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SENSITIVE DEVELOPMENTAL PERIODS, ADVERSE CHILDHOOD EXPERIENCES, POSITIVE ADAPTATIONS AND COMMUNITY CAPACITY

An Overview

Tribal Networks Meeting 2010
AT THE CORE: Collective Concerns, Collaborative Solutions
Friday October 22, 2010

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INTRODUCTION

1. Brain Research (Sensitive Developmental Periods)

2. Adverse Childhood Experiences (ACEs) Study

3. Resiliency & Community Capacity

4. ACEs in Washington – A highlight of what we now know

EXPERIENCE DRIVES DEVELOPMENT

Genetic Predispositions

Experience

Heritable Traits

Structure & Developmental Sequence of Brain; Baseline Intelligence

Determines function & specialty of cells exposed to certain hormones.

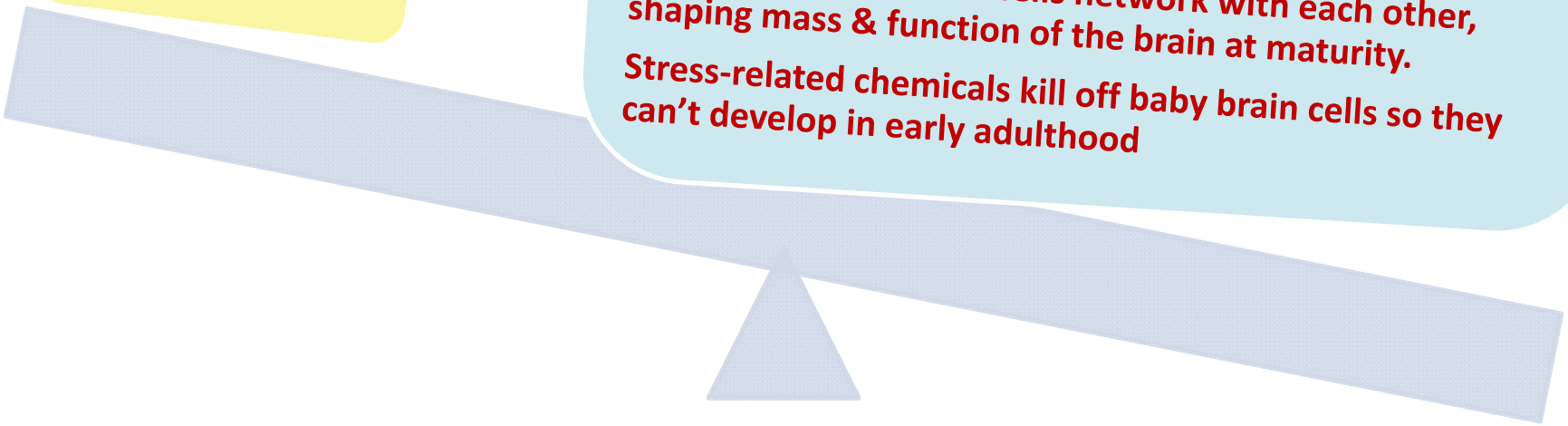
Activate systems & makes them more or less sensitive to future stressors.

Regulates myelination—the coating of nerves with fat.

Regulates the development of receptor cells—the decoder rings of the brain.

Determines how brain cells network with each other, shaping mass & function of the brain at maturity.

Stress-related chemicals kill off baby brain cells so they can't develop in early adulthood



Research Framework Brings Cohesion and Synergy to Multi-Sector Work

BRAIN RESEARCH

See for example: Teicher, M et al. "Neurobiological & Behavioral Consequences of Exposure to Childhood Traumatic Stress," *Stress in Health and Disease*, BB Arnetz & R Ekman (eds). 2006.

Teicher, M. "Scars that Won't Heal: The Neurobiology of Child Abuse," *Scientific American,* March, 2002, pp. 68-75.

EPIDEMIOLOGICAL RESEARCH

See for Example: Felitti, VJ, Anda, RF et al. "Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults." *American Journal of Preventive Medicine*. 1998. (14:4)

For a full list of publications, see http://www.cdc.gov/nccdphp/ace/publications.htm

RESILIENCY RESEARCH

Masten, AS. "Ordinary Magic: Resilience Process in Development." *American Psychologist*. March, 2001 (56:3), pp. 227-238.

Boss, P; *Loss, Trauma and Resilience – Therapeutic Work with Ambiguous Loss*; WW Norton & Company; 2006

Longhi, D; *Community Networks – Building Community Capacity, Reducing Rates of Child and Family Problems*, 2008; *How Do High Risk Counties Protect All Youth*, 2009

HISTORICAL TRAUMA

Koss, M., Polacca, M., Yuan N., et al "Adverse Childhood Exposures and Alcohol Dependence Among Seven Tribes" *American Journal of Preventative Medicine*, 2003, pp. 238-244 http://minority-health.pitt.edu/archive/00000149/01/Adverse_Childhood_Exposures_and_Alcohol_Dependence_Among_Seven_Native_American_Tribes.pdf

Yellow Horse Brave Heart M., Duran E., Duran B. et al "Healing the American Indian Soul Wound" *International Handbook of Multigenerational Legacies of Trauma*, Y. Daniele (ed) 1998

MIND-BODY AWARENESS, NEUROPHILOSOPHY & TRADITIONAL PRACTICE

Yellow Bird, M. High School Video Series: On Mindfulness http://www.roundvalleyschools.org/vnews/display.v/ART/4b5de532788ba

Arrows F., Cajete, G., Lee J., *Critical Neurophilosophy & Indigenous Wisdom*; 2010

Cajete, G. *Native Science: Natural Laws of Interdependence;* 2000

BRAIN RESEARCH:

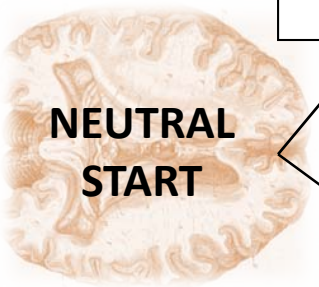
THE NEUROBIOLOGY OF MALTREATMENT

See for example: "Neurobiological and Behavioral Consequences of Exposure to Childhood Traumatic Stress," *Stress in Health and Disease*, BB Arnetz and R Ekman (eds). 2006. Martin Teicher, Jacqueline Samson, Akemi Tomoda, Majed Ashy, and Susan Anderson

Teicher, M. "Scars that Won't Heal: The Neurobiology of Child Abuse," *Scientific American,* March, 2002, pp. 68-75.

BRAIN DEVELOPMENT PATTERNS

Adapted from the research of Martin Teicher, MD, Ph.D



NEUTRAL START

TRAUMATIC STRESS

BRAIN
Hormones, chemicals & cellular systems prepare for a tough life in an evil world

INDIVIDUAL
- Edgy
- Hot temper
- Impulsive
- Hyper vigilant
- "Brawn over brains"

OUTCOME
Individual & species survive the worst conditions

Dissonance between biological expectations & social reality fuels psychiatric disorders

BRAIN
Hormones, chemicals & cellular systems prepare for life in a benevolent world

INDIVIDUAL
- Laid back
- Relationship-oriented
- Thinks things through
- "Process over power"

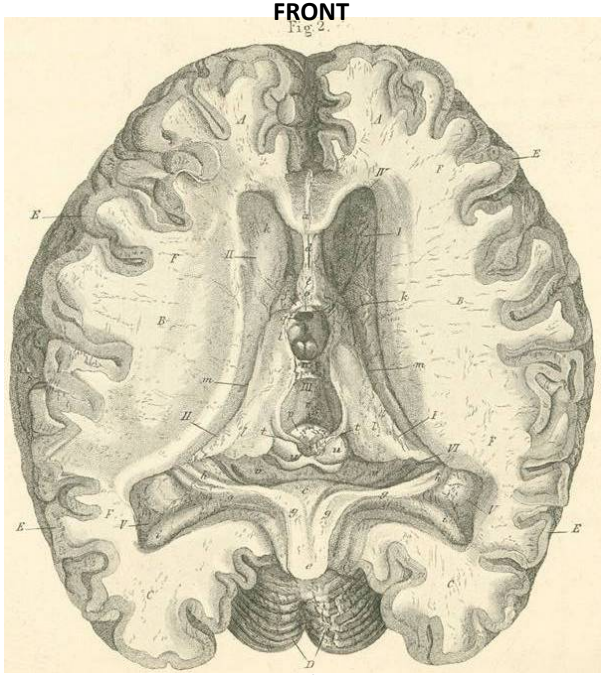
OUTCOME
Individual & species live peacefully in good times; vulnerable in poor conditions

KEY VARIABLES IN BRAIN OUTCOMES

CRITICAL TIME: AGE OF MALTREATMENT

The brain develops over time. The effects of maltreatment correspond to the region and/or function that is developing at the time of maltreatment.

FRONT



BACK

TYPE OF ABUSE

Different types of maltreatment activate different processes that shape the brain, such as chemicals & hormones, electrical activity, cell growth, & specialization of cells.

