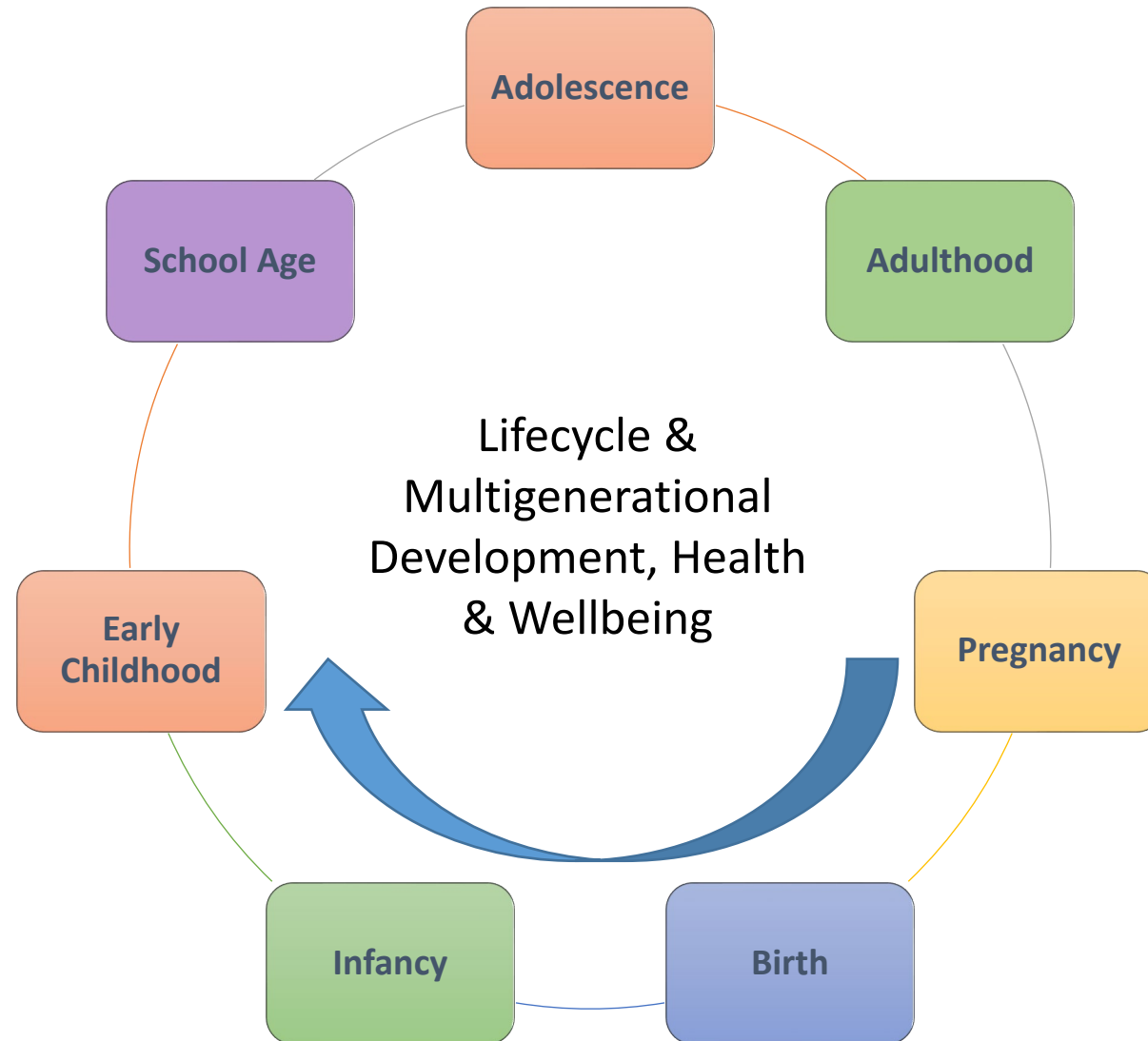
Youth with mental health conditions will receive treatment

Child Health.
Reimagined.
Realized.

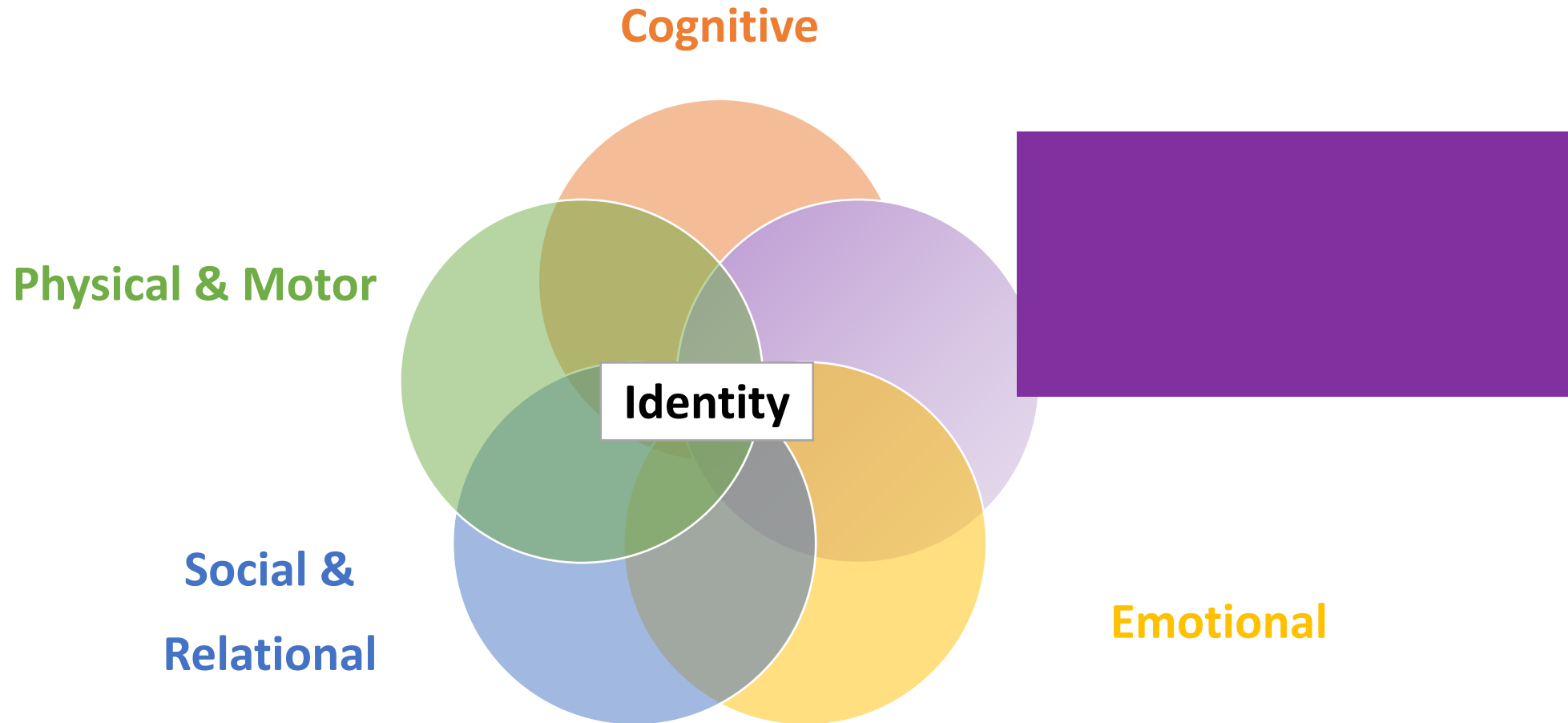
Advance a youth- and family-centered, coordinated system of mental health care with collaborative partners, ensuring equitable access to high-quality, evidenced-based care and prevention.



Lifecycle and Multigenerational Approach



Cognitive, emotional, social, physical, and language capacities are inextricably intertwined throughout the lifecycle.





Maternal

MENTAL HEALTH

AWARENESS MONTH

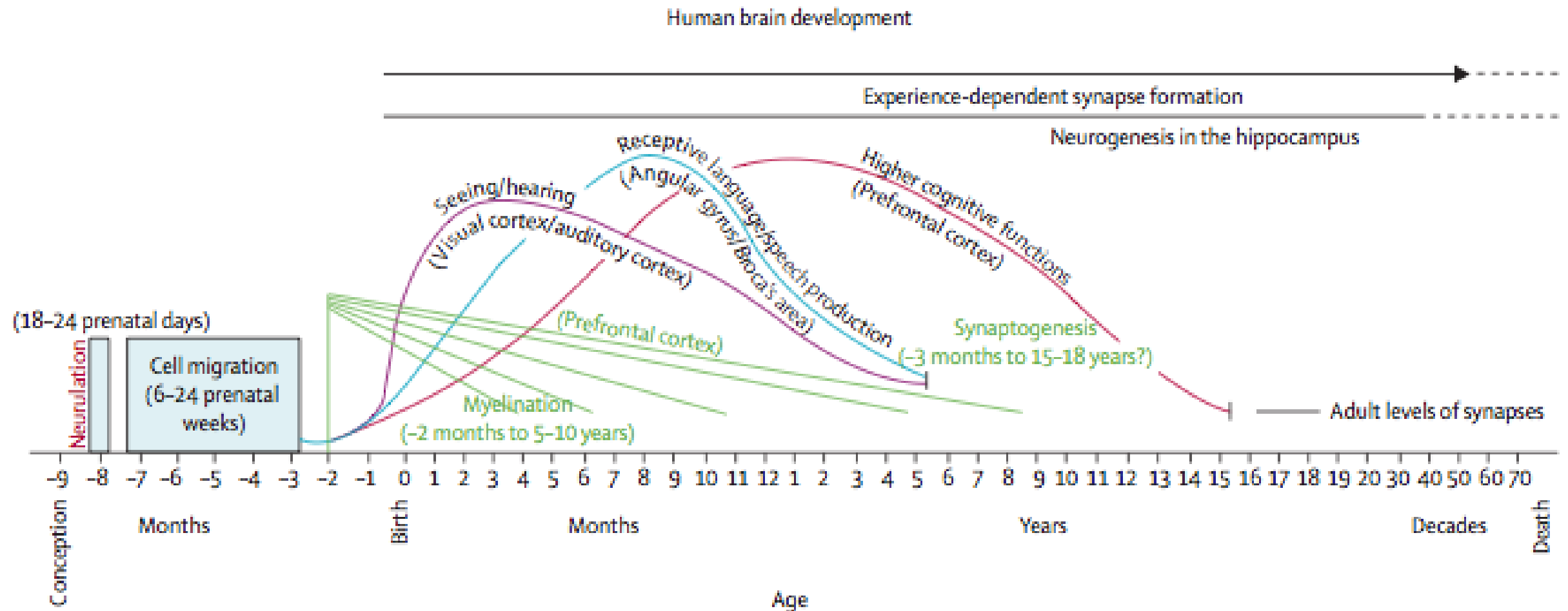
Prenatal through Early Childhood Development

