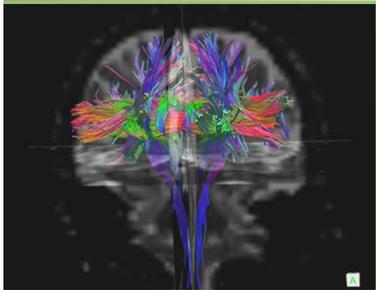
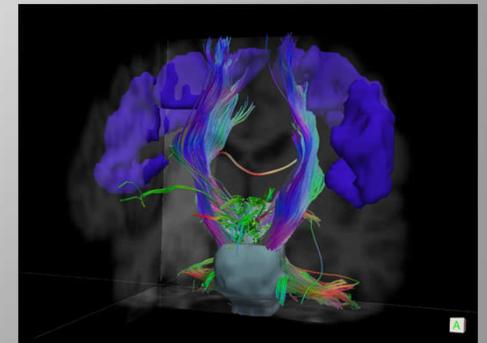


The need to focus on Children and Families:  
Why ACES legislation must focus on the children and families.



Jim Hudziak, M.D.  
Vermont Center for Children, Youth, and Families



# Who am I representing?

- Members of:
- Vermont Center for Children, Youth, and Families, UVM MC and COM.
- Vermont Child Health Improvement Program
- Vermont Chapter of the AAP
- Vermont Chapter of Family Medicine
- UVM MC Children's Hospital and Department of Pediatrics
- Members of the State of Vermont Public Health,, Division of Maternal and Child Health
- We are partnering with CMHC, FQHC, IFS, and DCF
- And many other local experts on the physical and emotional health of children and families in Vermont.
- AS A GROUP WE DISCUSSED HOW BEST TO SERVE THE LEGISLATURE AND BLUEPRINT IN THEIR GOALS.
- AS A GROUP WE DO NOT SUPPORT THE BLUEPRINT RECOMMENDATIONS AND ARE HOPEFUL THAT THROUGH COLLABORATION WE CAN HELP LEAD BLUEPRINT ON HOW BEST TO SERVE THE CHILDREN AND FAMILIES OF VERMONT.

# Bonafides

- Chair of Health Promotion and Illness the AACAP for the Nation (Hudziak).
- VCHIP - Academic Pediatric Association Health Care Delivery Award 2015 – for its work in illness prevention. (Shaw)
- VCHIP – “Outstanding Collaboration Award – KidSafe 2015. (Shaw)

# Brief Intro

- What have we been up to regarding ACES:
  - Joined Christina Bethell and her MCHB team
  - Wrote two unsuccessful SIM grants
  - Have four VFBA projects (Addison, Franklin, Plainfield, and Burlington).
  - Wrote successful NIMH Adversity Grant
  - Multiple publications on the effects of adversity on children and family health outcomes.
  - Multiple pediatric projects
  - Multiple health promotion projects all aimed at ACES prevention.

# Outline

- Review science behind ACES
- Present Vermont Data
- Present Vermont work
- Present appeal to the State and Blueprint that we have the expertise in the State of Vermont to do this work and lead the nation in rationale health care reform.

# Outline

- Review science behind ACES
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# Adversity and Adult Disease

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Why Medicine should embrace this approach