GENDER

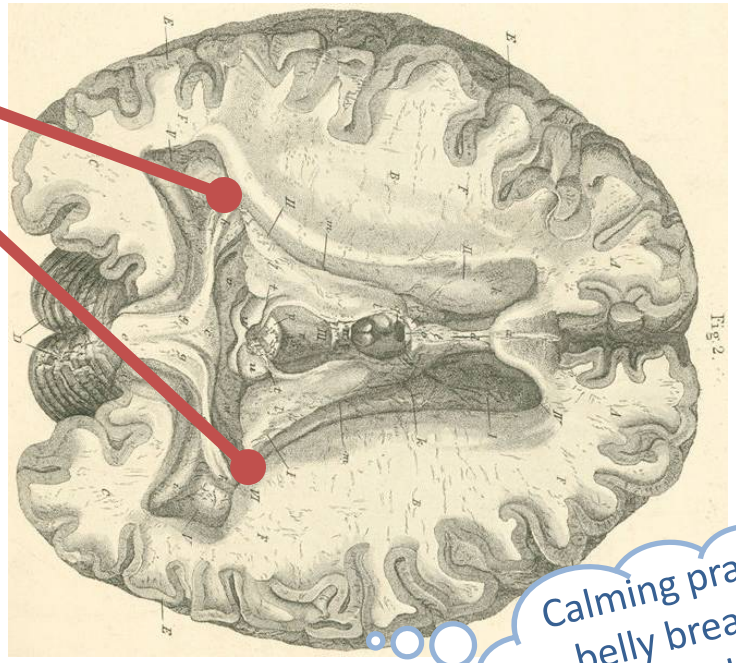
Although both boys & girls are affected by maltreatment the effects of sexual abuse are more profound in girls while the effects of neglect are more profound in boys.

BRAIN EFFECTS BY CRITICAL PERIODS

CRITICAL TIME	BRAIN REGION	FUNCTION	AFFECTED BY
First 3 years Ages 3-5	**HIPPOCAMPUS**	Emotional regulation Verbal memory Spatial memory With the **AMYGDALA**, Manages fear, panic, emotional understanding Regulates emotionally-appropriate responses Puts the brakes on outbursts & tantrums	All maltreatment Sexual abuse
Infancy Age 8-10	**CORPUS CALLOSUM**	Cross-brain function Language & math proficiency Social cues	Neglect Sexual abuse
Age 7-9	**RT TEMPORAL GYRUS**	Spoken language	Emotional abuse
Prior to puberty	**CEREBELLAR VERMIS**	Center for mental health Navigation through space Track periphery	All maltreatment
First 2-3 yrs Age 8-10 Age 15-16	**CORTEX**	Thinking and judgment Vision Executive function Long-term memory	All maltreatment Witnessing Family Violence Sexual abuse

BIOLOGICAL EFFECTS OF ABUSE & NEGLECT

HIPPOCAMPUS



The center for:

- Controlling emotional reactions
- Constructing verbal memory
- Constructing spatial memory

VULNERABLE TO

All forms of maltreatment in the first 2-3 years of life

Sexual abuse at ages 3-5

Calming practices, belly breathing, martial arts, meditation…

ADAPTIVE FUNCTIONING

- Emotionally reactive
- Poor regulation of behavior
- Difficulty with verbal & spatial memory

DELAYED SYMPTOMS CAN OCCUR BECAUSE:

Stress hormones are toxic to granule or "seedling" cells; their failure to grow means decreased mass in this area of the brain

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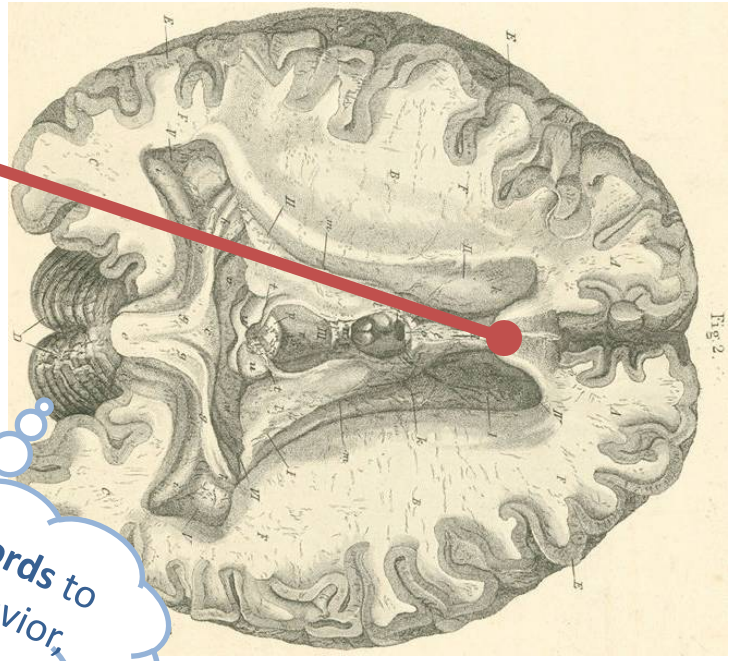
CORPUS CALLOSUM



Integrates hemispheres & facilitates

- Language development
- Proficiency in math
- Processing of social cues, like facial expression
- Promotes learning
- Regulates negative emotions
- Protects mental health

Give vocal **words** to gestures, behavior, affect…

VULNERABLE TO

Neglect in infancy

Sexual abuse at ages 9 and 10

ADAPTIVE FUNCTIONING

- Language delay
- Diminished integration & coordination
- Vulnerability to Post Traumatic Stress Disorder (PTSD)

EXPOSURE TO TRAUMA:

- Impedes cell division
- Interrupts myelination
- Disrupts electrical activity & Reduces the functionality of the corpus callosum

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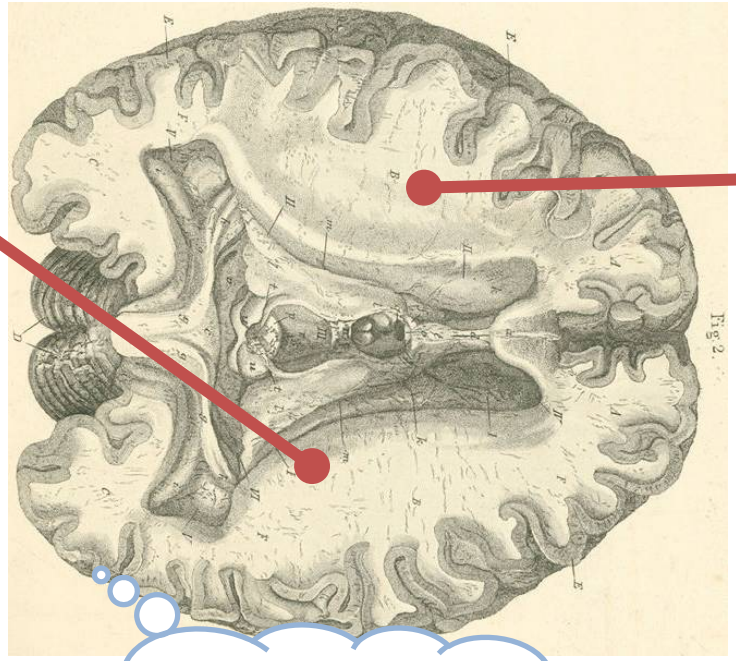
RIGHT TEMPORAL GYRUS

Center for spoken language
Center for social cognition



SUPERIOR TEMPORAL GYRUS

Center for sensing sound and processing speech

Generates Aha! -insight

VULNERABLE TO

Emotional abuse, especially between 7 - 9

VULNERABLE TO

Verbal abuse in Middle childhood

Give physical **gesture** to verbal instruction. Charades!

ADAPTIVE FUNCTIONING

Delays in language acquisition—both spoken and written

Profound depression, suicidality and other mental health disorders

ADAPTIVE FUNCTIONING

Difficulty processing and remembering verbal information

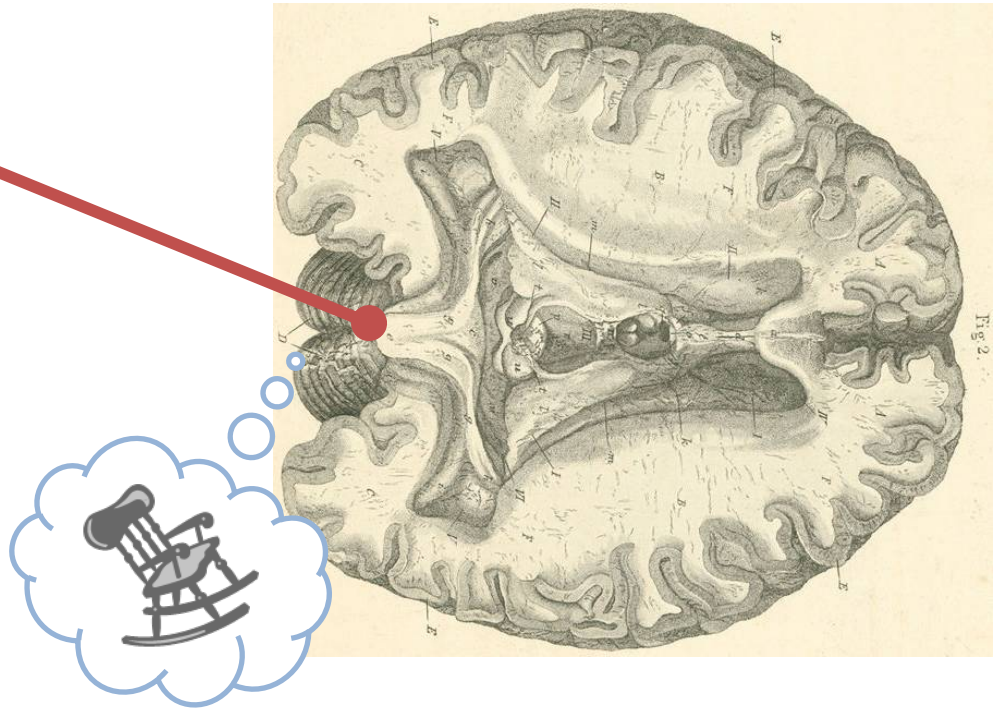
Enacting information concurrent with hearing information may help memory and meaning formation