NICHQ

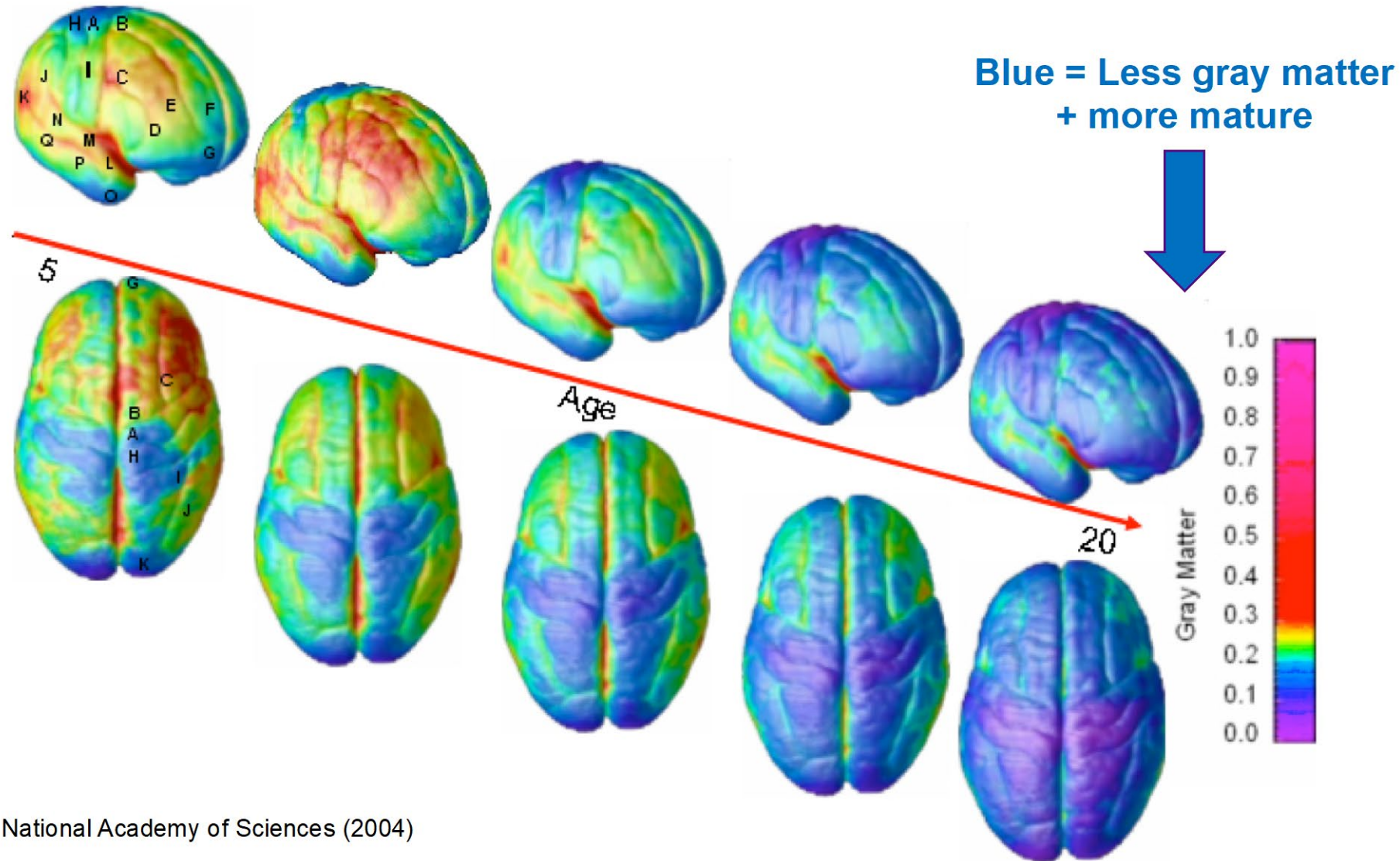
National Institute for
Children's Health Quality

Human Brain Development and Critical Periods

Neural Connections for Different Functions Develop Sequentially



Brains are built over time, from the bottom up, and in a back to front wave as the brain matures.



The development of a child's brain architecture provides the foundation for all future learning, behavior, and health.

- In the first few years of life, more than 1 million new neural connections form every second.
- Brain architecture is comprised of billions of connections between individual neurons across different areas of the brain.
- The interactions of genes and experience shape the developing brain.



Synaptic Development

A baby's brain triples in weight during the first 2 years of life.

**36 weeks
gestation**

Newborn

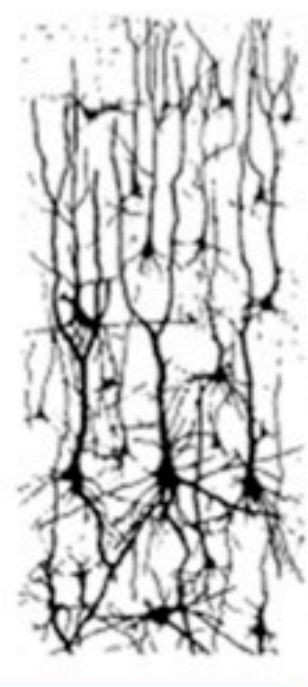
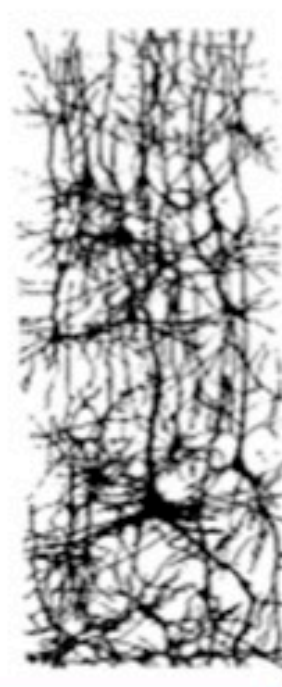
3 months