## Early experience

Abuse  
Family strife  
Emotional neglect  
Harsh discipline

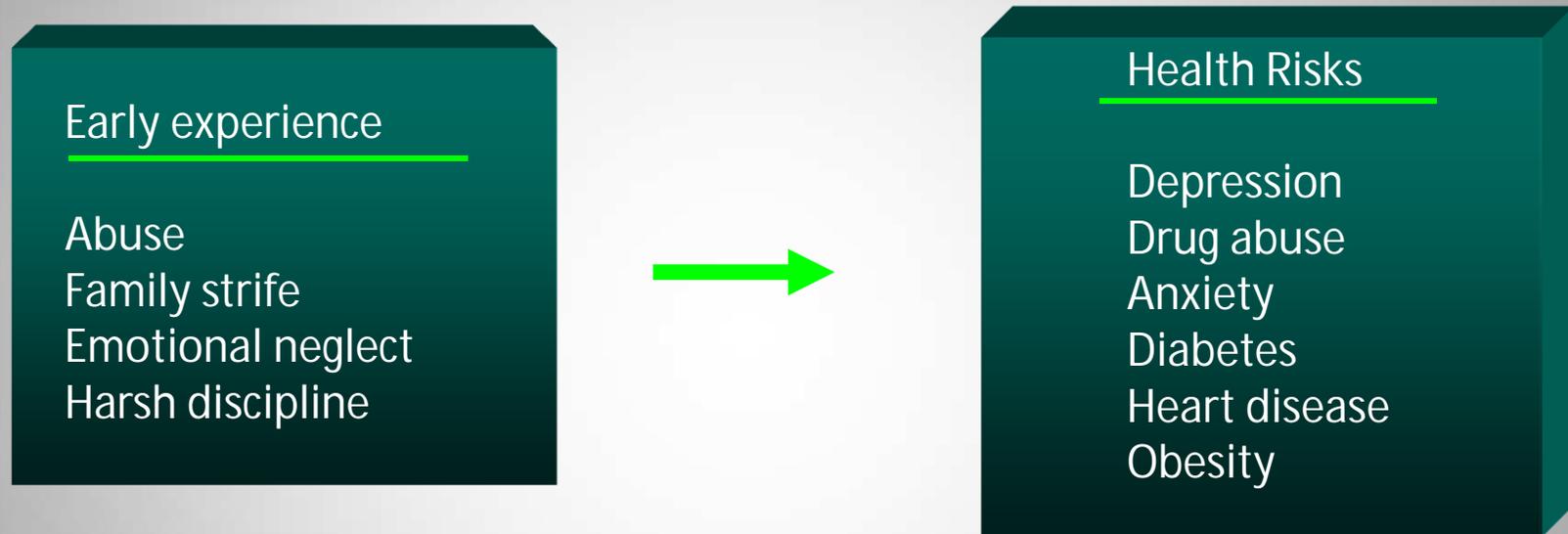


## Health Risks

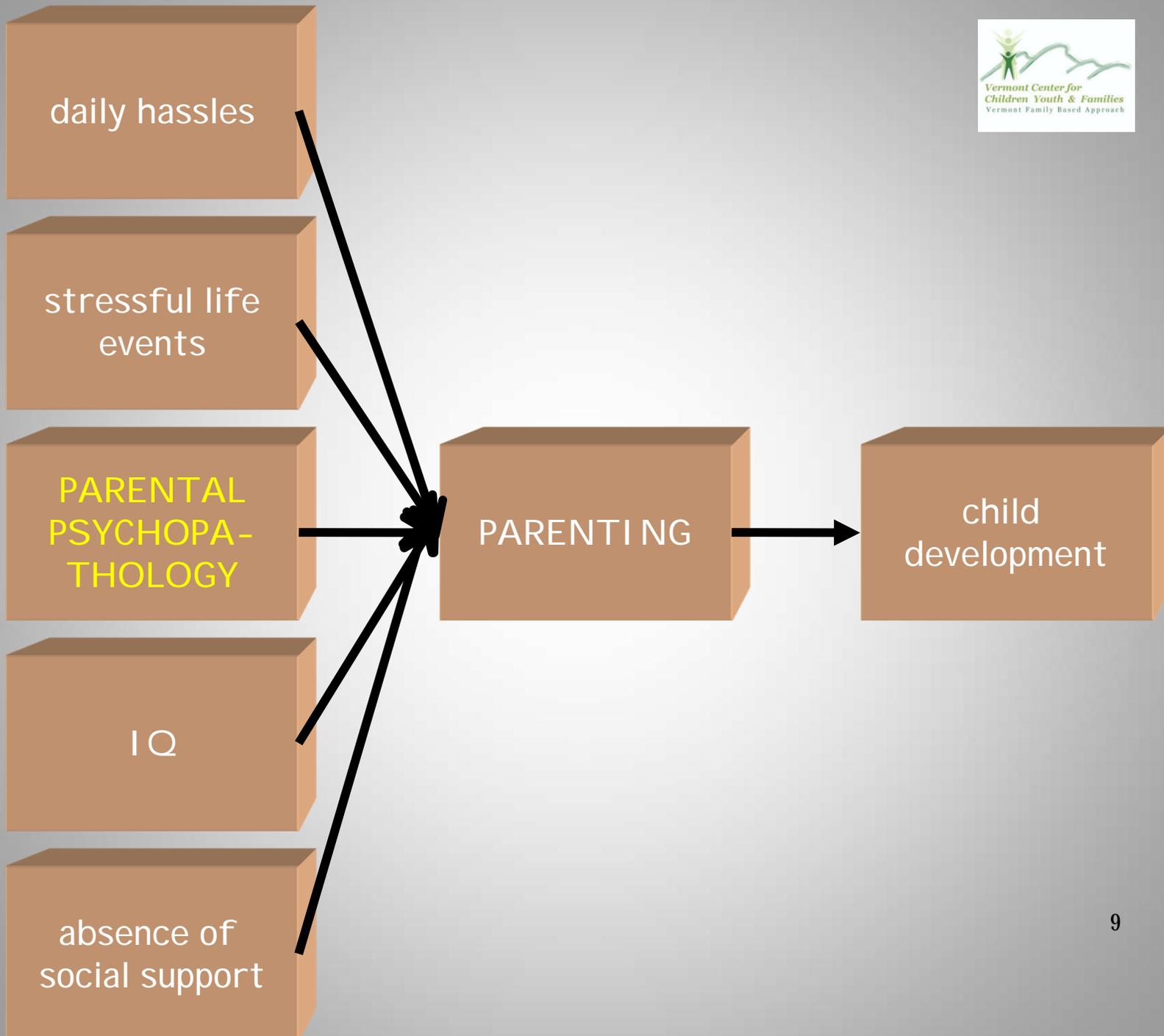
Depression  
Drug abuse  
Anxiety

## Developmental Origins of Adult Disease

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We are engaged in research in Vermont investigating the biological mechanisms (epigenetic, genetic, neuroscience) how Adversity leads to medical illness.



# Epigenetics

Any functional change to the genome that does not involve an alteration of DNA sequence.

**Epigenetics is the biological basis for gene x environment interactions.**

- Epigenetic effects refers to modifications of the chemistry of the DNA, but not to a change of sequence.
- Epigenetics alters the activity of the gene, but not its function.



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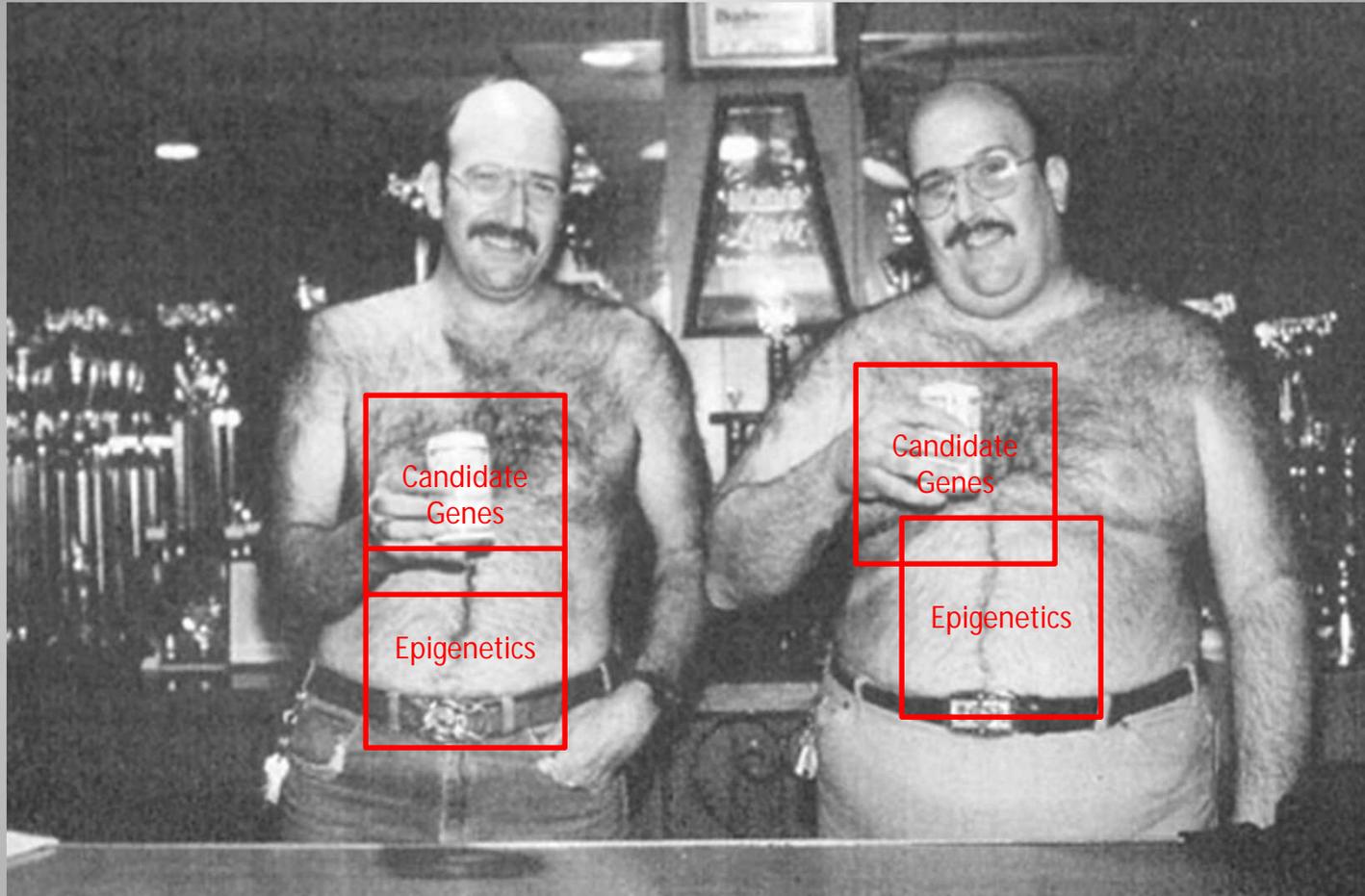
- DNA methylation: The addition of a methyl group onto a cytosine.