BIOLOGICAL EFFECTS OF ABUSE & NEGLECT

CEREBELLAR VERMIS

Center for:

- Regulating affect and attention
- Regulating mental health
- Regulating movement through the physical environment
- Reacting to peripheral details in the world around us



VULNERABLE TO

All maltreatment- high levels of cortisol pre-puberty

ADAPTIVE FUNCTIONING

Higher risk for depression
Higher risk for substance abuse

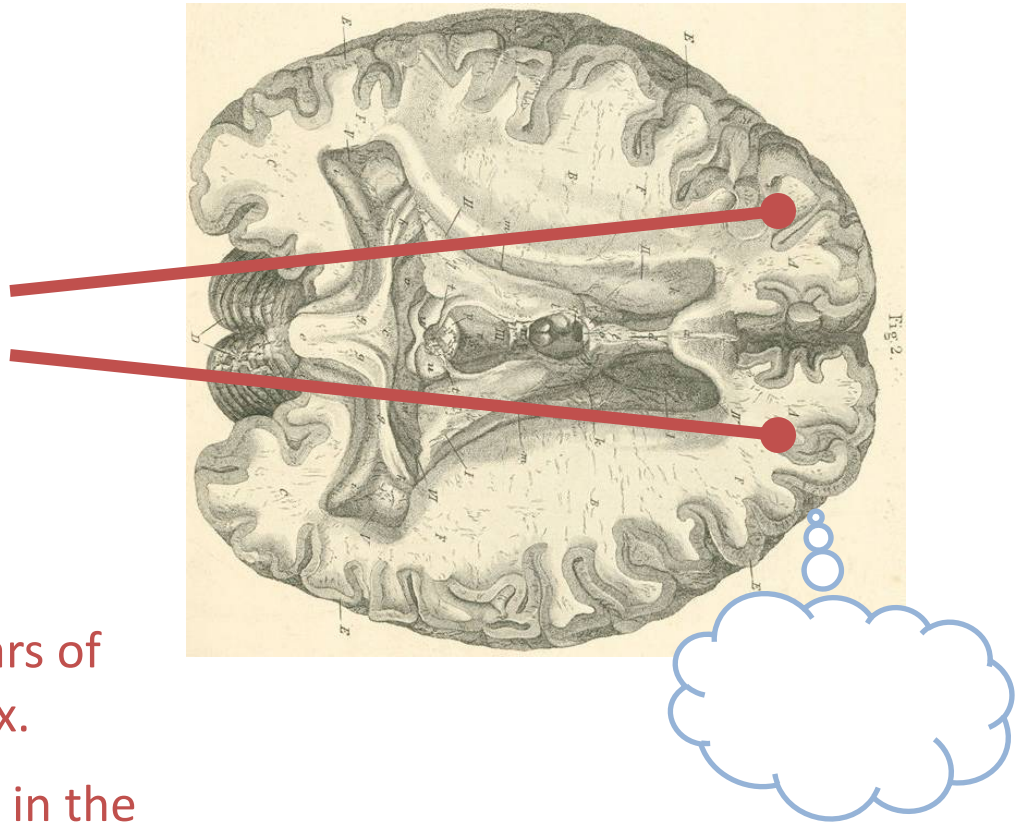
DELAYED SYMPTOMS CAN OCCUR BECAUSE: Stress hormones are toxic to granule or "seedling" cells; their failure to grow means decreased mass in this area of the brain

BIOLOGICAL EFFECTS OF ABUSE & NEGLECT

CORTEX

Center for:

- Thinking & judgment
- Executive function
- Long term memory
- Vision



VULNERABLE TO:

Trauma in the first several years of life affecting pre-frontal cortex.

Witnessing domestic violence in the elementary school years affecting visual cortex.

Sexual abuse at 15-16 affecting executive function.

ADAPTIVE FUNCTIONING

Limiting Field of Vision

CONSEQUENCES OF BIOLOGICAL OUTCOMES

COGNITIVE

- Slowed language development
- Attention problems (ADD/ADHD)
- Speech delay
- Poor verbal memory/recall
- Loss of brain matter/IQ

SOCIAL

- Aggression & violent outbursts
- Poor self-control of emotion
- Can't modify behavior in response to social cues
- Social isolation—can't navigate friendship

MENTAL HEALTH

- Poor social/emotional development
- Alcohol, tobacco & other drug abuse—vulnerable to early initiation
- Adolescent & adult mental health disorders—especially depression, suicide, dissociative disorder, borderline personality disorder, PTSD

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ADVERSE CHILDHOOD EXPERIENCES STUDY

"Understanding Adverse Childhood Experiences isn't to know one's life path.

It is to open doors for the future you would like for yourself and for future generations."

Dr. Ronald Voorhees, MD, PhD
Chief Office of Epidemiology & Biostatistics
Allegheny County Health Department

INTEGRATING BRAIN & EPIDEMIOLOGICAL RESEARCH

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WHAT ARE THE ADVERSE CHILDHOOD EXPERIENCES (ACEs)?

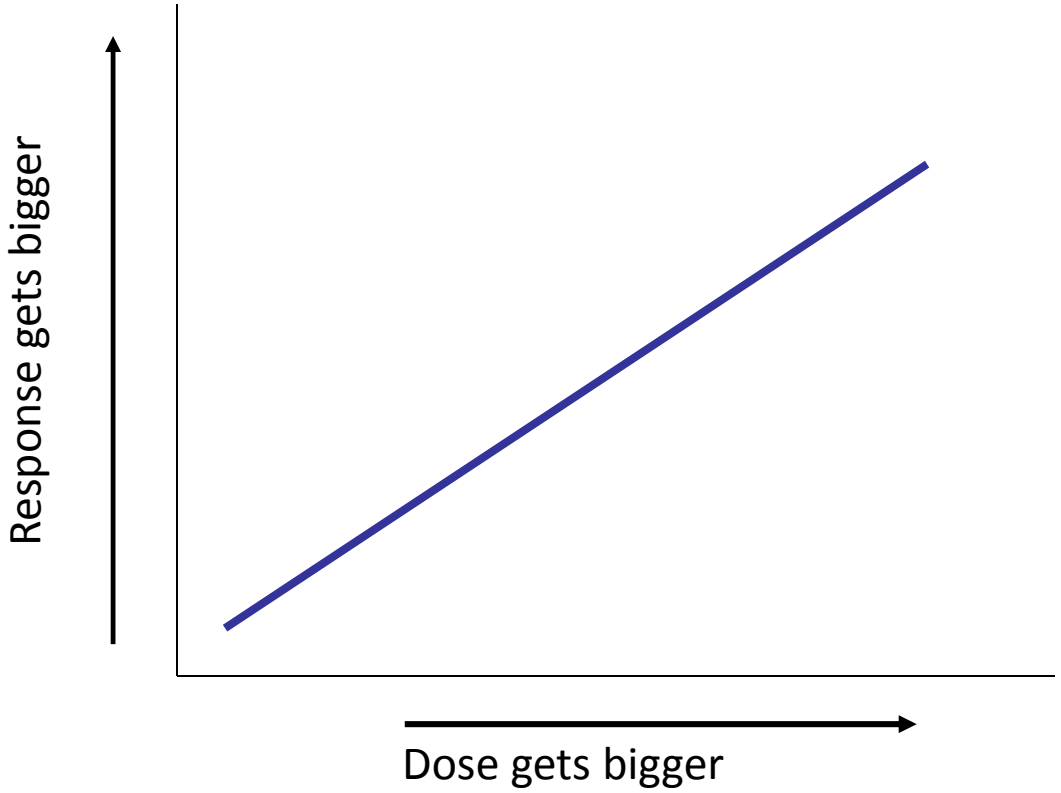
1. Child physical abuse
2. Child sexual abuse
3. Child emotional abuse
4. Neglect
5. Mentally ill, depressed or suicidal person in the home
6. Drug addicted or alcoholic family member
7. Witnessing domestic violence against the mother
8. Loss of a parent to death or abandonment, including abandonment by divorce
9. Incarceration of any family member

COUNTING ACEs

ACE Score: Number of ACE categories to which a person was exposed.

The ACE Study found that the number of categories, not necessarily the frequency or severity of the experiences within a category, determine health outcomes.