6 months

2 years

4 years

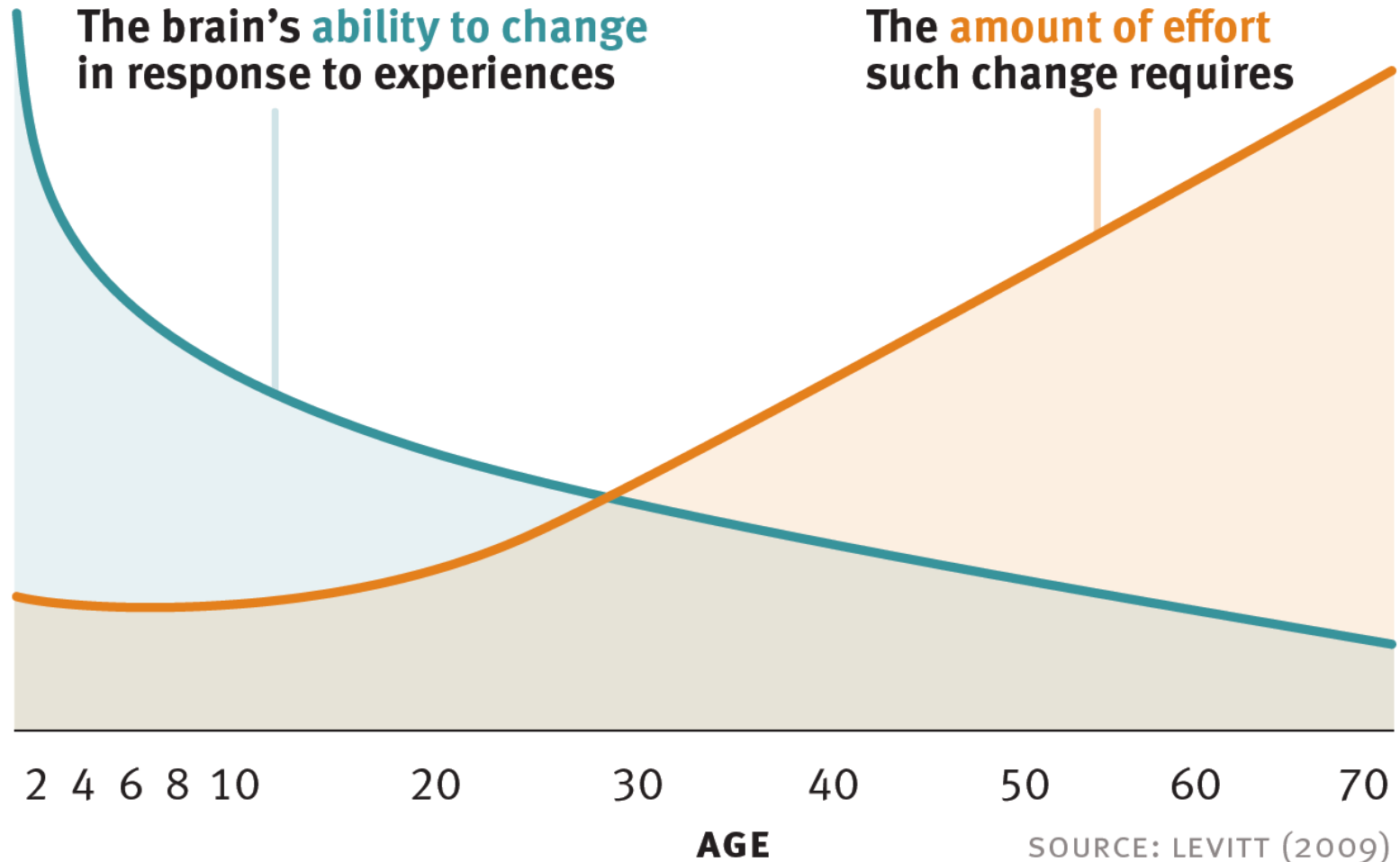
6 years



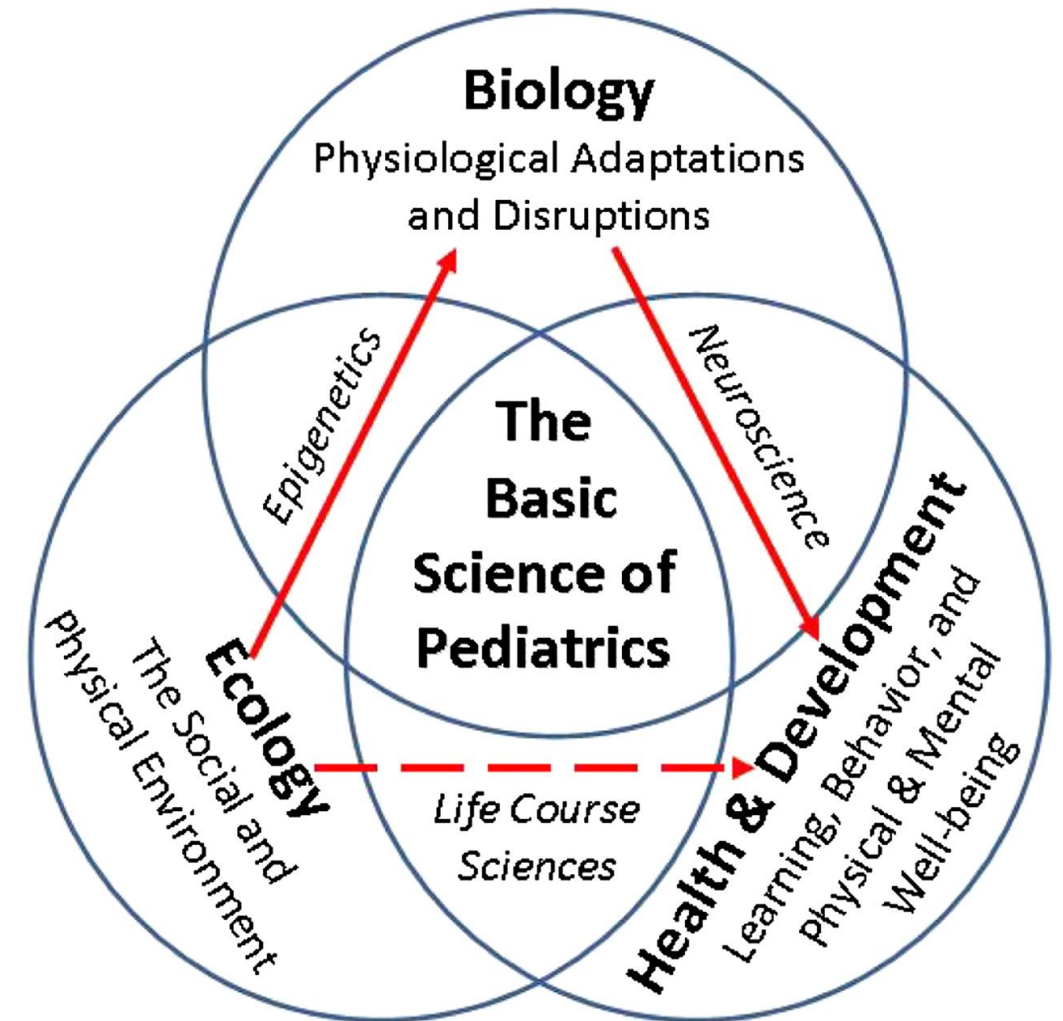
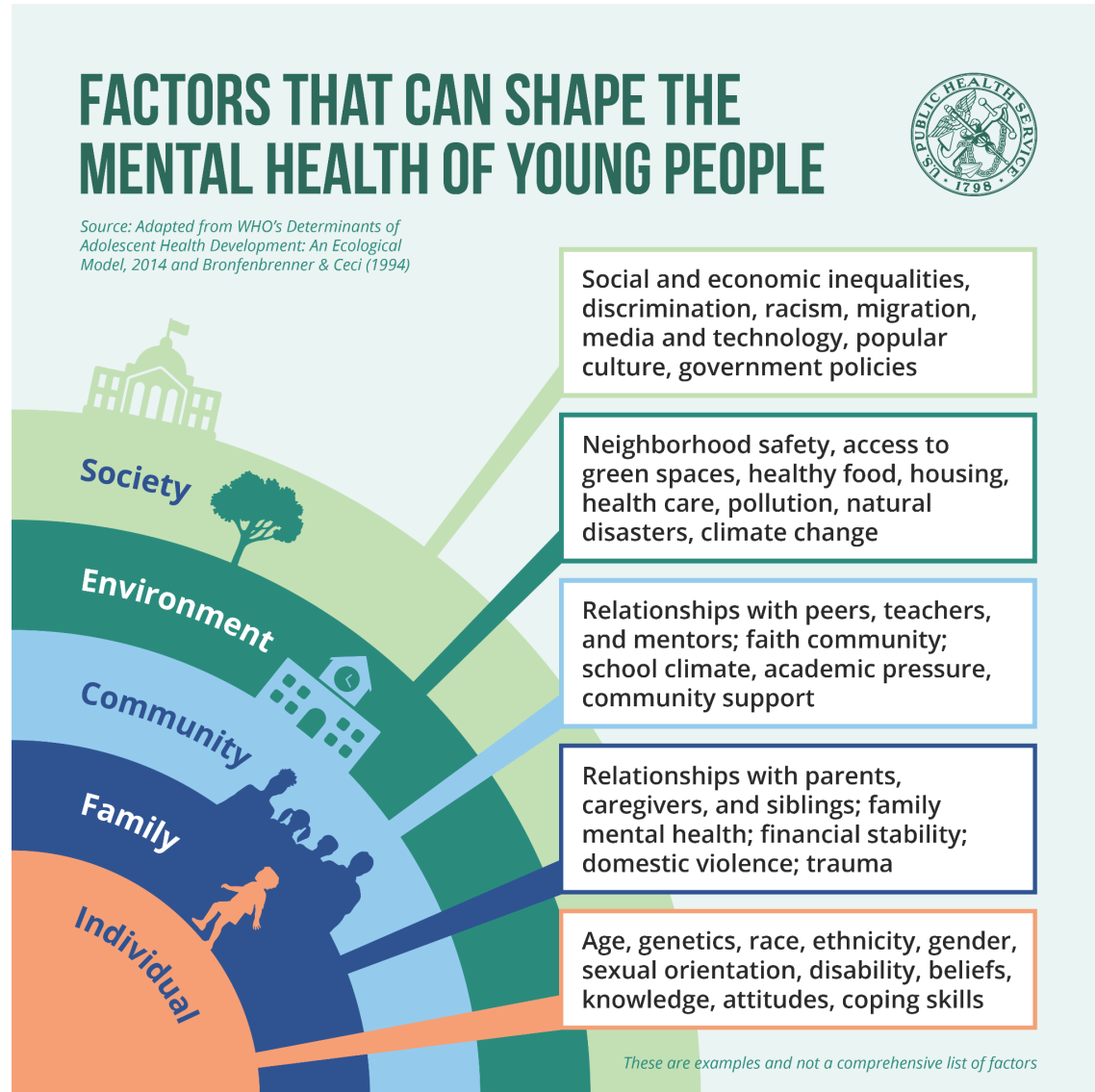
Synapse formation

Synapse pruning

Neuroplasticity

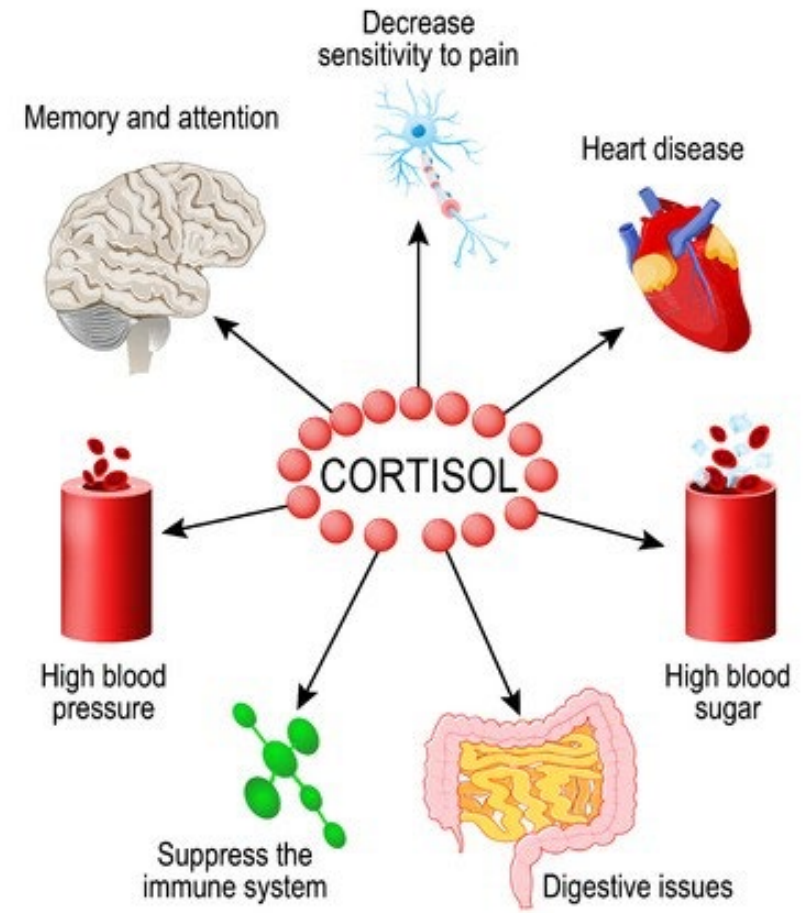
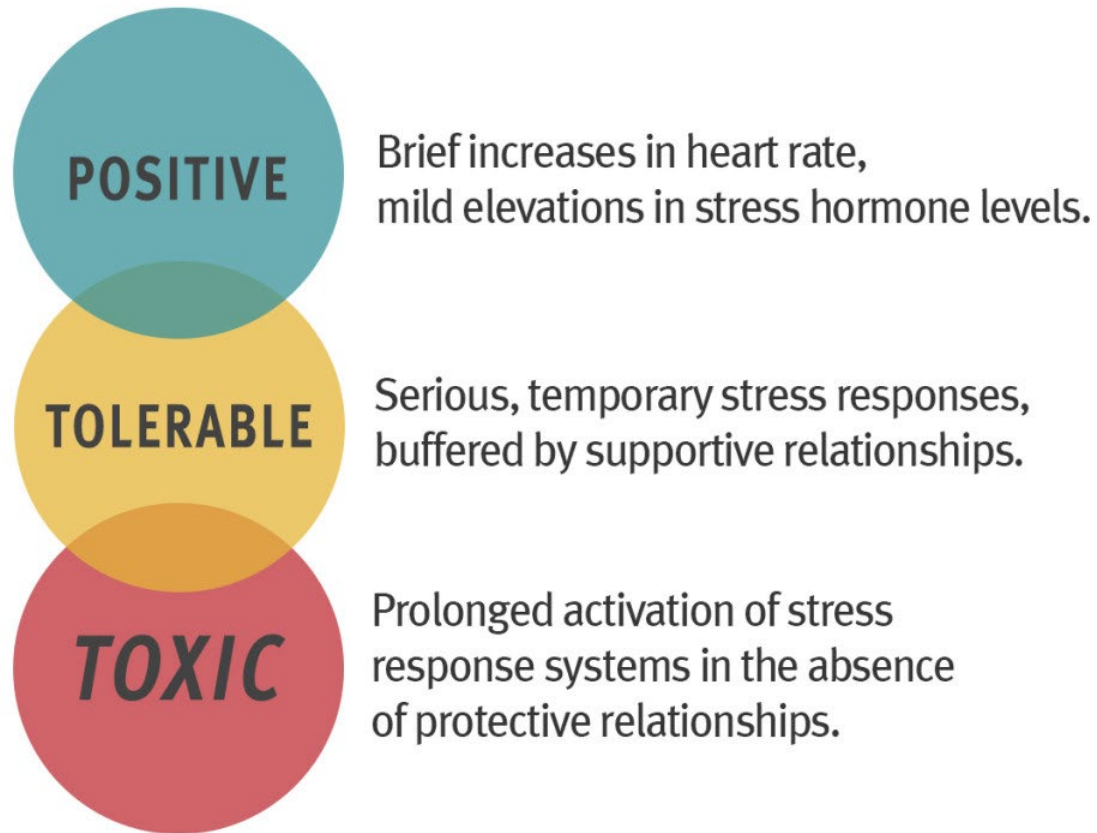


Ecobiodevelopmental Framework



Jack P. Shonkoff et al. Pediatrics 2012;129:e232-e246

3 Stress Responses: Positive, Tolerable & Toxic

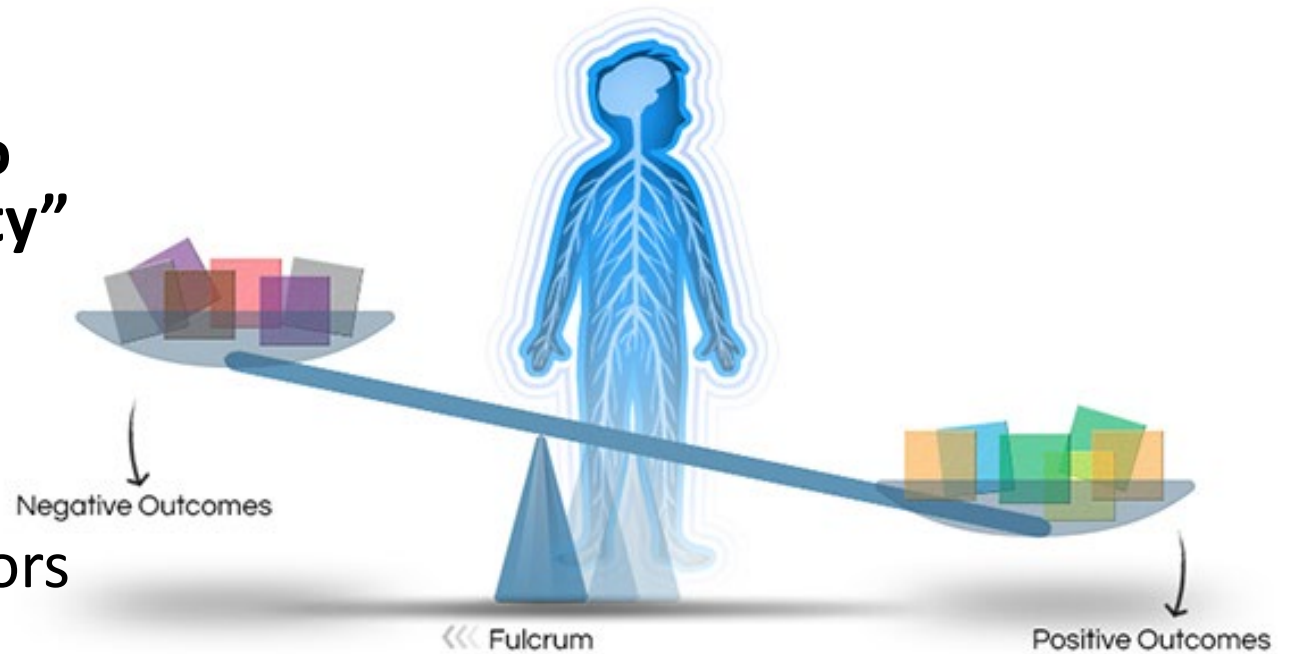


Risk and Resiliency:

Learning how to cope with adversity is an important part of healthy child development.