- Epigenetic effects refers to modifications of the chemistry of the DNA, but not to a change of sequence.
- Epigenetics alters the activity of the gene, but not its function.



- DNA methylation: The addition of a methyl group onto a cytosine.
- DNA methylation is chemically very stable (potentially lasting for the life of the organism).
- DNA methylation silences gene expression.

# Multiple phenotypes from a common genotype



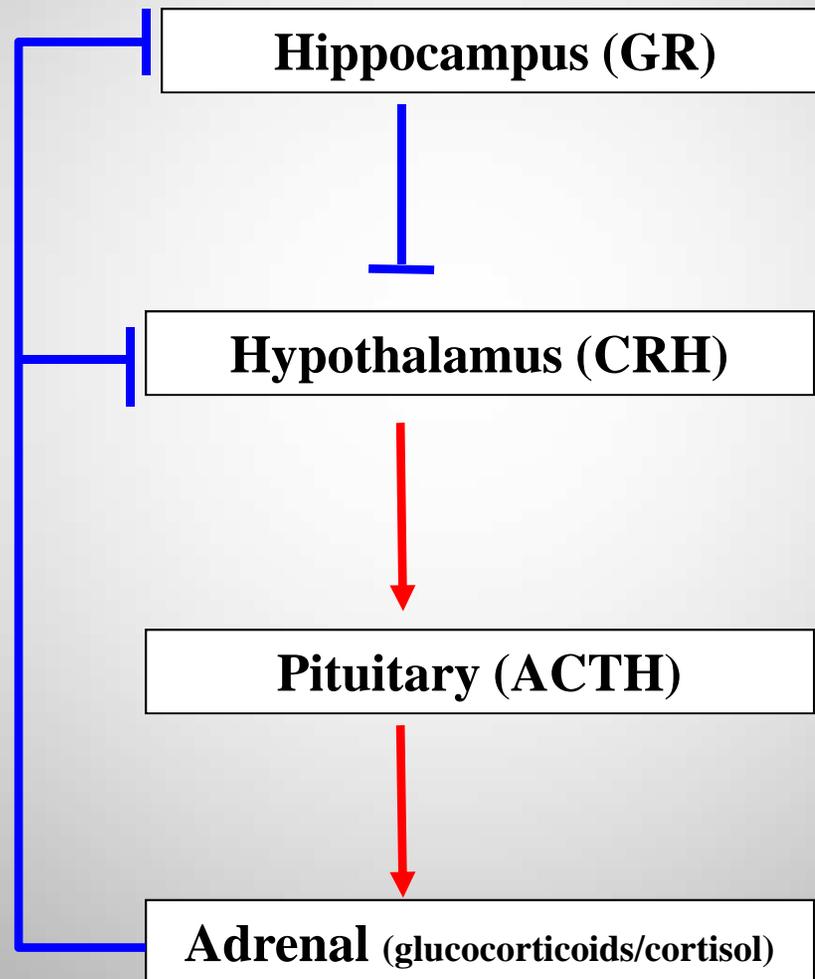
**Every cell in your body has the same nuclear genes, but...?**