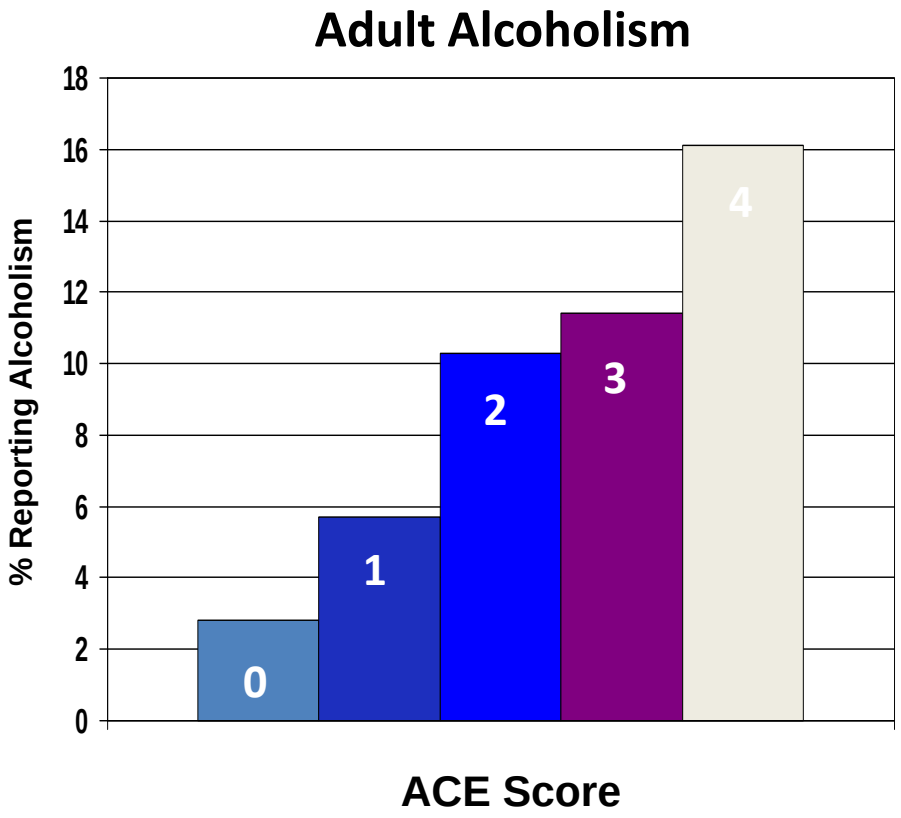
A CLASSIC CAUSAL RELATIONSHIP
MORE ACEs = MORE HEALTH PROBLEMS

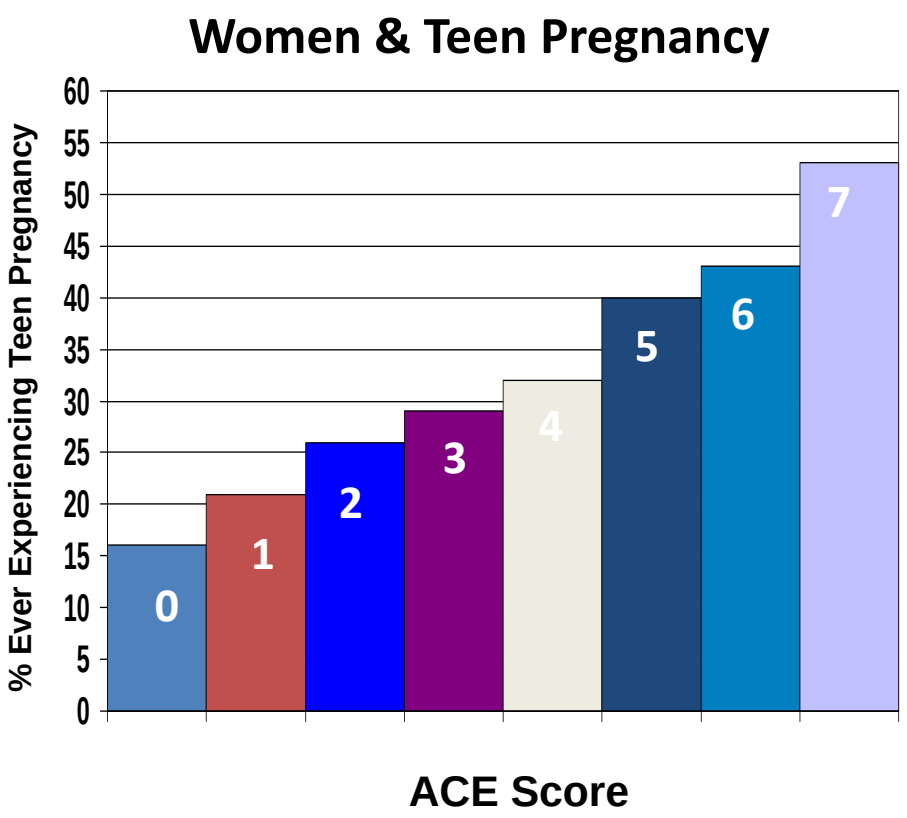


Dose-response is a direct measure of cause & effect.

The "response"—in this case the occurrence of the health condition—is caused directly by the size of the "dose"—in this case, the number of ACEs.

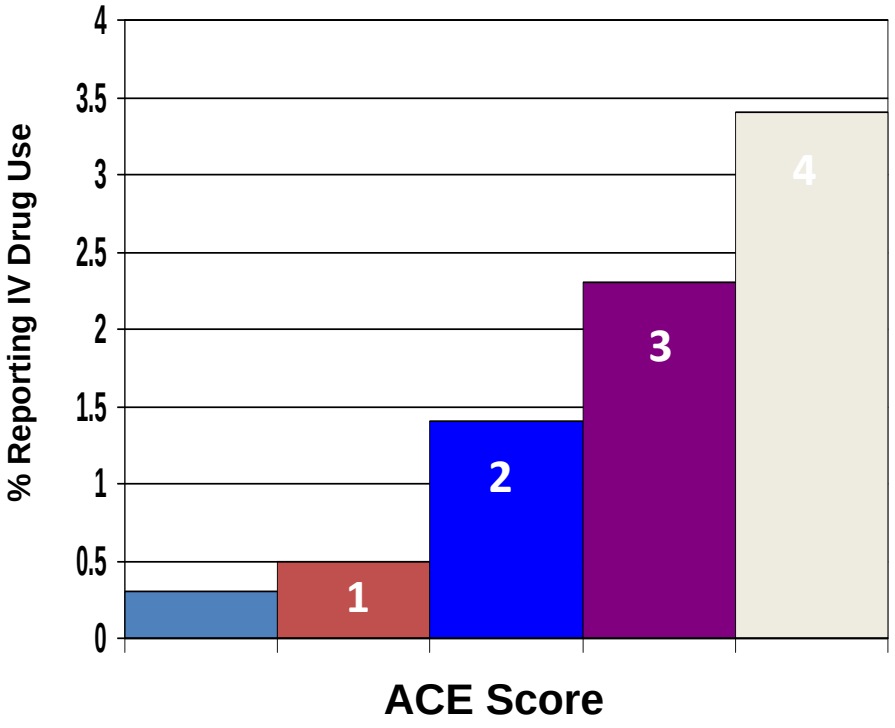
ACE STUDY DOSE-RESPONSE FINDINGS



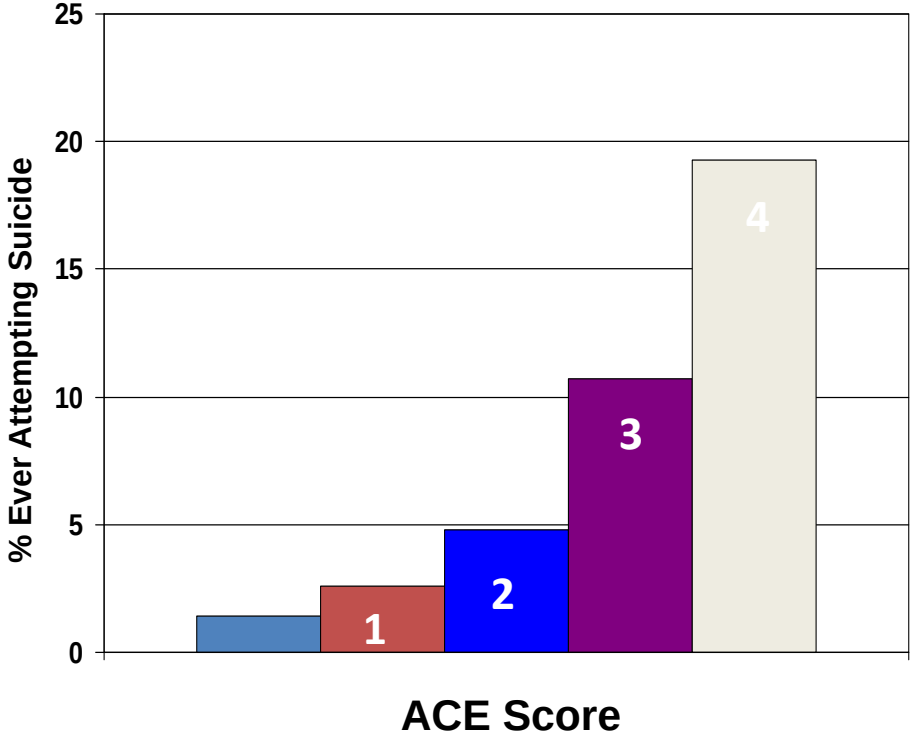


ACE STUDY DOSE RESPONSE FINDINGS

Intravenous Drug Use



Attempted Suicide



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PROBABILITY OF SAMPLE OUTCOMES GIVEN 100 AMERICAN ADULTS

33 Report No ACEs	51 Report 1-3 ACES	16 Report 4-8 ACEs
WITH 0 ACEs	**WITH 3 ACEs**	**WITH 7+ ACEs**
1 in 16 smokes	1 in 9 smokes	1 in 6 smokes
1 in 69 are alcoholic	1 in 9 are alcoholic	1 in 6 are alcoholic
1 in 480 uses IV drugs	1 in 43 uses IV drugs	1 in 30 use IV drugs
1 in 14 has heart disease	1 in 7 has heart disease	1 in 6 has heart disease
1 in 96 attempts suicide	1 in 10 attempts suicide	1 in 5 attempts suicide

"Ten Tribes" Study

Adverse Childhood Exposures

Koss, M., Polacca, M., Yuan N., et al "Adverse Childhood Exposures and Alcohol Dependence Among Seven Tribes" *American Journal of Preventative Medicine*, 2003, pp. 238-244

- Boarding School, Foster Care and Adoption added.

- Cultural variables assessed.

- 86% participants experienced one or more categories of exposure and 33% reported four or more categories.