Resiliency is “the process of harnessing the resources we need to sustain well-being in face of adversity”

- Trait, process, or outcome
- Interaction of biological, psychological, social & cultural factors
- Continuum present to differing degrees across multiple domains of life



Tipping the Scales

8 Things to Remember about Child Development

#8

**Resilience
requires
relationships,
not
rugged
individualism.**

“Relationships lie
at the roots of
resilience.”

Suniya Luthar, PhD
(1958-2023)

Summary of core themes of development

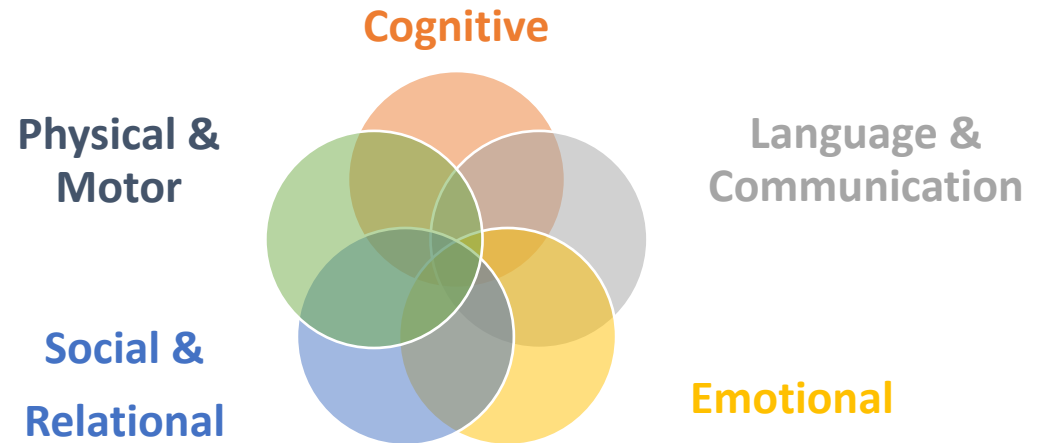
- **Early experiences** affect the development of brain architecture, which provides the **foundation** for all future learning, behavior, and health **across the lifecycle**.
- The **ecobiodevelopmental framework** is comprised of the convergence of biology, health and development, and physical and social ecology.
- Learning how to cope with adversity (**resiliency**) is an important part of healthy child development.

Major Tasks of Infancy

- Gain motor control
- Establish routines
 - Day-Night, Sleep-Wake rhythms
 - Regulate crying
- Emotional development
 - Temperament
 - Goodness of Fit
- Attachment
 - Serve and return
- Learn about the world

Major Tasks of Early Childhood

- Autonomy and independence
 - Improved motor control
 - Language development
 - Gender identity
-
- Self regulation as a cornerstone of development
 - Control impulses, delay gratification
 - Control emotions
 - Pay attention



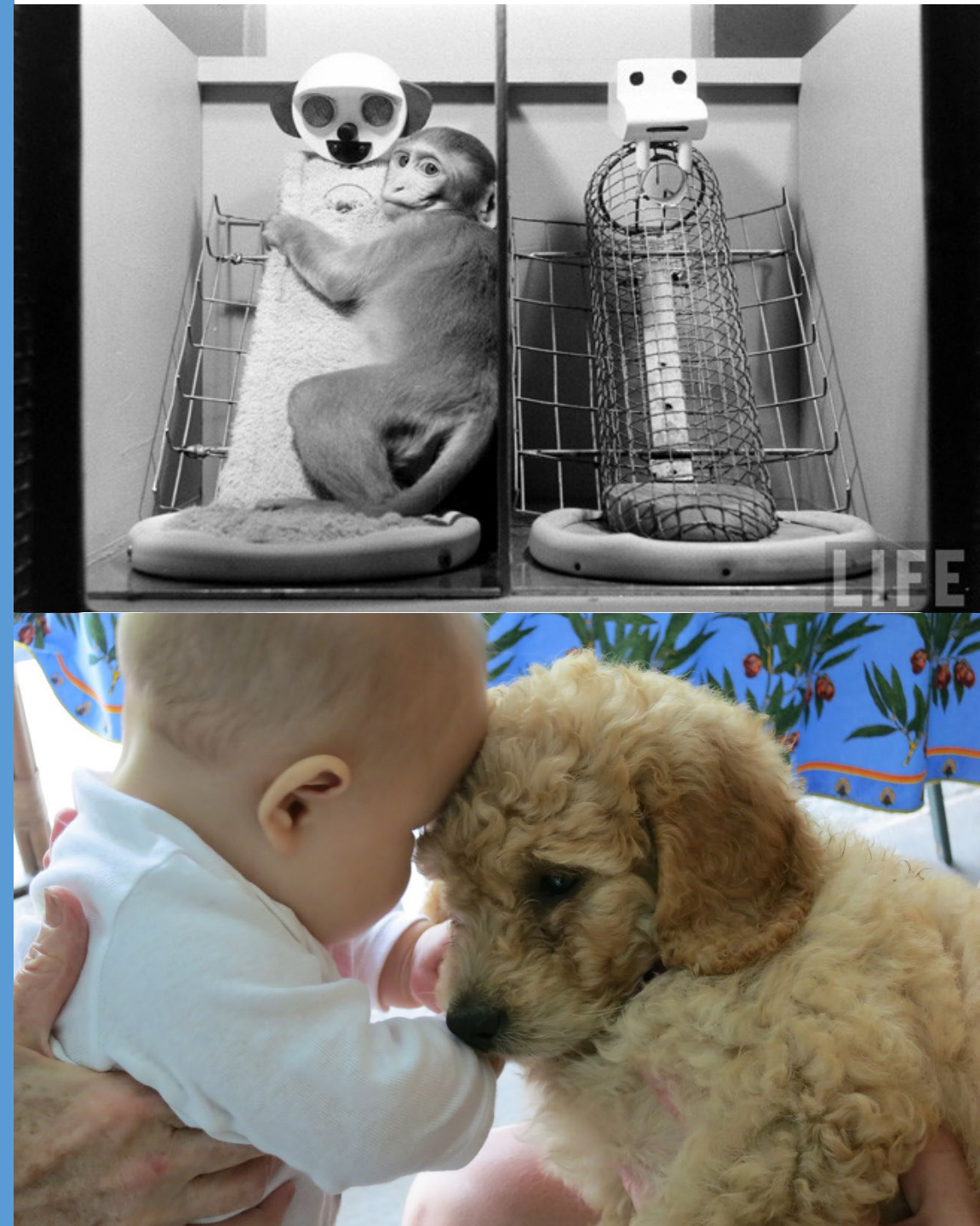
Attachment

“All of us, from the cradle to the grave, are happiest when life is organized as a series of excursions, long or short, from a **secure base** provided by our attachment figure(s)”

“Attachment is an inborn system in the brain that evolves in ways that influence and organize **motivational, emotional, and memory** processes with respect to significant caregiving figures.”

Bowlby, J. (1988).

Daniel J. Siegel (1999).



When an infant or young child **babbles, gestures, or cries**, and an adult **responds** appropriately with **eye contact, words, or a hug**, neural connections are built and strengthened in the child's brain that support the development of **communication and social skills**.

Serve and Return Interactions Shape Brain Architecture

Summary of

- **Attachment** and internal working models of relationships are still in a critical development period during early childhood.
- A **language explosion** occurs during early childhood, when children's vocabulary increases at an exponential rate over a short period of time.
- Toddlers seek **independence and control** and are learning how to **regulate** their impulses and emotions.