## **Stress Effects on the Brain**

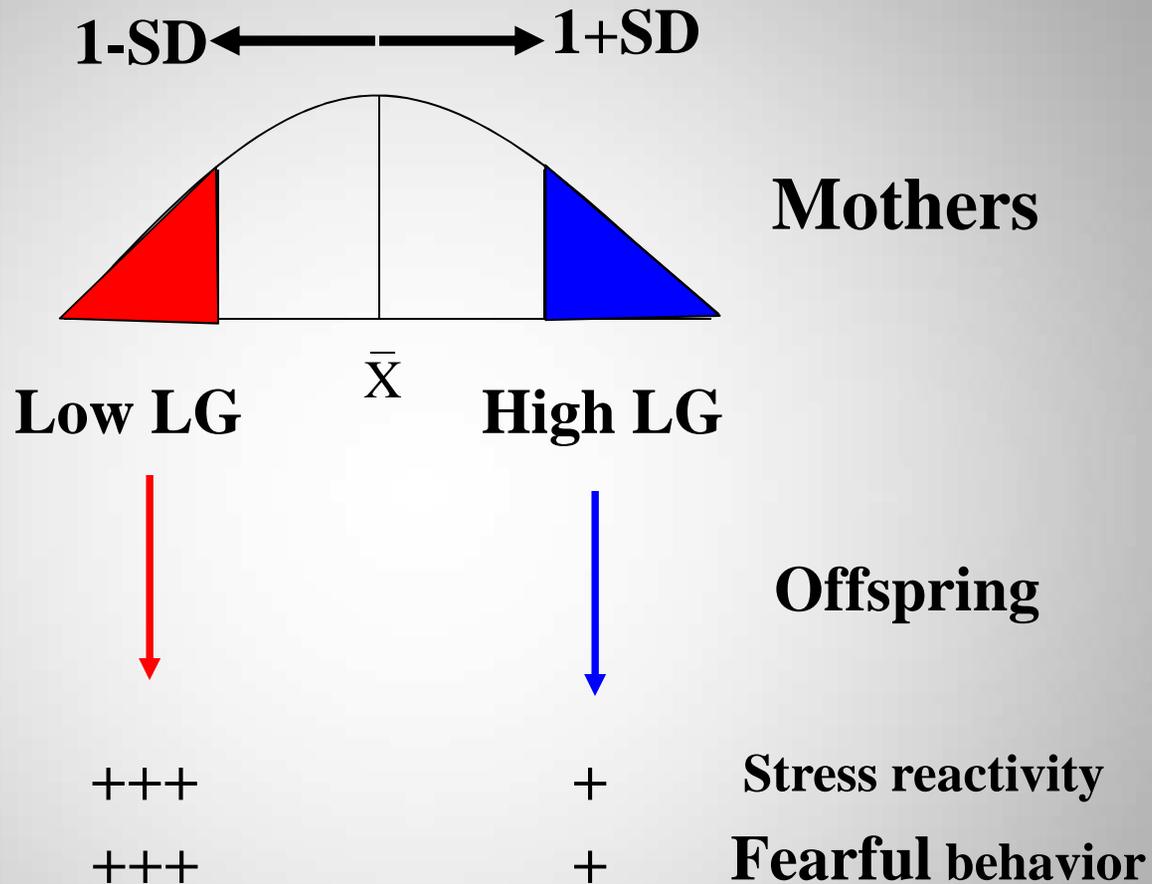
**Are epigenetic mechanisms implicated in conferring risk for psychopathology among maltreated children?**

# The Stress Response

## The HPA Axis



# Maternal neglect in rodents



# **Maternal Behavior Programs the Brain and Stress Reactivity**

**Optimal Parenting – High Licking and Grooming (LG)**

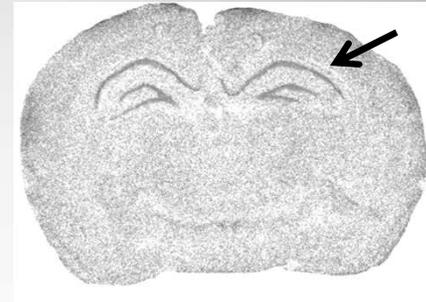
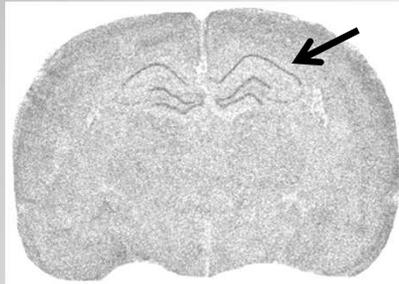


**A. Kaffman, 2009**

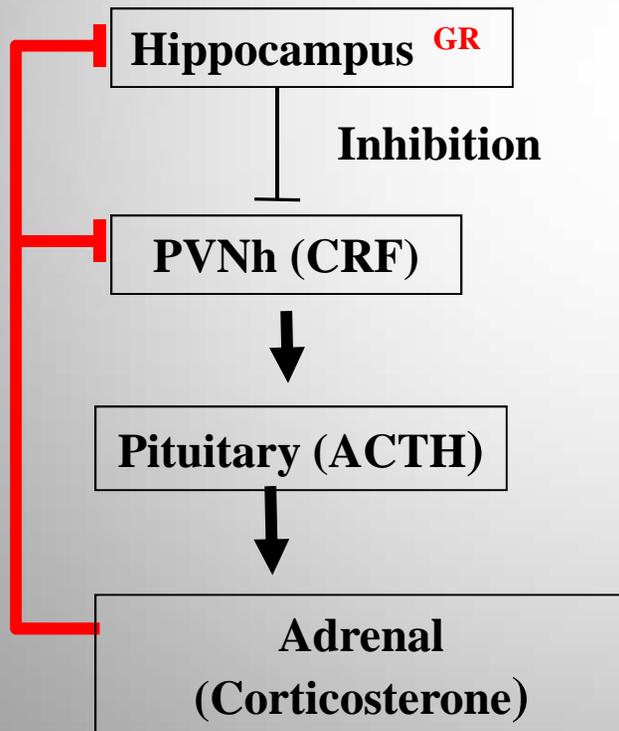
# Differences in Maternal Care



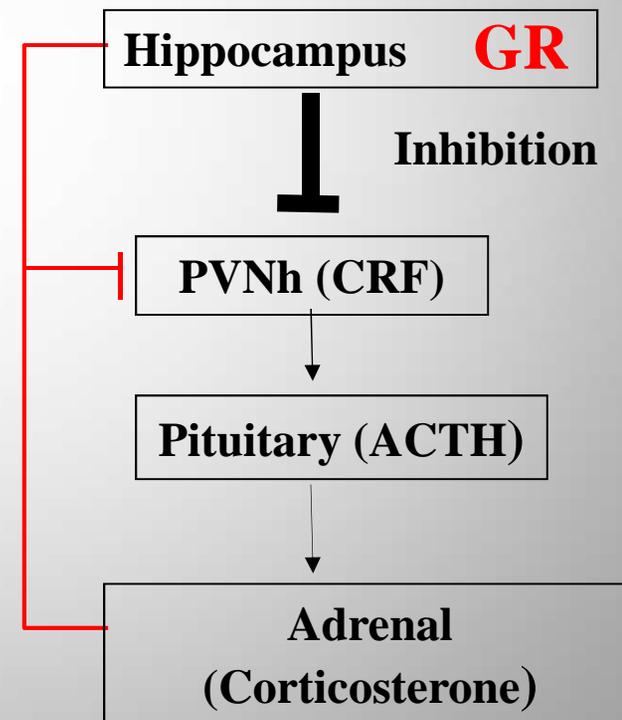
# Maternal behavior promotes long-term changes in GR gene expression in the hippocampus