- Strong relationship between childhood sexual abuse and subsequent drinking problems among the general population similar in Native American population.

- Combined sexual and physical abuse increased alcohol dependence for men.

- Combined sexual abuse and boarding school attendance were significant for women.

HISTORIC TRAUMA

The collective emotional and psychological injury both over the life span and across generations, resulting from a cataclysmic history of genocide.

(Maria Yellow Horse Brave Heart)

Genocide is the intent to destroy a national, ethnic, racial or religious group.

(1948 Geneva Convention)

Historical trauma has a layering effect and is the "cumulative emotional and psychological wounding over the life span and across generations, emanating from massive group trauma."

Historical or intergenerational trauma is similar to that suffered by the Jewish people as a result of the Holocaust, Native Americans, the Japanese Americans interned in California at the beginning of World War II and African Americans suffering the aftermath of slavery.

Maria Yellow Horse Brave Heart, Research Associate Professor, Graduate School of Social Work, University of Denver

EFFECTS OF HISTORIC TRAUMA

First Generation – Post Traumatic Stress Disorder

Subsequent Generations – Historical Unresolved Trauma

Survivor guilt,
Psychic numbing,
Victim identity,
Thoughts of suicide,
Preoccupation with trauma,
Depression,
Anger,
Death identity,
Nightmares,
Relational problems,

Physical symptoms including diabetes and other disease associated with high stress hormones that wear out the body.

ACEs are The Most Powerful Determinate of The Public's Health

ACE LIFE LONG

PHYSICAL, MENTAL & BEHAVIORAL OUTCOMES

PAR: Population Attributable Risk

- → Alcoholism & alcohol abuse (PAR 65%)
- → Chronic obstructive pulmonary disease & ischemic heart disease
- → Depression (PAR 54%)
- → Fetal death
- → High risk sexual activity (PAR 48%)
- → Illicit drug use (PAR 50%, IV 78%)
- → Intimate partner violence
- → Liver disease
- → Obesity
- → Sexually transmitted disease
- → Smoking (PAR 39%)
- → Suicide attempts (PAR 58%)
- → Unintended pregnancy
- → Early Death

The higher the ACE Score, the greater the incidence of co-occurring conditions from this list.

2009 BRFSS: BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM PREVIEW OF ACE FINDINGS FOR WASHINGTON ADULTS

ACEs are common in Washington

1. 62% of adults have at least one ACE

2. 17% of adults report physical abuse during childhood

3. 17% of women and 7% of men report sexual abuse during childhood

4. One in four adults report parental separation or divorce during childhood

5. A third of adults grew up with substance abuse in the household

POSITIVE ADAPTATION

Shifting from Deficit Oriented Models

to

Strengths, Health, & Thriving.

9-20-10 DRAFT

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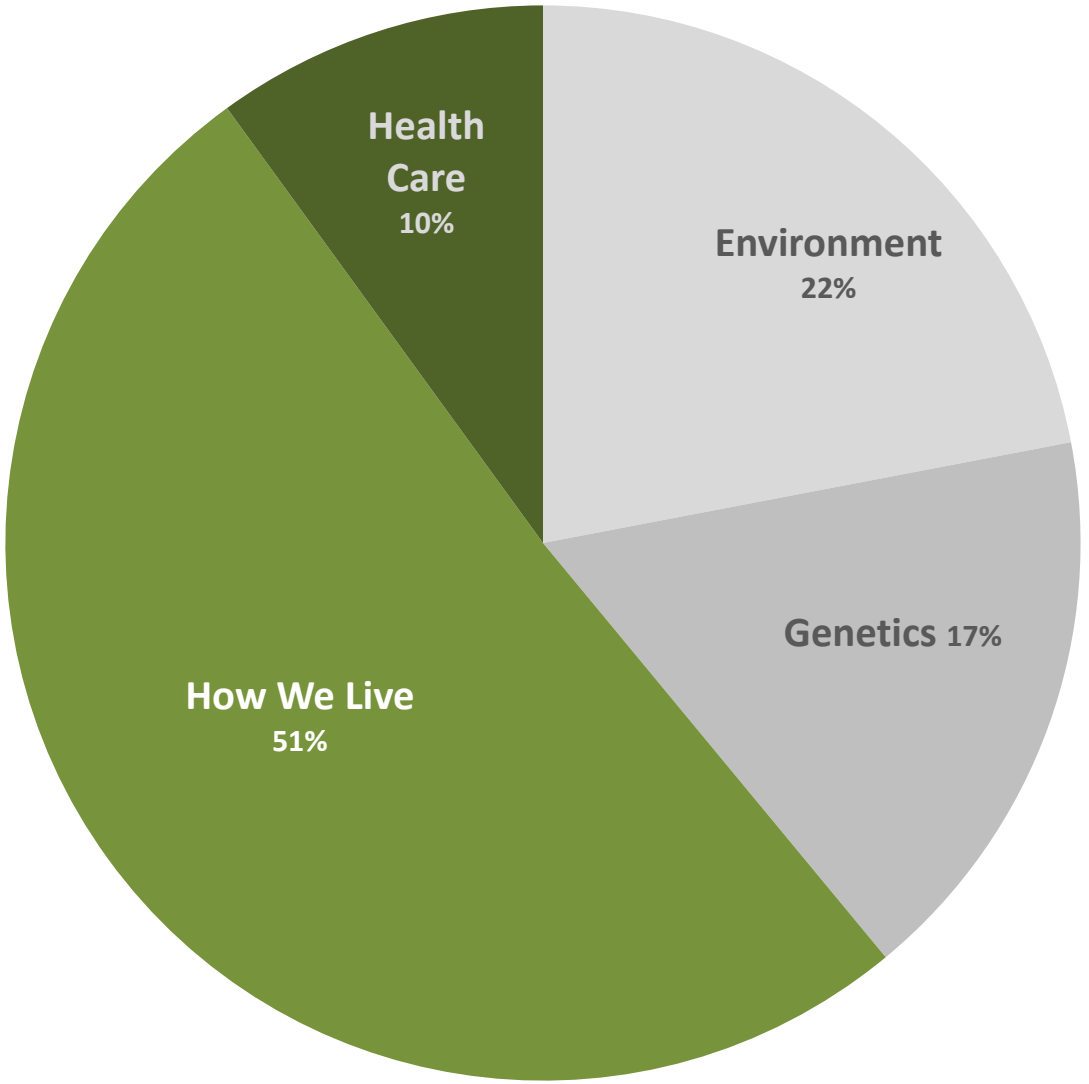
FACTORS THAT INFLUENCE HEALTH



Source: USDHEW, PHS, CDC. "Ten Leading Causes of Death in US 1975, Georgia Bureau of State Services, Health Analysis and Planning for Preventive Services, p. 35, 1978

WHAT IS RESILIENCE?

The natural human capacity to navigate life well.

(HeavyRunner & Marshall, 2003)

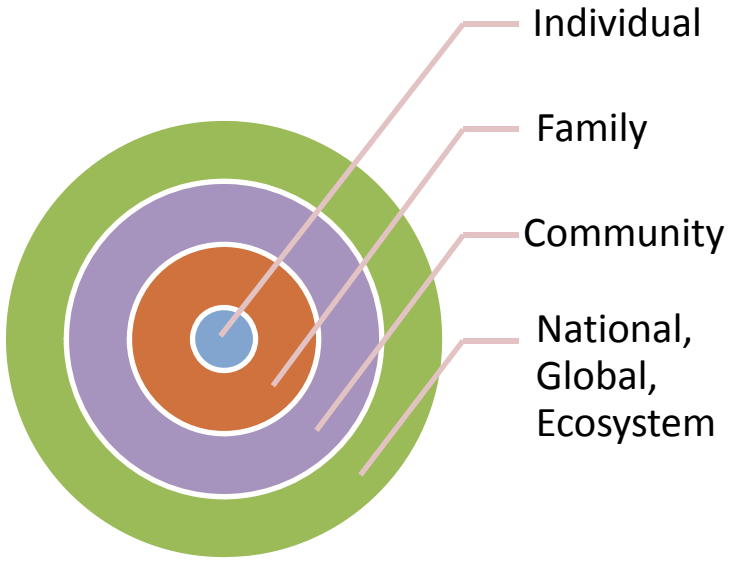
The capacity to absorb disturbance and re-organize while undergoing change, yet still retain essentially the same function, structure, identity, feedbacks.

(Walker et al., 2002)

The ability of an individual, system or organization to meet challenges, survive, and do well despite adversity.

(Kirmayer, 2009)

RESILIENCE OCCURS AT ALL LEVELS:



PHASES IN RESILIENCE RESEARCH

Descriptive – What do resilient individuals have in common?

Predictive – How questions: identify and understand processes that might lead to resilience, including risk and protective factors.

Contextual –Why ages, stages, personal and family history, community context matter for promotion of resilience.

Integrative – Encompasses rapid advances in the study of genes, developmental neurobiology, neural plasticity, and the conditions, contexts, and processes that affect positive adaptation throughout the lifespan.

“Resilience rests, fundamentally, on relationships”.

Conclusion of Suniya Luthar, in: *Resilience in development: A synthesis of research across five decades*. (2006, p. 780)

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RESILIENCE AS A DEVELOPMENTAL PROCESS

- We develop competencies & characteristics that prepare us to be effective in the world we're growing into.
- We develop the capacity to adapt in the face of challenges.
- None of us is perfect—we'll all have moments when we don't appear to be very well adapted to the conditions we're facing.
- Resilience is complex; it is possible to be resilient in one setting and pathological in another.