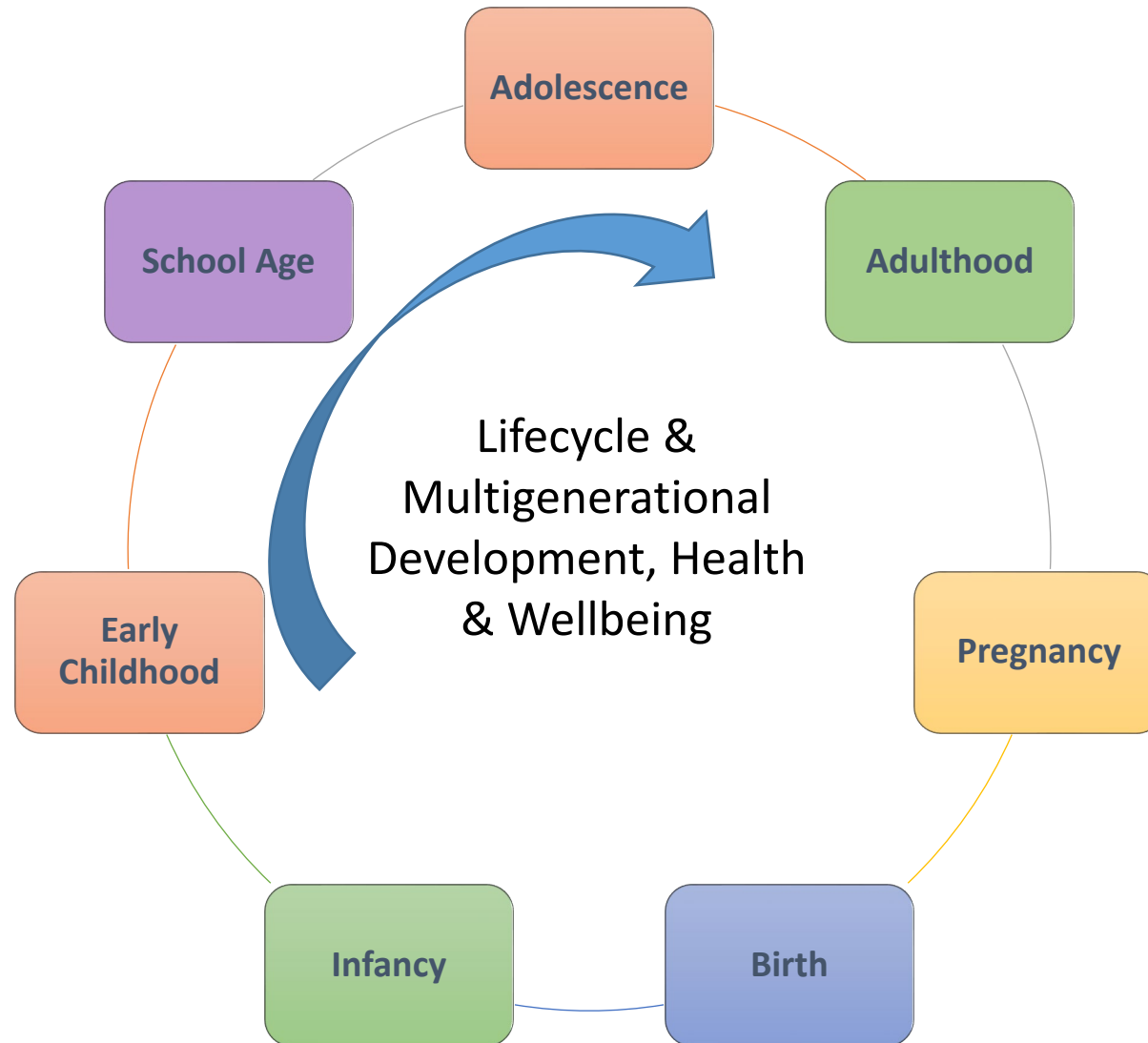


Idea Break

Prenatal through Early Childhood

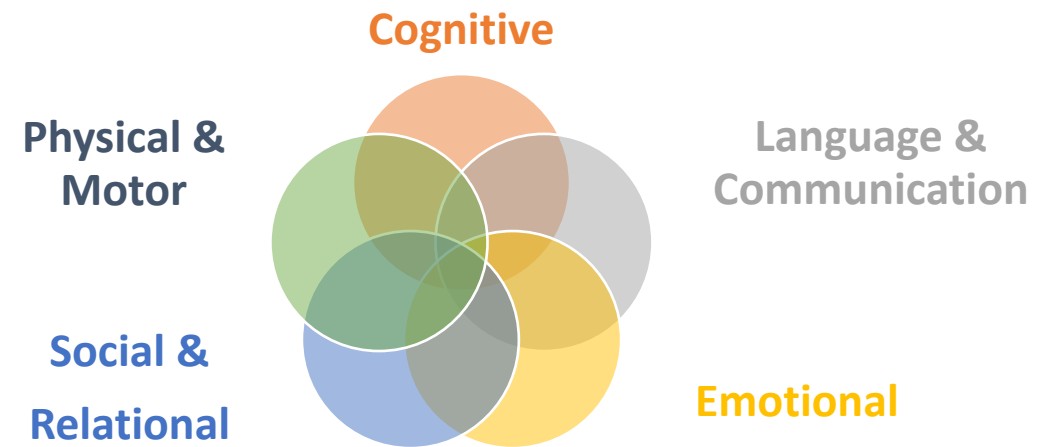


Lifecycle and Multigenerational Approach



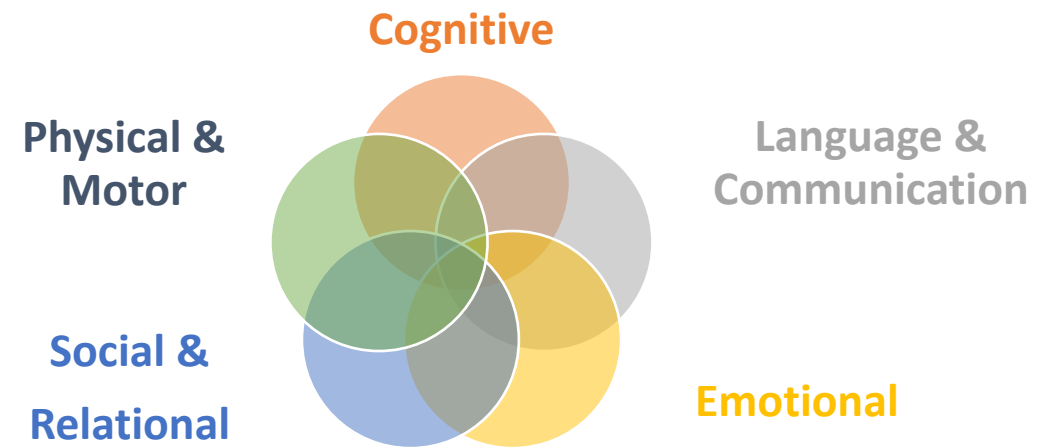
Major Tasks of Childhood Development

- Middle Childhood (6-8 years)
 - Rapid development of physical, social & mental skills.
 - Critical time for the development of confidence in all areas of life.
 - Show more independence from parents and family.
 - Pay more attention to friendships and teamwork.
 - Learn better ways to describe experiences and talk about thoughts and feelings.
 - Have less focus on one's self and more concern for others.



Major Tasks of Childhood Development

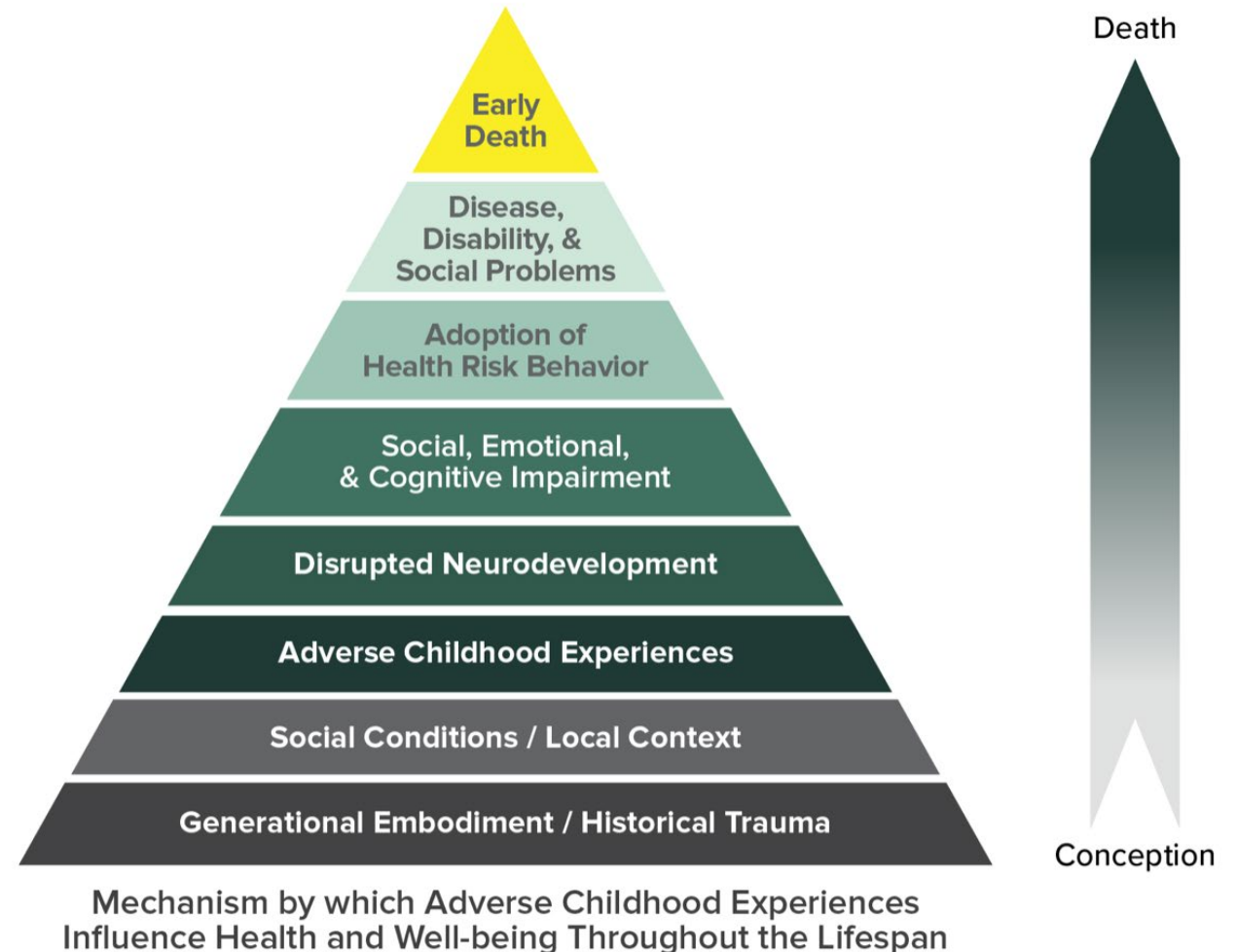
- Middle Childhood (9-11 years)
- Start to form stronger, more complex friendships and peer relationships.
- Experience more peer pressure.
- Become more aware of body as puberty approaches.
- Face more academic challenges at school.
- Become more independent from the family.



Adverse Childhood Experiences (ACEs)

Early adversity has lasting impacts.

- ACEs are potentially traumatic events that occur in childhood such as experiencing
 - Violence, abuse or neglect
 - Having a family member attempt or die by suicide
 - Parental substance misuse, mental health problems and incarceration
 - Household instability
- ACEs have been linked to
 - Risky health behaviors
 - Chronic health conditions
 - Low life potential
 - Early death



Early adversity has lasting impacts.

The three types of ACEs include

ABUSE



Physical



Emotional



Sexual

NEGLECT



Physical



Emotional

HOUSEHOLD DYSFUNCTION



Mental Illness



Mother treated violently



Divorce



Incarcerated Relative



Substance Abuse

WHAT IMPACT DO ACEs HAVE?

0-1 ACEs=Low ACE

≥2 ACEs=High ACE

BEHAVIOR



Lack of physical activity



Smoking



Alcoholism



Drug use



Missed work

PHYSICAL & MENTAL HEALTH



Severe obesity



Diabetes



Depression



Suicide attempts



STDs



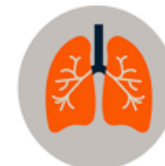
Heart disease



Cancer



Stroke



COPD

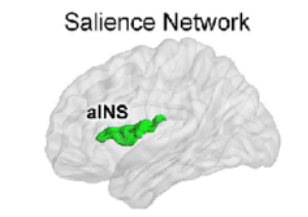
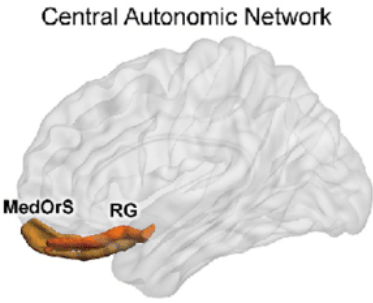
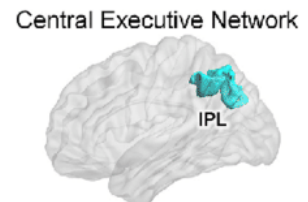
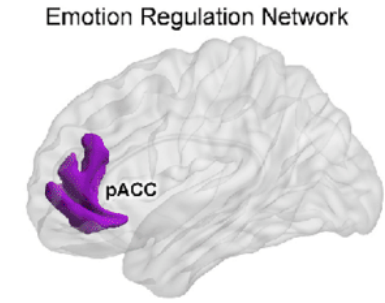
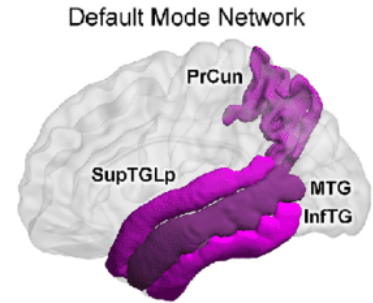
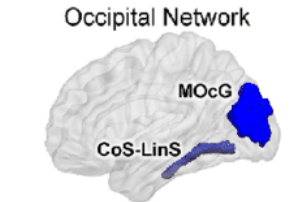
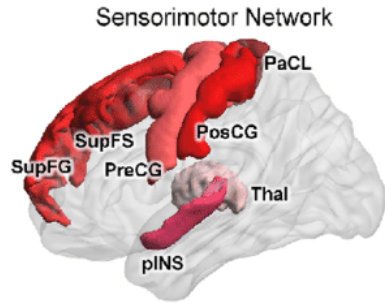