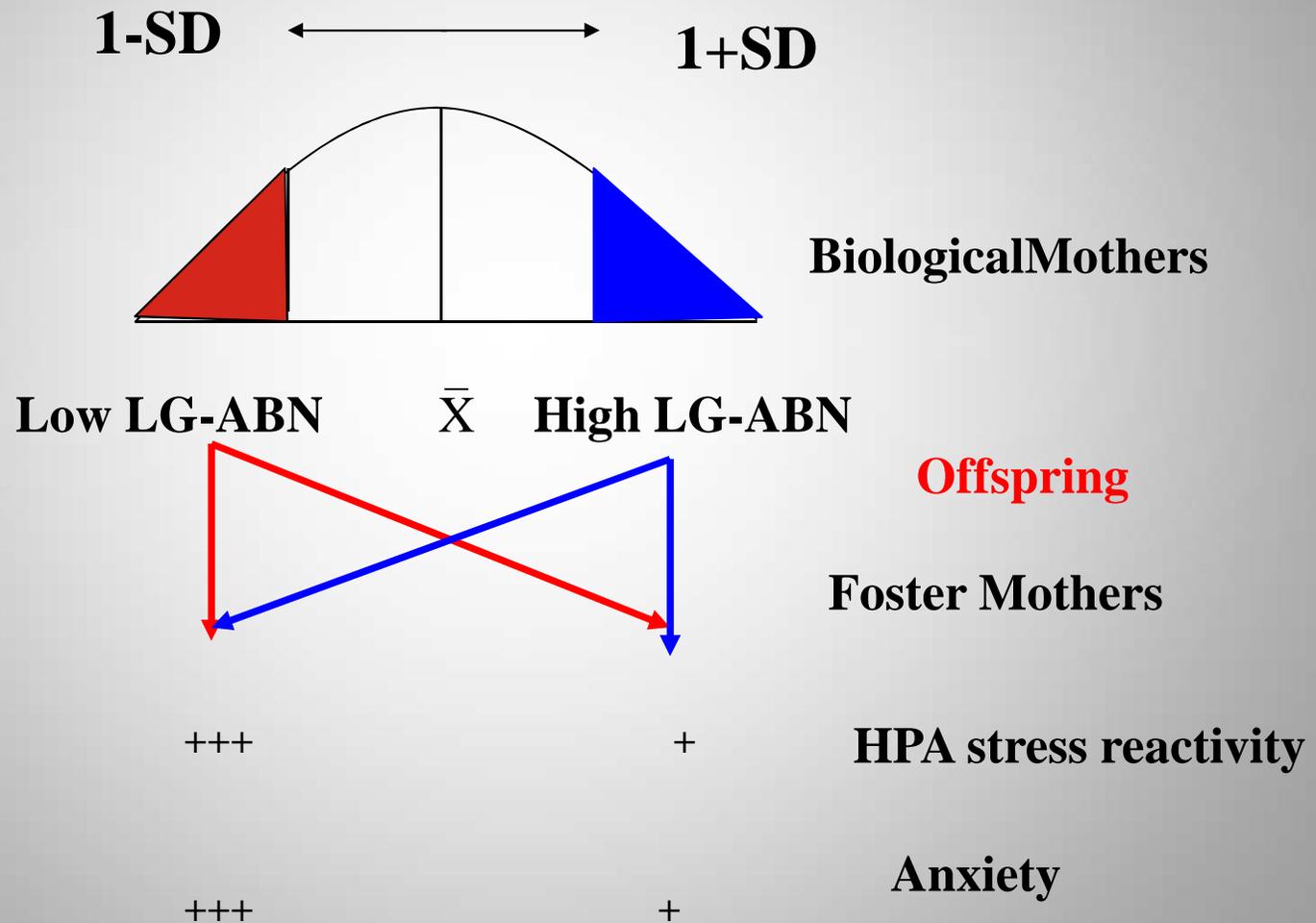
Low LG



High LG



# Cross-Fostering Experiments Show Differences in Stress Reactivity and Behavior Due to Differences in Maternal Care



# ACES and Kids and Families

- Review (very briefly) VT ACES
- Present Child Family Argument
- Present (very briefly) Vermont Adversity Data
- Present a potential solution (the Movie).
- Conclude

Query for children in your state at [www.childhealthdata.org](http://www.childhealthdata.org)



Ask us a question | Request a dataset  
» Open your data briefcase

- About the Data Resource Center
- Learn About the Surveys
- Browse the Data
- Put Data into Action
- Get Help

Keyword Search

Publicly insured children are more likely to have insurance coverage which adequately meets their health needs than privately insured

- » Survey Fast Facts
- » Quick Data Search
- » Browse by State
- » How to Use This Site

### Data at a Glance

At your fingertips—easy-to-read data snapshots for each state

State/Region

### Welcome to the Data Resource Center for Child & Adolescent Health!

Welcome to the newly redesigned DRC website. Take a [tour](#) of the site and give us your feedback.

The mission of the Data Resource Center (DRC) is to take the voices of parents, gathered through the National Survey of Children's Health (NSCH) and the National Survey of Children with Special Health Care Needs (NS-CSHCN), and share the results through this online resource so they can be used by researchers, policymakers, family advocates and consumers to promote a higher quality health

### Connect with the DRC

Sign up for email updates 23

# And Now We Have National and State Data on Adverse Childhood Experiences and Resilience **FOR CHILDREN** (2011-12 NSCH (HRSA/MCHB/CDC))