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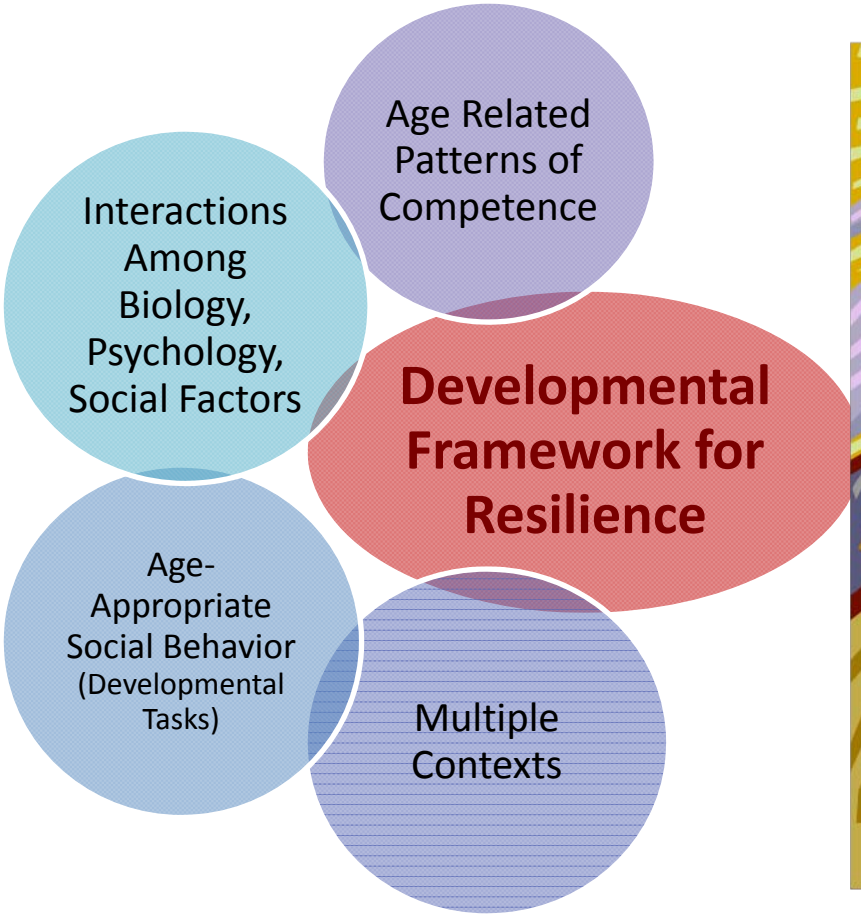


KEY COMPONENTS OF RESILIENCE

CAPABILITY

- Intellectual & employable skills
- Self regulation – self control, executive function, flexible thinking
- Ability to direct & control attention, emotion, behavior
- Positive self view, efficacy

ATTACHMENT & BELONGING

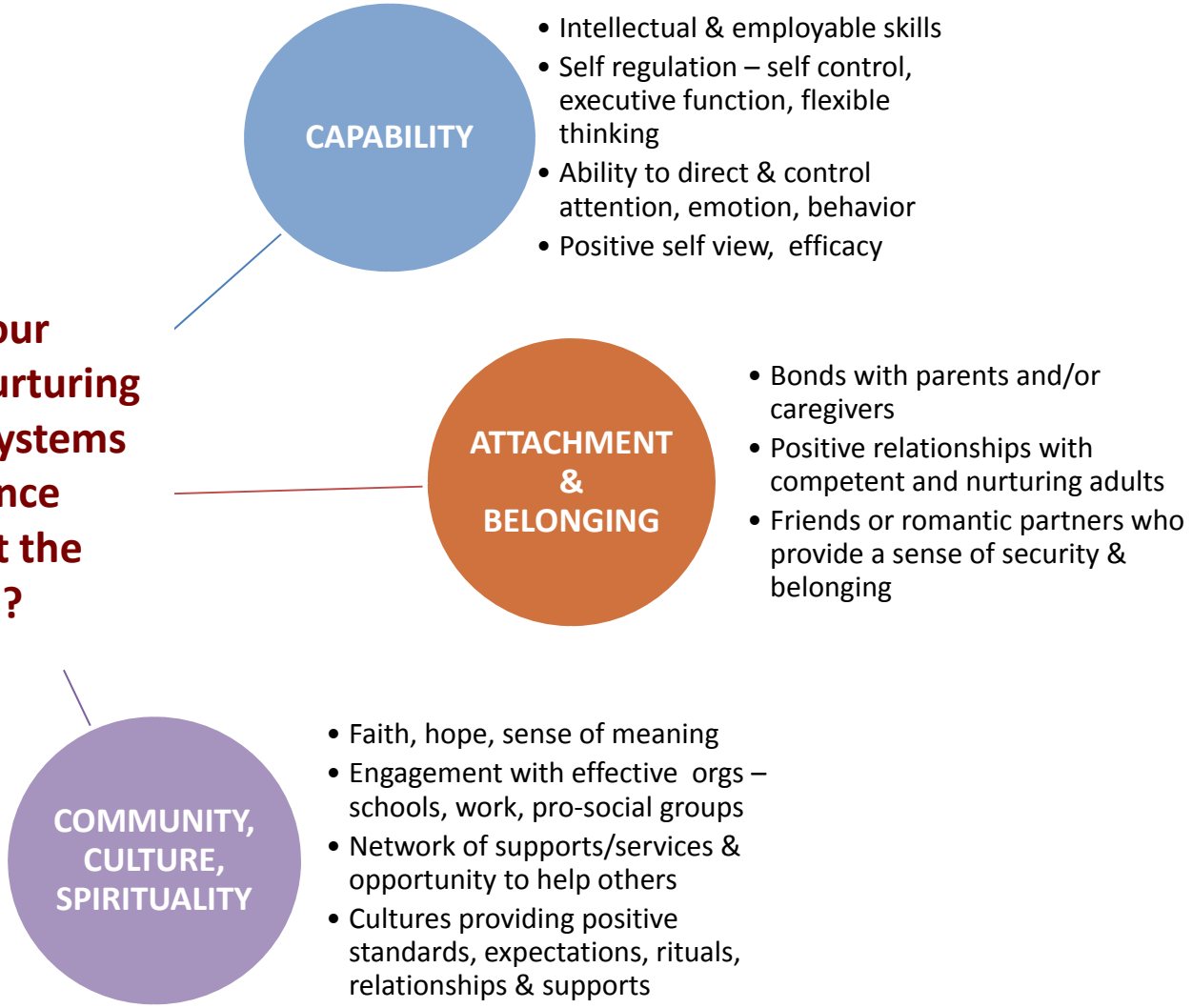
- Bonds with parents and/or caregivers
- Positive relationships with competent and nurturing adults
- Friends or romantic partners who provide a sense of security & belonging

COMMUNITY, CULTURE, SPIRITUALITY

- Faith, hope, sense of meaning
- Engagement with effective orgs – schools, work, pro-social groups
- Network of supports/services & opportunity to help others
- Cultures providing positive standards, expectations, rituals, relationships & supports