Broken bones

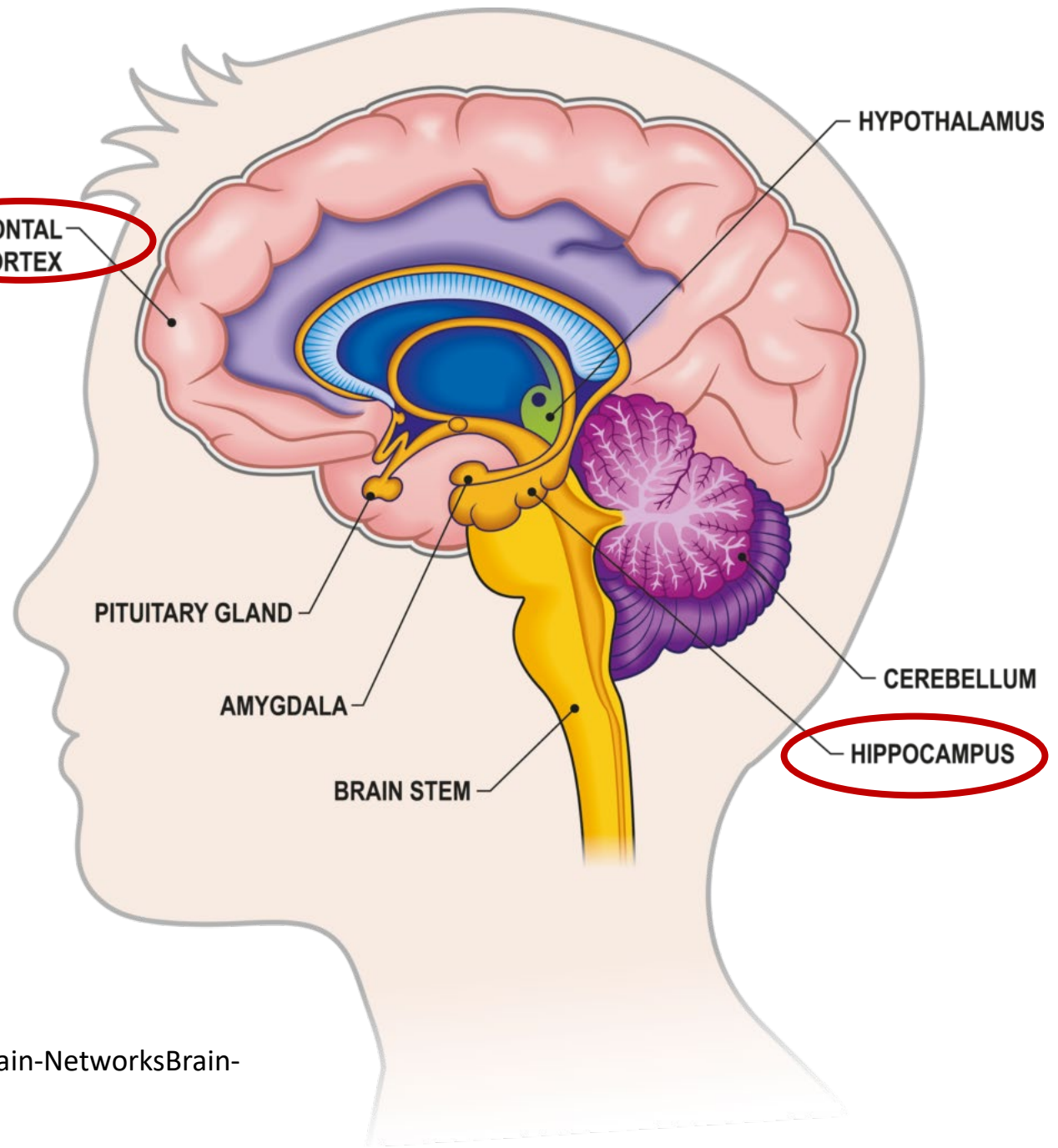
<https://www.cdc.gov/violenceprevention/acestudy/index.html>



BRAIN HEALTH for all, for life.



PREFRONTAL CORTEX



<https://www.ncmh.info/2019/08/22/adverse-childhood-experiences-and-the-developing-brain/>

https://www.researchgate.net/figure/Early-Life-Adversity-Impacts-Multiple-Brain-NetworksBrain-Regions-SupFG-S-superior_fig3_351864100

The Role of Schools in Child Development



1. Foster a supportive environment that promotes strong relationships among staff, students, and families
2. Implement meaningful, engaging instructional practices that develop students' ability to manage their own learning
3. Develop habits, skills, and mindsets that build students' social, emotional, and academic competence
4. Create an integrated system of school supports that includes extended learning opportunities and community partnerships

<https://casel.org/fundamentals-of-sel/>

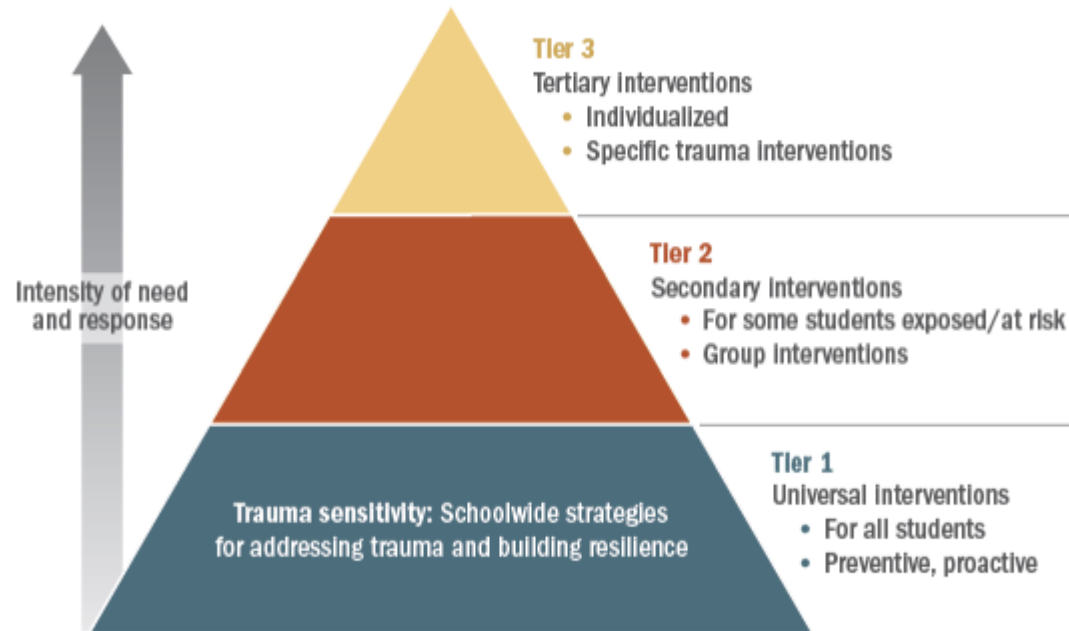
https://greatergood.berkeley.edu/article/item/four_ways_schools_can_support_the_whole_child

Multi-Tiered System of Supports

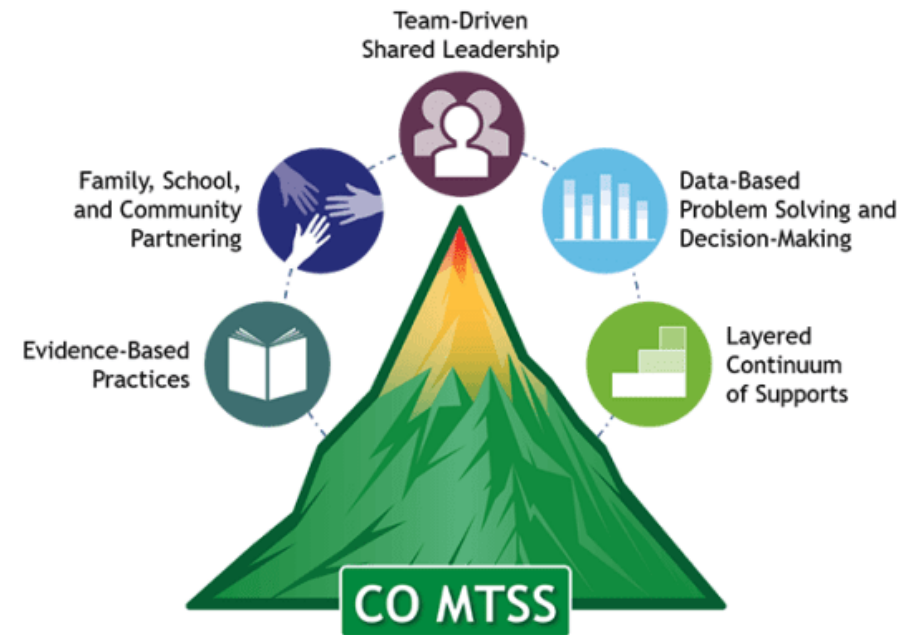
Schools play a critical role in addressing and mitigating the effects of child trauma by recognizing the impact of adversity and trauma on students, parents, and staff and embedding policies and practices that foster well-being and resilience.

1.

Multi-tiered Approach to Addressing Trauma In Schools



(American Institutes for Research, 2018)