47.9% of US Children 1+  
(of 9) ACEs Age 0-17 years

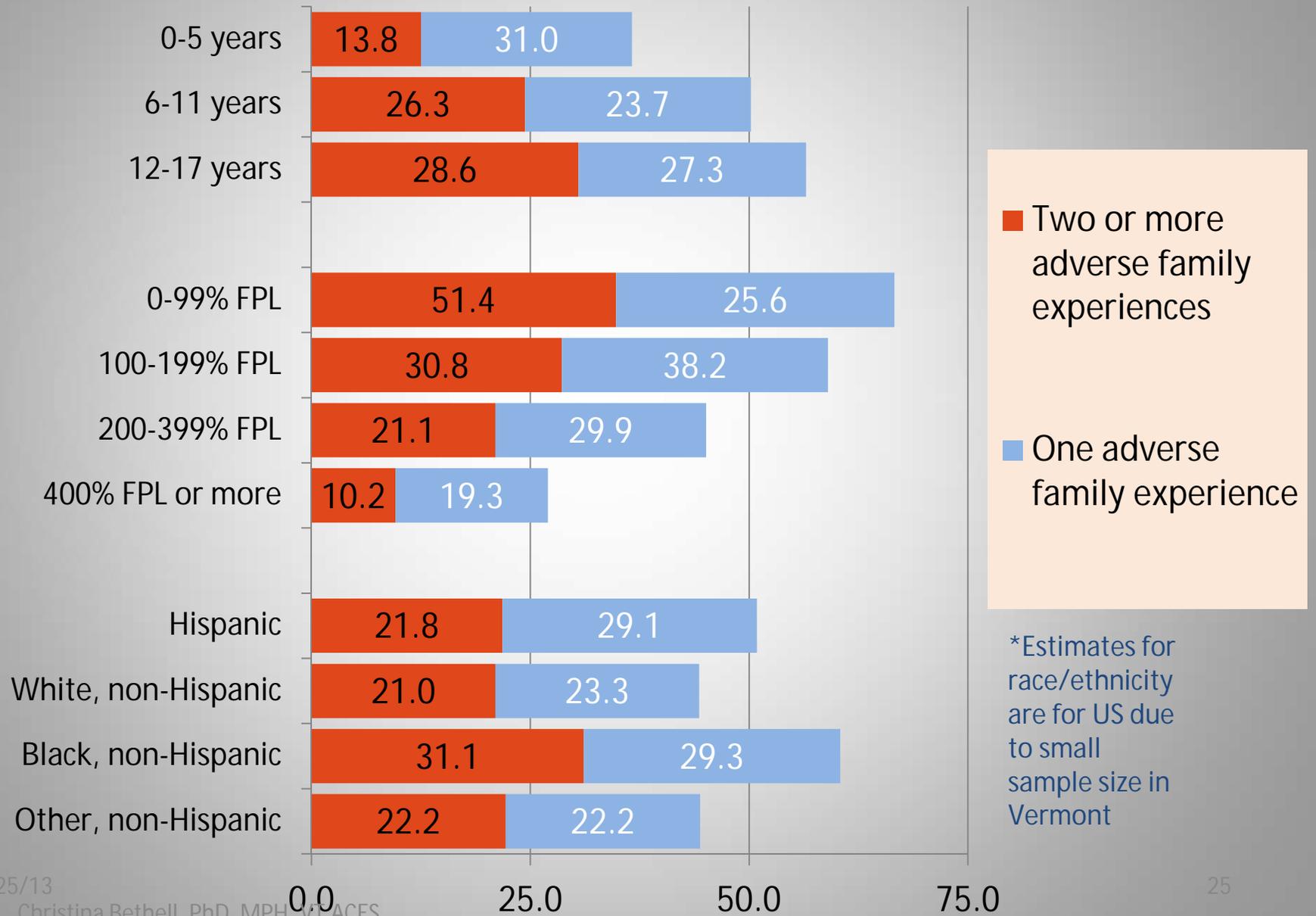


50.6% of Vermont  
Children 1+ (of 9) ACEs  
Age 0-17 years



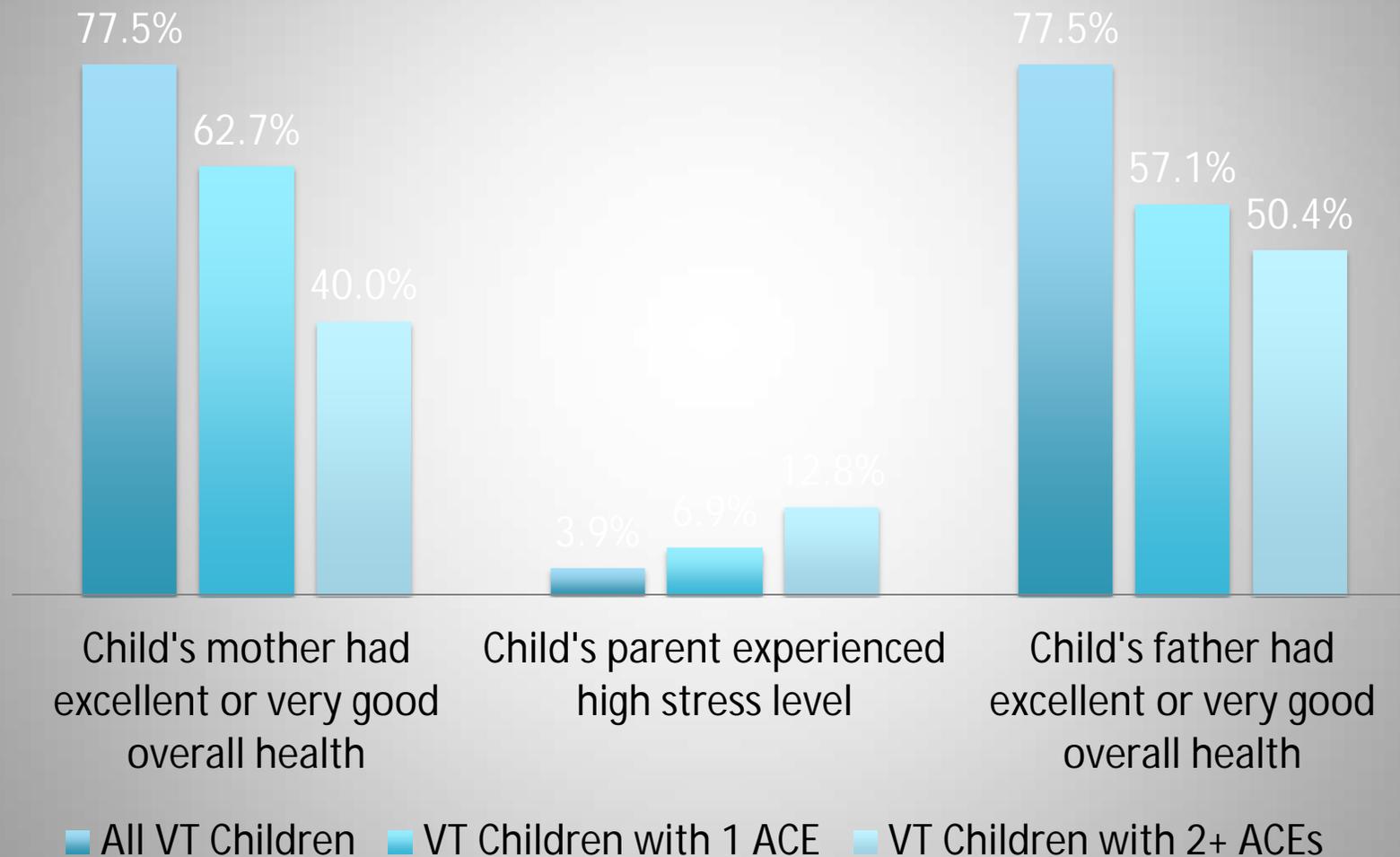
State Variation In Prevalence of 2+ (of 9) ACES  
16.3% (UT) – 32.9% (OK) across states.