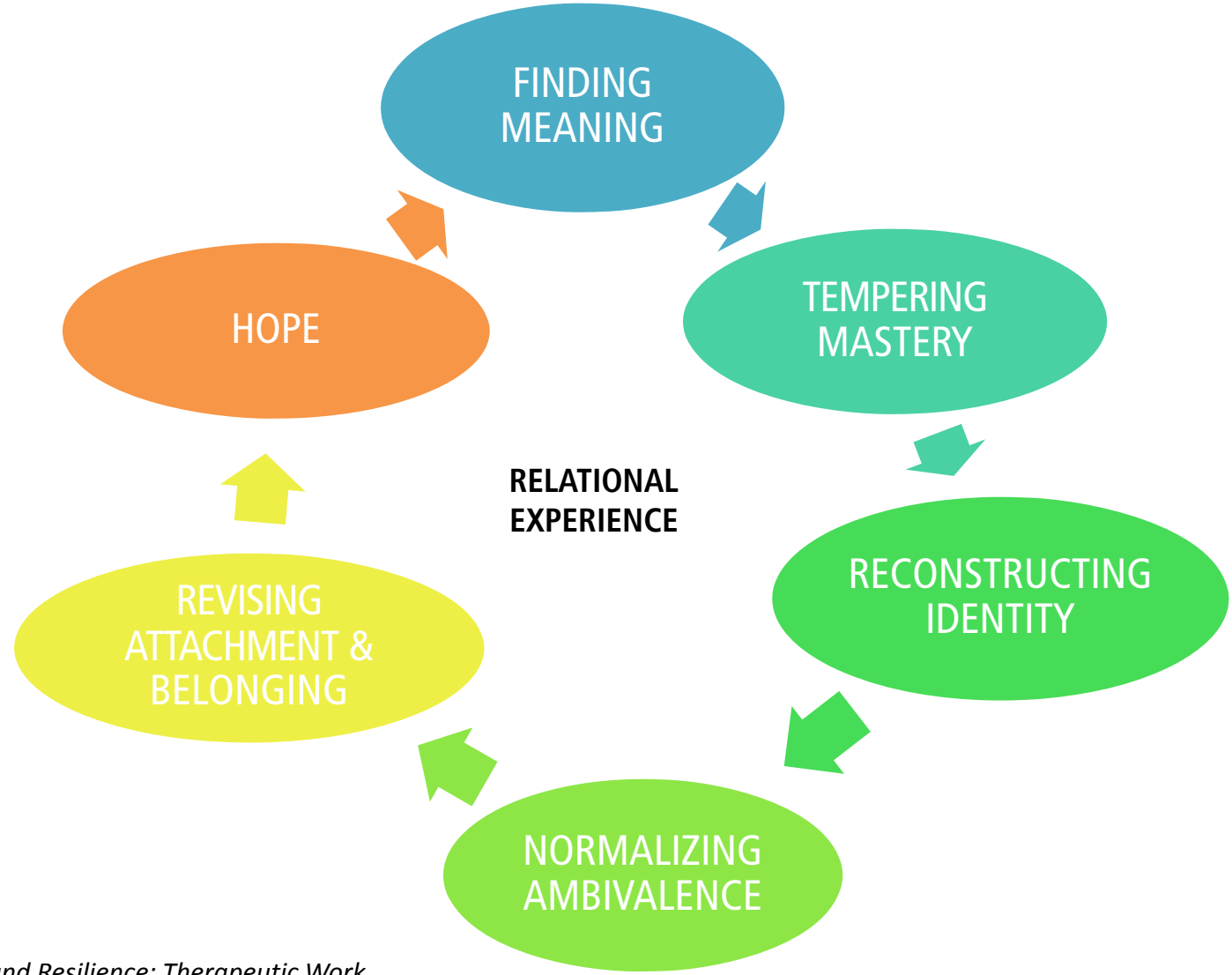
EXAMPLES OF PROGRAM & POLICY ACTIONS

How is your community nurturing these three systems for resilience throughout the lifespan?



RISK & PROTECTION INTERACT IN CULTURAL CONTEXT

Individuals	Compensatory Protective Challenge
Family & Community	Caring, Cohesion, Belief in Each Child Belonging with Peers, School, Circle of Success Non-punitive Provisions and Resources to Assist Belief in Societal Values
Cultural	Spirituality Traditional Activities Traditional Languages Traditional healing Elders



From: *Loss, Trauma, and Resilience; Therapeutic Work with Ambiguous Loss*; Dr. Pauline Boss; 2006

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CAUTIONS ABOUT THE RESILIENCE APPROACH

1. Expectation for Thriving Despite Oppression

2. Strength Based ≠ Solutions

3. Attending to Characteristics & Factors that Promote Resilience – Only Part of the Story

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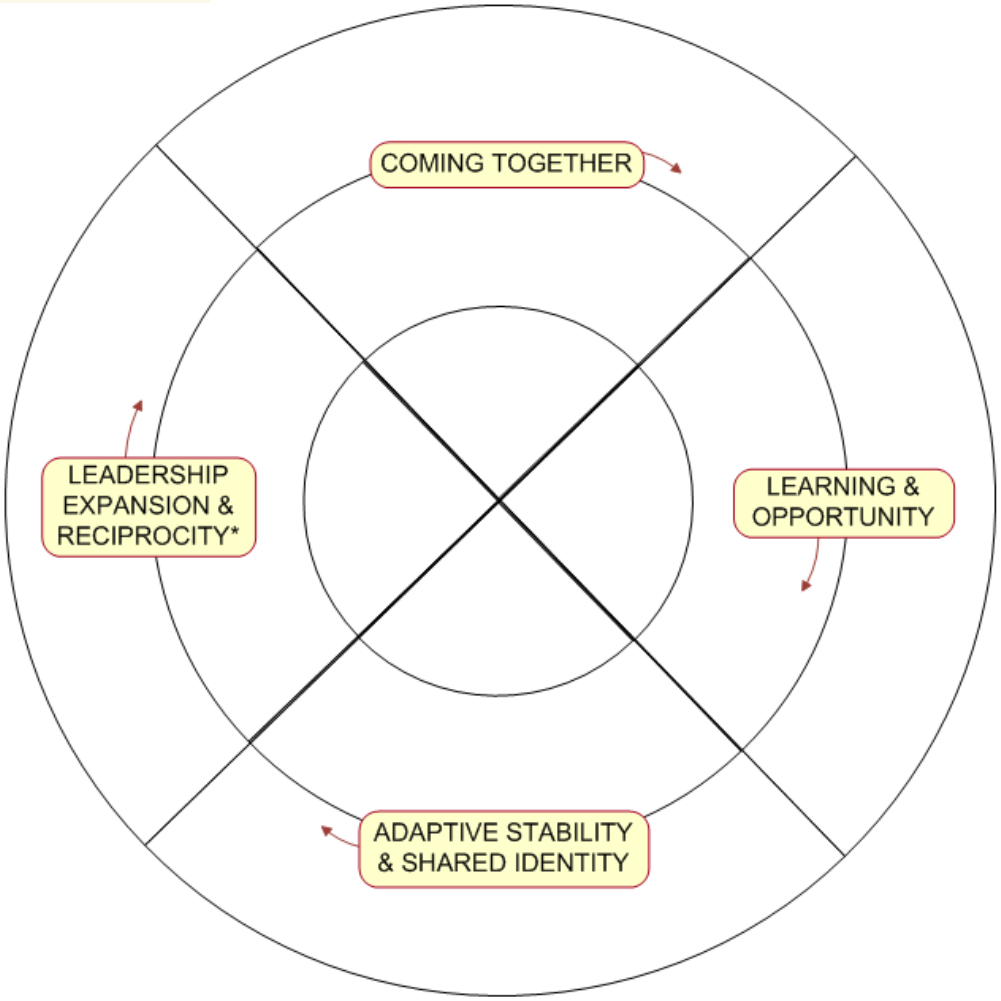
ENHANCING COMMUNITY CAPACITY

A DYNAMIC PROCESS OF CONNECTION

GENERAL COMMUNITY CAPACITY DEVELOPMENT MODEL



General Community Capacity is:
capacity to not only sustain programs, but also to identify new community problems as they arise, and develop ways of addressing them.

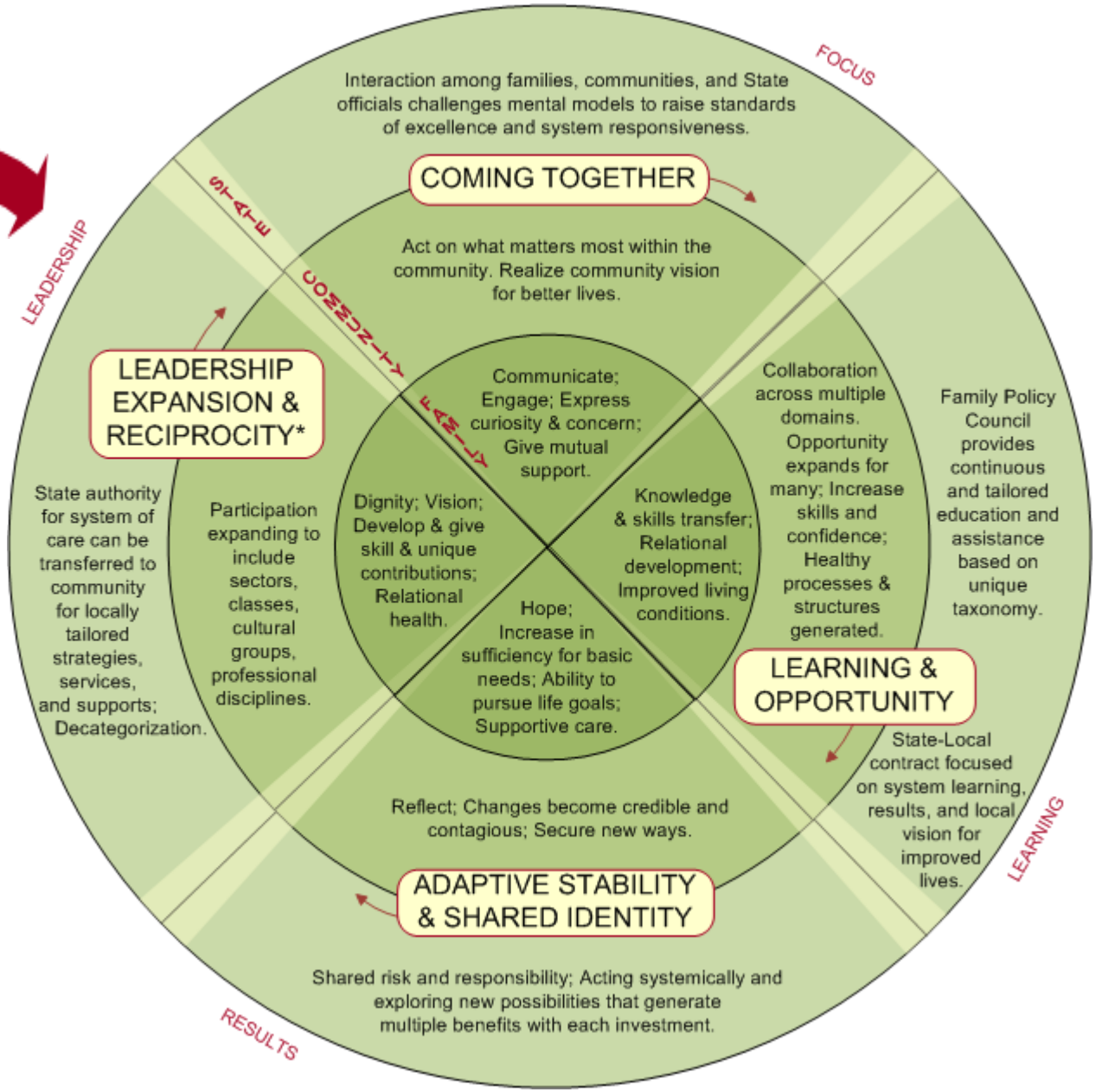
General Capacity Development is a dynamic process that enhances the infrastructure, skills, and motivation of a community – changing the way we live with one another day-to-day.