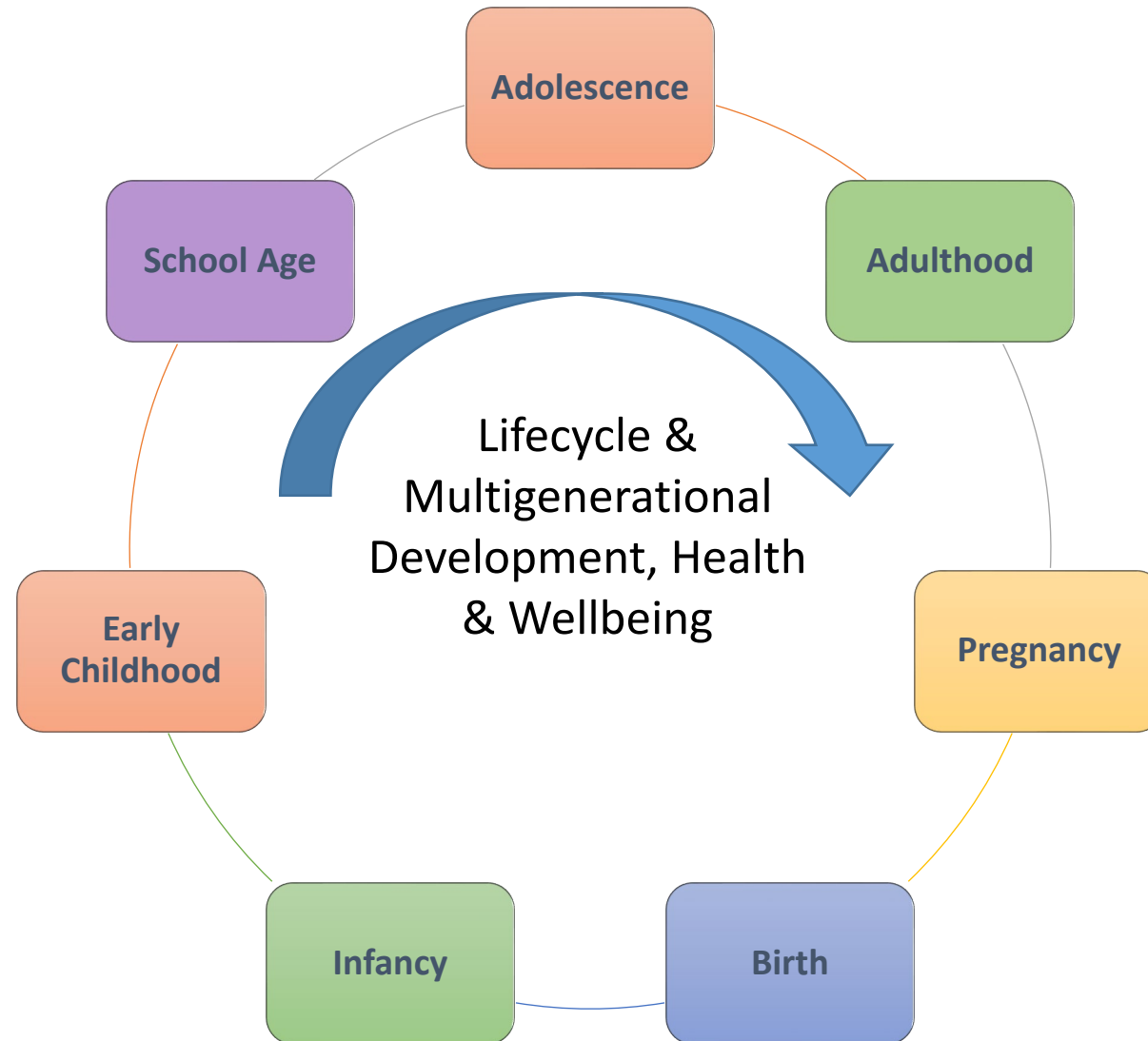


Idea Break

Middle Childhood

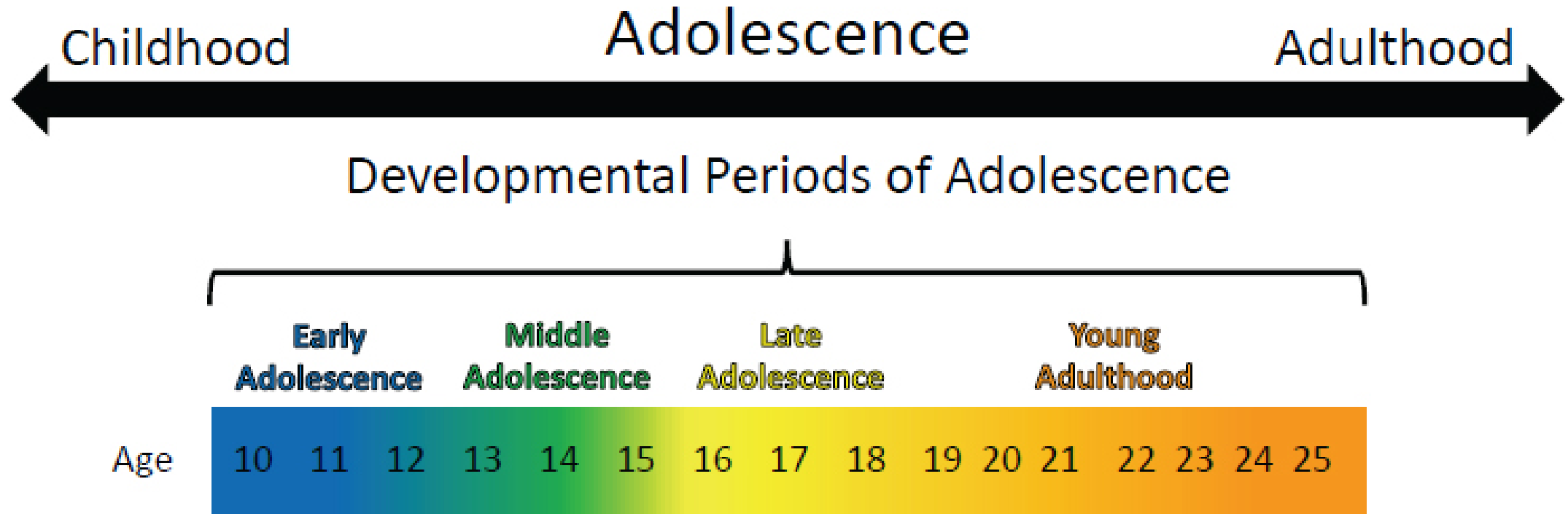


Lifecycle and Multigenerational Approach



Adolescence Defined

Begins in biology and ends in culture



“The shift from childhood to adulthood is not a linear one. Adolescence is a time of wonderfully dynamic change in the brain.” BJ Casey, PhD, <http://fablab.yale.edu/>

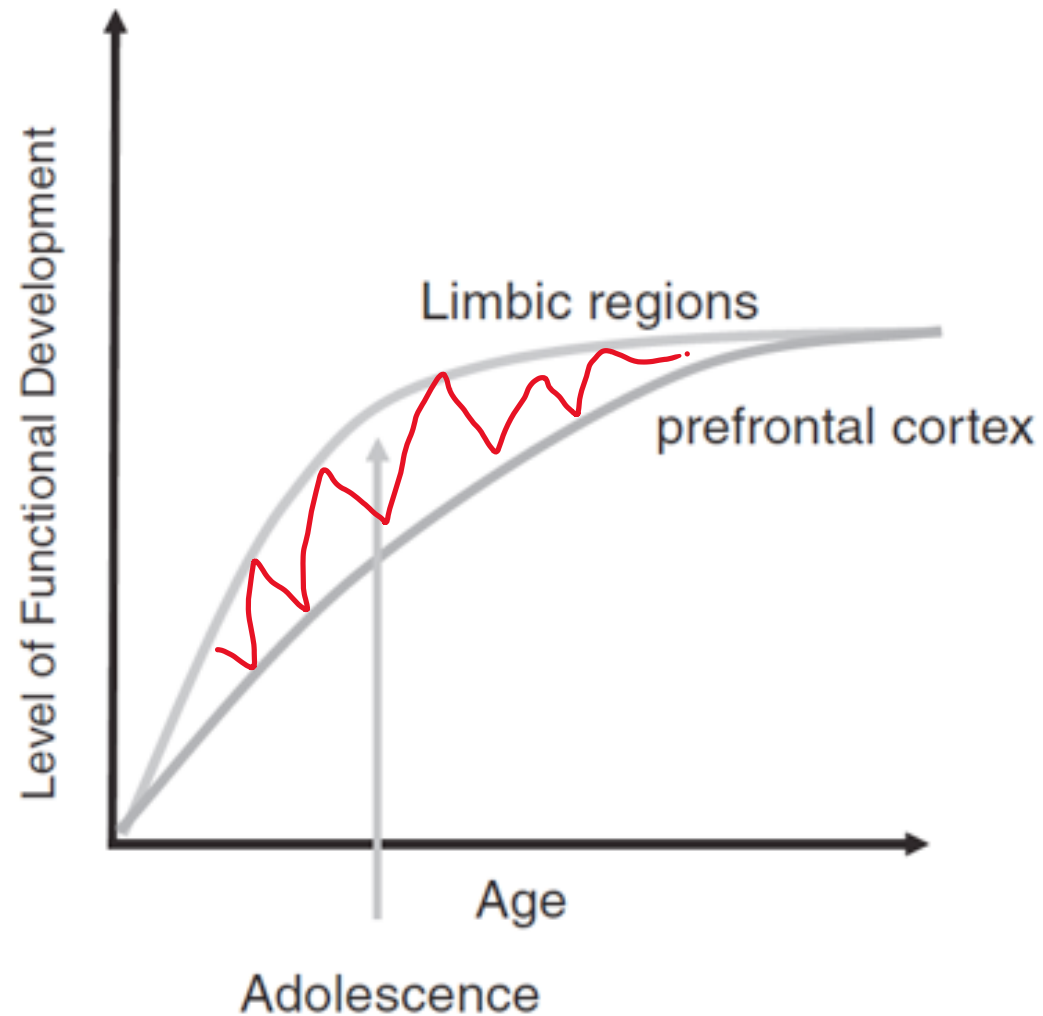
Major Tasks of Adolescence

- Developing a healthy and realistic **body image**
- Developing increased **independence** and capacities for **self-care and regulation**
- Developing meaningful and supportive **relationships** outside of the family
- Developing appropriate **control and expression** of increased sexual and aggressive drives
- **Identity** consolidation and early plans for a vocation and economic **self-sufficiency**
 - In adolescence, the way we see ourselves changes in response to peers, family, and school, among other social environments.
 - Our self-identities shape our perceptions of belonging.

5 Features of Emerging Adulthood

- **Age of identity exploration**
 - Young people are deciding who they are and what they want out of work, school and love.
- **Age of instability**
 - The post-high school years are marked by repeated residence changes, as young people either go to college or live with friends or a romantic partner.
- **Age of self-focus**
 - Freed of the parent- and society-directed routine of school, young people try to decide what they want to do, where they want to go and who they want to be with.
- **Age of feeling in between**
 - Many emerging adults say they are taking responsibility for themselves, but still do not completely feel like an adult.
- **Age of possibilities.**
 - Optimism reigns. Most emerging adults believe they have good chances of living "better than their parents did."

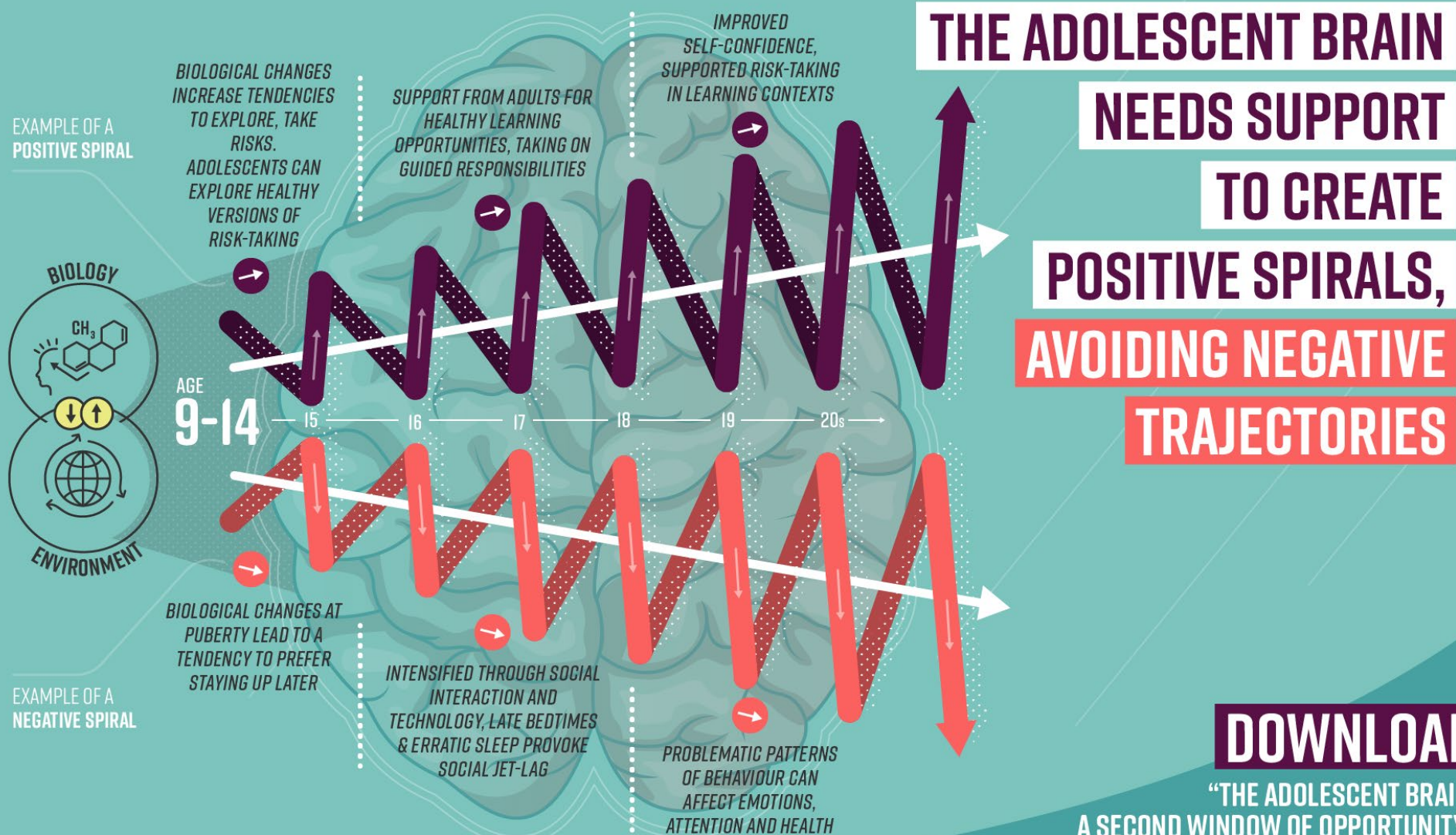
The Teenage Brain and Risk-Taking



Cognitive and emotional neural networks mature at different rates.