# Prevalence of Adverse Child and Family Experiences in Vermont, by Age Groups, Household Income Level and Child Race/Ethnicity\*



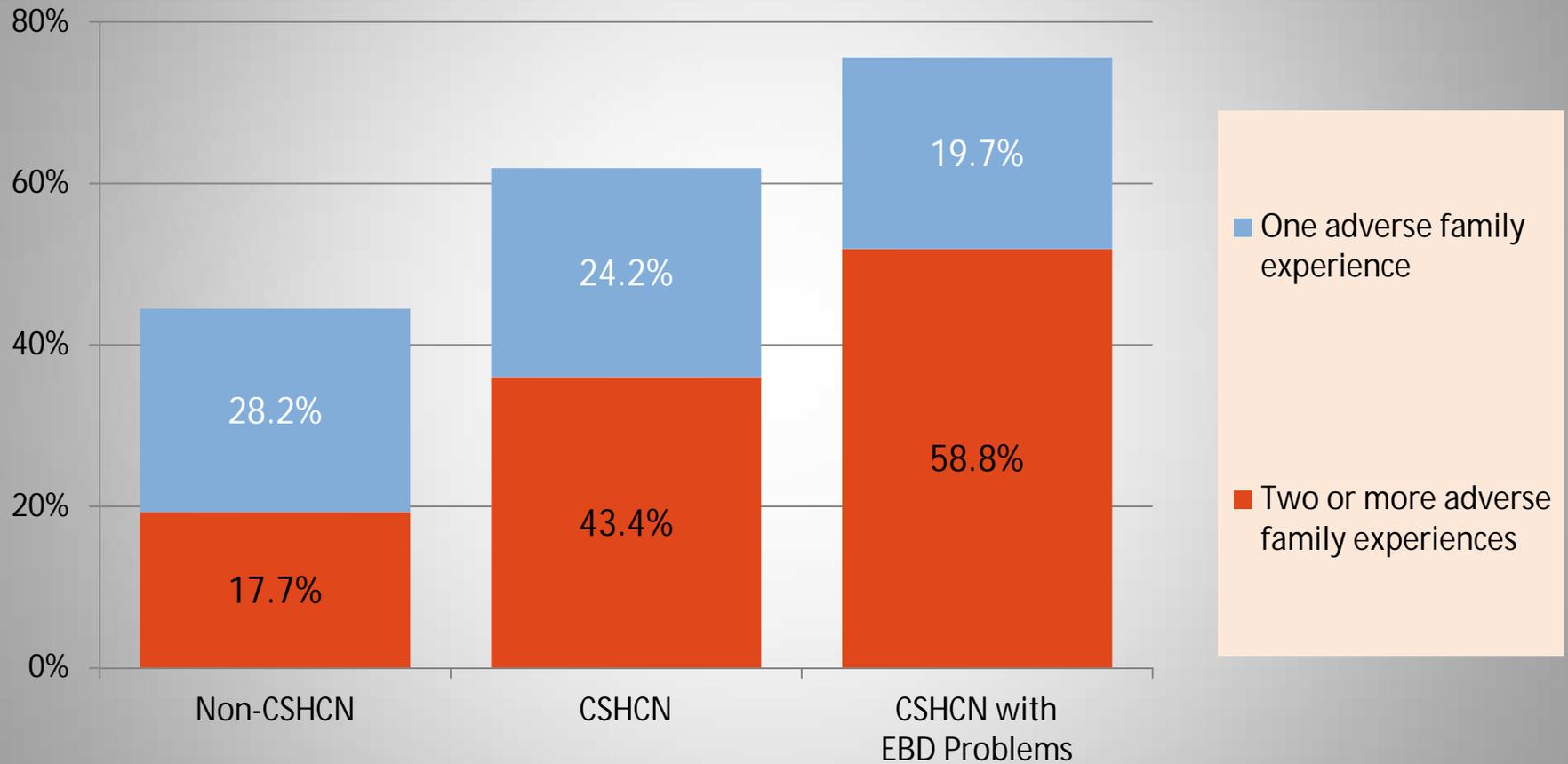
# Compounded Risks

## ACES and the Health and Stress of Parents



# Chicken and Egg Observations

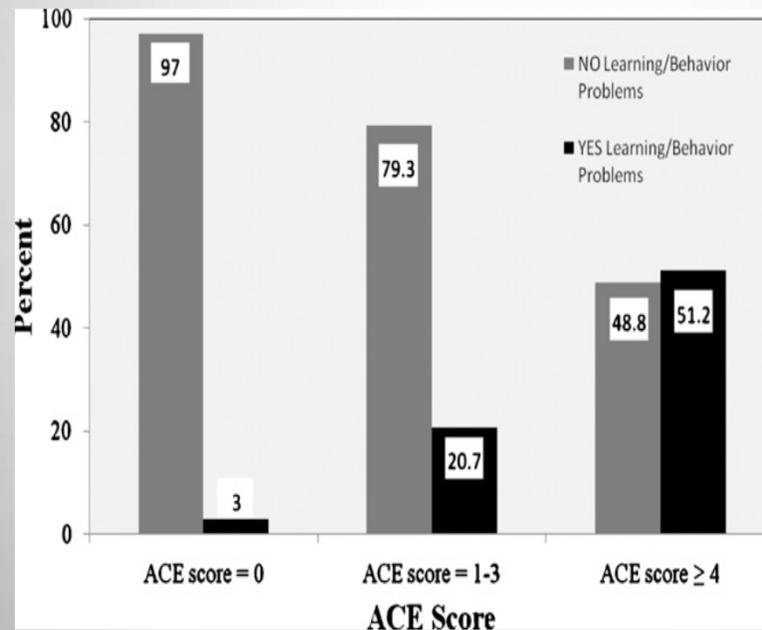
Adverse Childhood Experiences in Vermont and Health  
Children With Chronic Conditions Are More to Experience ACES.  
Children With ACES Are More Likely to Have Chronic Conditions