Literature strongly supports the importance of general capacity building in the process of promoting effective prevention. (Livet, 2008)

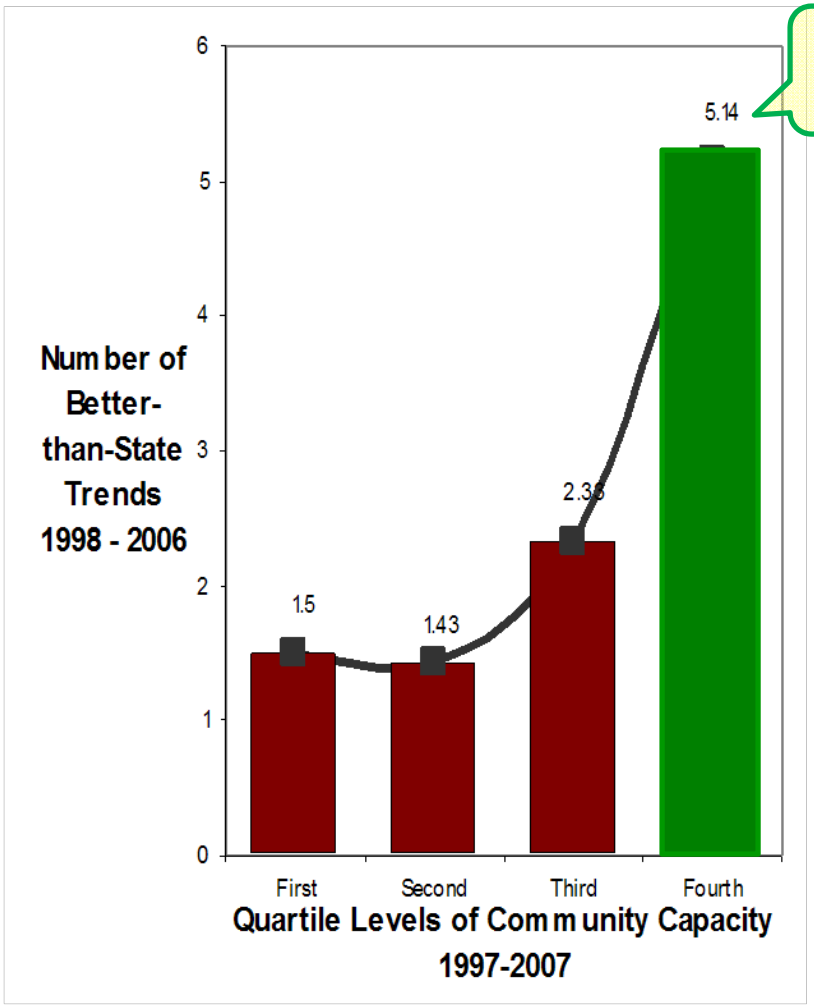
THE TOTALITY OF THIS DYNAMIC PROCESS LEADS TO:

VIRTUOUS REINFORCING CAPACITY BUILDING - SUSTAINABLE THRIVING

LEVERAGE POINT



HIGH COMMUNITY CAPACITY –
BETTER THAN STATE & COMPARISON COUNTY TRENDS



Rates Plummeting
for 5 Different Problems Concurrently!

1. Child Out –of-Home Placement
2. Dropping Out of School
3. Teen Pregnancy
4. Youth Felony Crime Filings
5. Youth 30 Day Use and Binge Drinking
6. Youth Marijuana Use
7. Youth Cigarette Smoking

COMMUNITY CAPACITY IN WASHINGTON STATE

1. ACE Score Is Reduced from One Generation to the Next

2. Improved Social Responses to High ACE People Result in Better Life Course

3. Foundations for Healthy Development Become Stronger

General Community Capacity is: capacity to not only sustain programs, but also to identify new community problems as they arise, and develop ways of addressing them.

General Capacity Development is a dynamic process that enhances the infrastructure, skills, and motivation of a community – changing the way we live with one another day-to-day.

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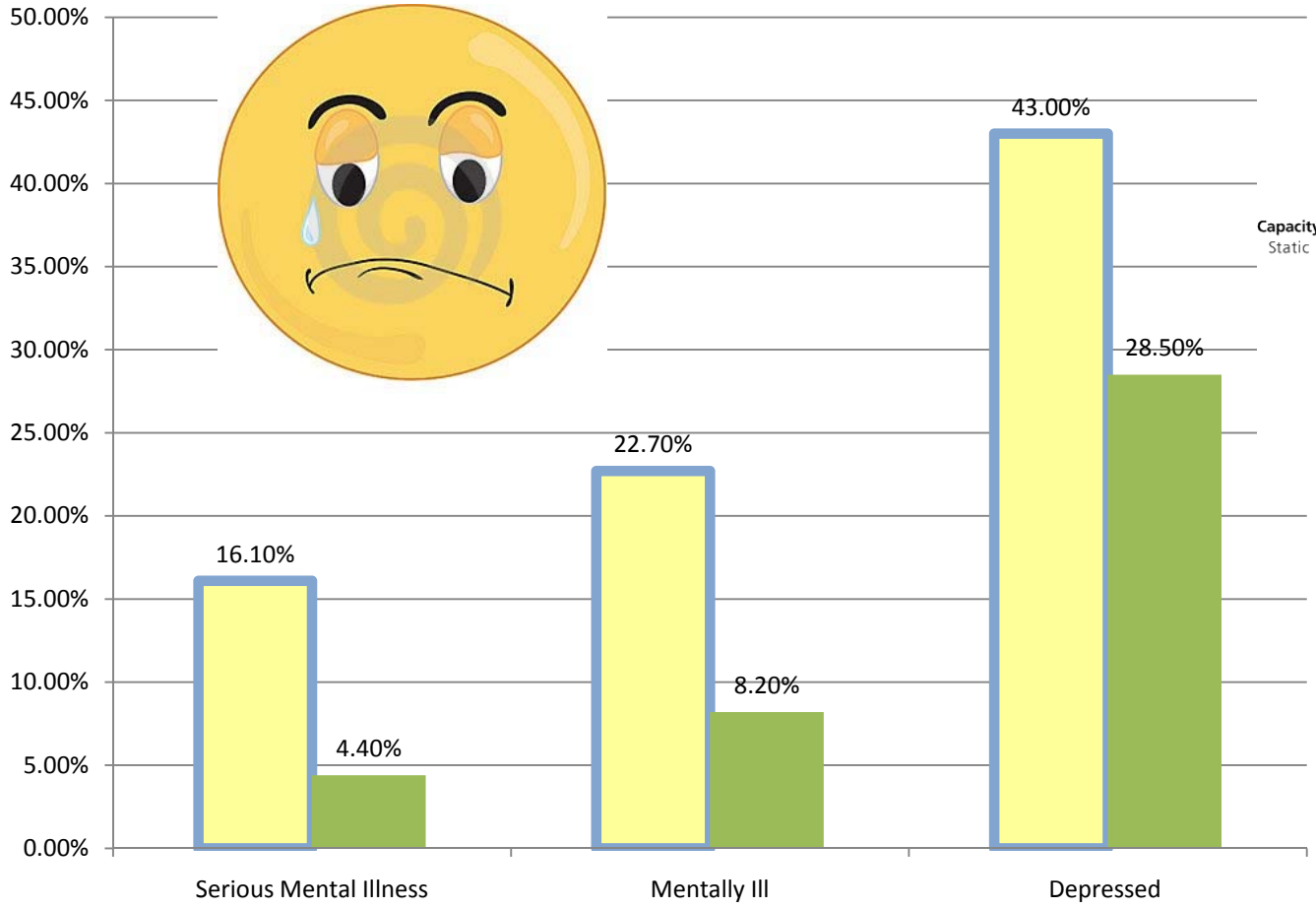
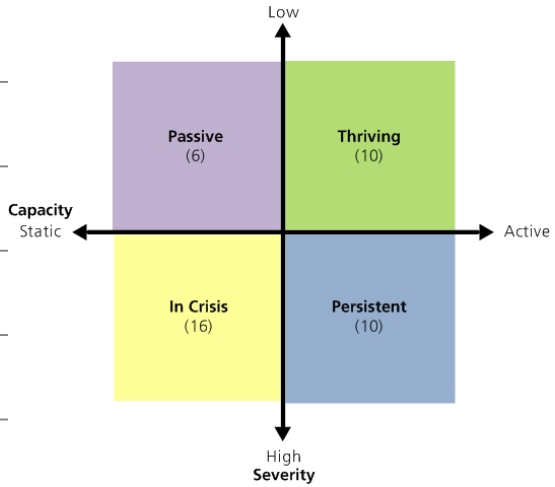
A FAMILY, COMMUNITY & STATE PARTNERSHIP

YOUNG ADULTS WITH HIGH ACE SCORES REPORT FEWER MENTAL ILLNESS DISORDERS IN THRIVING COMMUNITIES

Lower Community Capacity (Yellow) vs. High Community Capacity (Green)

Ages 18 – 34 with 3-8 ACEs





THANK YOU!

If you or someone you are working with has already made changes to the way you interact with others, or provide services based on ACE & resilience research,

We want to hear from you!

The Family Policy Council collects inventory of changes to practice, policy and neighborhood work that is consistent with brain science, the ACE Study, and Resilience research. You can complete a short survey online at: **http://www.fpc.wa.gov/**

INVENTORY OF SERVICE CHANGE

Contact us at:

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A Family, Community, State Partnership

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