POSITIVE AND NEGATIVE SPIRALS

DURING ADOLESCENT BRAIN DEVELOPMENT



DOWNLOAD

“THE ADOLESCENT BRAIN:
A SECOND WINDOW OF OPPORTUNITY”

WWW.UNICEF-IRC.ORG/ADOLESCENT-BRAIN

THE ADOLESCENT BRAIN

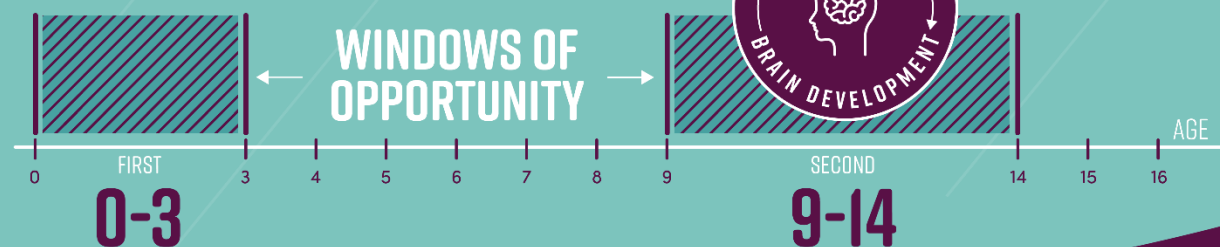
A SECOND WINDOW OF OPPORTUNITY

EARLY ADOLESCENCE IS
**A TIME OF RAPID
LEARNING AND
BRAIN DEVELOPMENT**

THESE INCLUDE
INCREASES IN
SENSATION-SEEKING,
MOTIVATION FOR SOCIAL
RELATIONS AND SENSITIVITY TO
SOCIAL EVALUATION.

A PERIOD OF
**VULNERABILITY
AND OPPORTUNITY**

PUBERTY INITIATES INTENSE
LEARNING & BRAIN
DEVELOPMENT, WHICH LEAD TO
STRUCTURAL REMODELING AND
NEURAL RE-CONFIGURATION OF
KEY BRAIN SYSTEMS. IT'S A
CRUCIAL TIME TO INVEST IN
ADOLESCENTS.



DOWNLOAD

**"THE ADOLESCENT BRAIN:
A SECOND WINDOW OF OPPORTUNITY"**

WWW.UNICEF-IRC.ORG/ADOLESCENT-BRAIN

ADOLESCENT BRAINS

ARE SENSITIVE TO STRESSORS

BIOLOGICAL

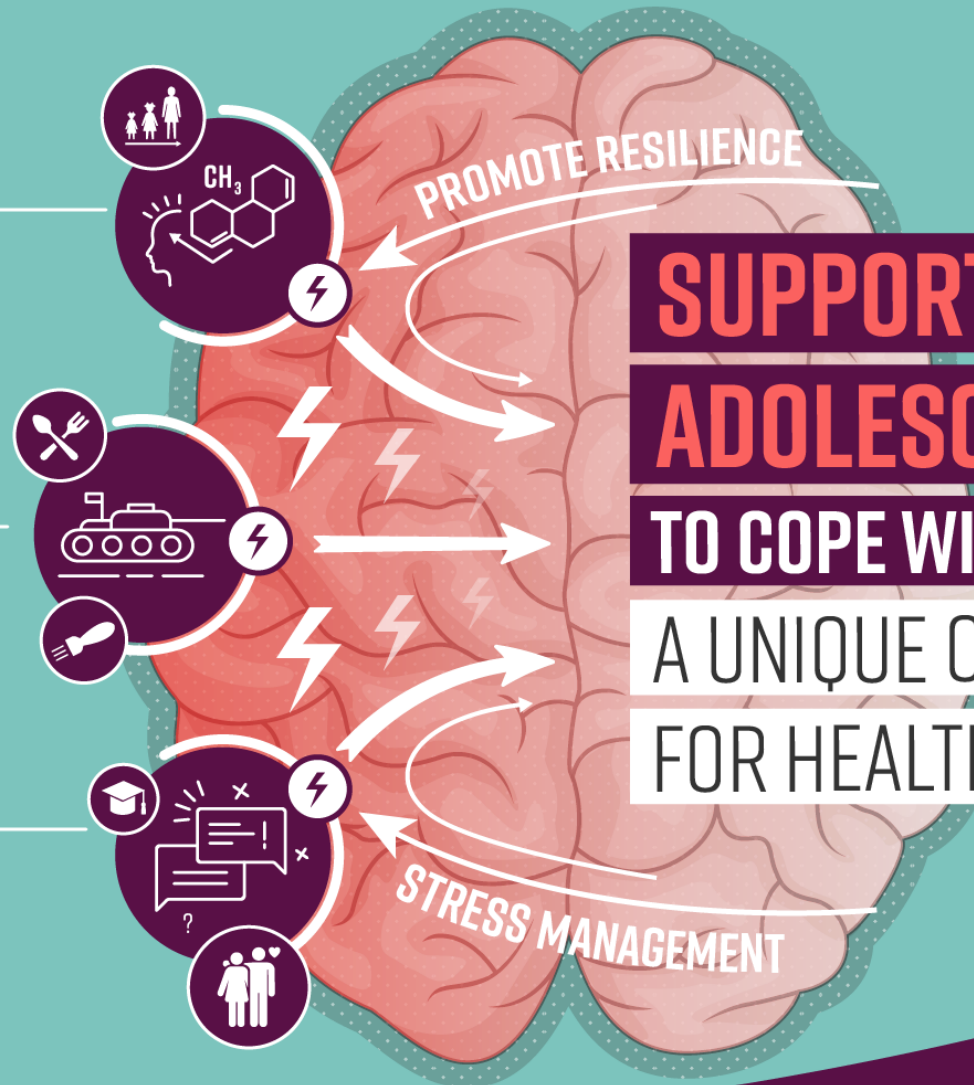
CHANGES IN HORMONE LEVELS
AFFECT DEVELOPMENT OF
NEUROBIOLOGICAL CIRCUITS.

POPULATION

MASS EVENTS - WAR AND
DISASTER - CAN HAVE LONGER
LASTING NEGATIVE IMPACTS.

SOCIAL

ADOLESCENTS NEED A
SUPPORTIVE ENVIRONMENT TO
DEVELOP THEIR SOCIAL IDENTITY
AND CONNECT TO PEERS.







SUPPORTING ADOLESCENTS TO COPE WITH STRESS



A UNIQUE OPPORTUNITY
FOR HEALTH AND WELL-BEING

DOWNLOAD

"THE ADOLESCENT BRAIN:
A SECOND WINDOW OF OPPORTUNITY"
WWW.UNICEF-IRC.ORG/ADOLESCENT-BRAIN

CDC's Youth Risk Behavior Survey (2011-2021)

The Percentage of High School Students Who:*	2011 Total	2013 Total	2015 Total	2017 Total	2019 Total	2021 Total	Trend
Experienced persistent feelings of sadness or hopelessness	28	30	30	31	37	42	
Experienced poor mental health†	–	–	–	–	–	29	–
Seriously considered attempting suicide	16	17	18	17	19	22	
Made a suicide plan	13	14	15	14	16	18	
Attempted suicide	8	8	9	7	9	10	
Were injured in a suicide attempt that had to be treated by a doctor or nurse	2	3	3	2	3	3	

	In wrong direction
	No change
	In right direction

School and Family Connections in Adolescence Linked to Positive Health Outcomes in Adulthood

YOUTH EXPERIENCE RISKS

17% of students considered attempting suicide

19% have been bullied at school

14% misuse prescription pain medicine



SCHOOL & FAMILY CONNECTIONS HELP PROTECT YOUTH

Adults who experienced strong connections as youth were

48%-66% LESS LIKELY TO:

Have mental health issues

Experience violence

Engage in risky sexual behavior

Use substances

SCHOOLS, FAMILIES, & PROVIDERS CAN HELP



SCHOOLS can implement positive youth development programs



PARENTS can have frequent & open conversations



PROVIDERS can discuss relationships & school experiences



Thank you!

Ron-Li.Liaw@cuanschutz.edu



Idea Break

Youth and Young Adults



Questions



NCSL Contacts



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Policy Examples

Prenatal through Early Childhood

Areas of interest may include: access to health care; access to quality early learning; prohibiting preschool expulsions; Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) benefits; child care; parental leave; home visiting programs; family tax credits; health screenings

- [Delaware HB 202](#) (2021) Requires any applicant for a child care facility license to commit that each enrolled child between 0-5 years old will undergo developmental and social emotional screening.
- [Louisiana HR 222](#) (2019) Requests that the state Department of Education establish the Louisiana Early Literacy Commission.
- [Utah S 100](#) (2022) Requires paid parental and postpartum recovery leave program for state workers after the birth, adoption or being named a legal guardian of a minor child. To qualify, employees must work part-time or more than a 40-hour work week or its equivalent. Paid postpartum recovery leave runs consecutively with parental leave and both provide three paid weeks that must be used in a continuous period only once in 12 months.
- [Family Tax Credits](#): Twelve states have child tax credits. The tax credits are intended to provide financial relief for low-income parents and their children.

Policy Examples

Middle Childhood

Areas of interest may include: school meals; family resource centers; child abuse and neglect prevention; access to health and mental health services; family tax credits; access to public assistance programs including nutrition, housing and income support

- [Idaho HCR 29 \(2022\)](#) Encourages certain officers, agencies, and employees of the state to become informed about the impacts of traumatic childhood experiences and implement interventions and practices to develop resiliency in children and adults with traumatic childhood experiences.
- [Illinois S 3889 \(2022\)](#) Children's Mental Health Act: relates to providing comprehensive and coordinated services for children from birth to age 25 and their families with the goal of addressing children's mental health needs across a full continuum of care.
- [Minnesota H 5 \(2023\)](#) Provides free lunch and breakfast to all Minnesota students, regardless of income requirements set by a federal program.
- [Texas S 910 \(2021\)](#) Community Based Family Preservation Services: relates to implementation options for providing community-based family preservation services.

Policy Examples

Youth and Young Adult

Areas of interest may include: access to health care services including mental and behavioral health; mental health education; housing and homelessness; transition from systems (foster care and juvenile justice); higher education; employment and job training; civil and criminal sentencing

- [Florida S 7034 \(2022\)](#) Expands tuition waivers for children and young adults in the foster care system.
- [Louisiana H 495 \(2022\)](#) Requires evidence-based, age-appropriate, suicide prevention, student safety and violence and social isolation prevention training within schools through the Department of Education.
- [New Mexico S 140 \(2022\)](#) Creates the Opportunity Scholarship Act to replace the New Mexico Lottery Scholarship. Would provide full-time and part-time students who maintain a 2.5 GPA with a last-dollar scholarship covering tuition and fees at public colleges and universities.
- [Washington S 5599 \(2023\)](#) Provides that when the Department of Children, Youth, and Families receives a report for a minor who is away from a lawfully prescribed residence or home without parental permission, and is seeking or receiving protected health care services, it shall offer to make referrals on behalf of the minor for appropriate behavioral health services and offer services designed to resolve the conflict and reunify the family.



2023 Indy Legislative Summit



 **NCSL** LEGISLATIVE
SUMMIT
INDY 2023

Aug. 14-16, 2023