CSHCN: Children With Special Health Care Needs  
EBD: Emotional, Behavioral, Developmental Problems

# Further Evidence:

- Exposure to three or more ACEs associated with increased risk for learning/behavior problems and obesity



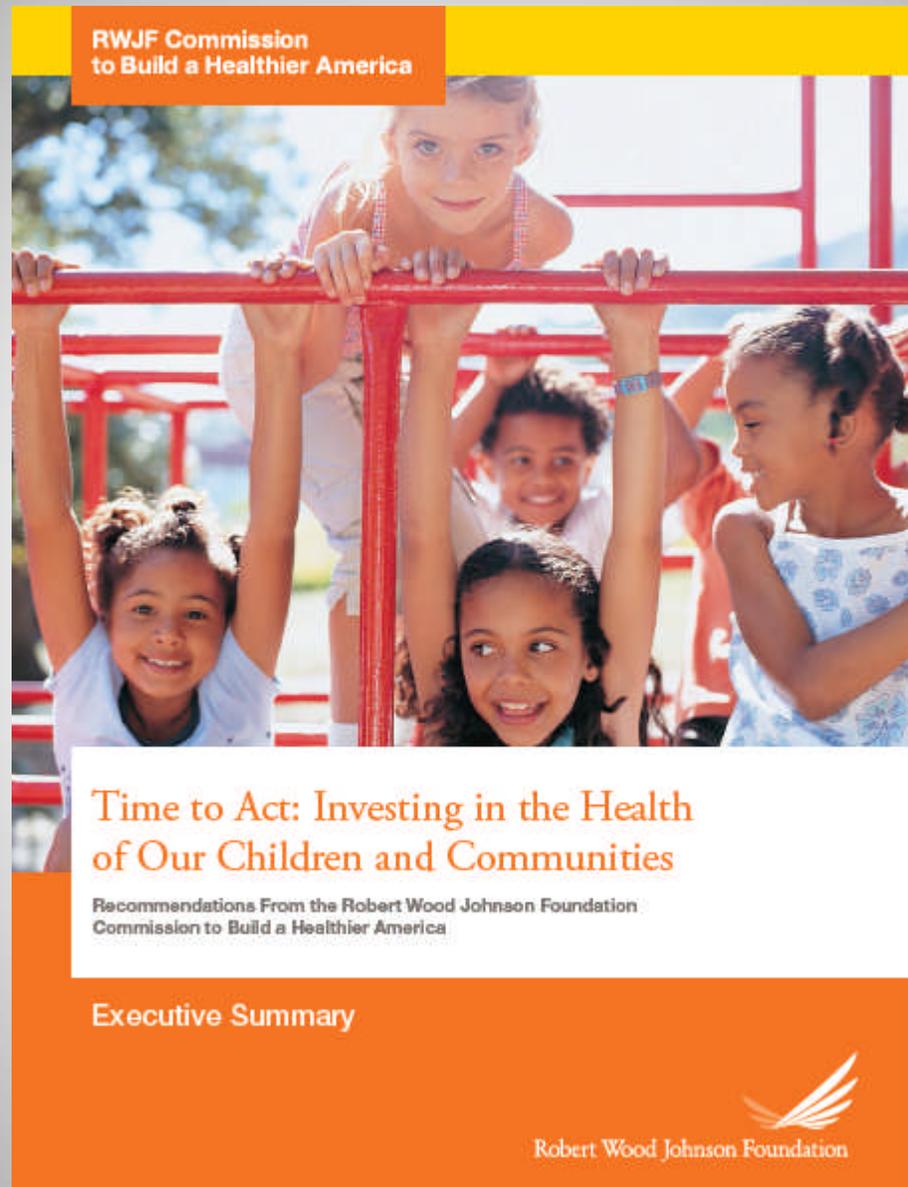
# Summary

- Adverse Child Experiences (ACES) affect 47.9% of Children Nationwide and 50.3% of Children in Vermont.
- Children who endure ACES:
  - come from all socioeconomic strata.
  - have parents who are less well (both mothers and fathers) and more stressed.
  - Struggle at school, home, and the community.
- ACES are associated with a wide variety of negative health outcomes that account for the vast majority of the health care costs to our Nation/State.
- ACES are by definition PREVENTABLE.

# Health Promotion and Illness Prevention for All

- Numerous studies show that ACEs place us at increased risk for: Obesity, substance use disorders, diabetes, emotional behavioral disorders, hypertension, and criminal behavior.
- These outcomes account for the majority of our health care expenditures (and costly State and Nation Wide programs).
- ACEs are by definition are preventable.
- The disorders that follow ACEs are extraordinarily difficult to treat once they have taken root in adulthood.
- Taking an evidenced based, child and family focused approach to health promotion, illness and ACEs prevention, and integrated intervention will lead to improved health and decreased costs.

# ROBERT WOOD JOHNSON FOUNDATION AGREES



# Losing Ground in Health:

- “Americans like to think that we are healthier than people who live in other countries. That is a myth”.
- In 1980 the US was ranked 15<sup>th</sup> among affluent countries in Life Expectancy (LE), by 2009 we have slipped to 27<sup>th</sup>.
- “To become healthier and reduce the growth of public and private spending on medical care, we must create a seismic shift in how we approach health and the actions we take. As a country, we need to expand our focus to address how to stay healthy in the first place.”

# Robert Wood Johnson Foundation

- Nationally one in three children is overweight or obese
- Three in four Americans ages 17-24 are ineligible to serve in the U.S. military, primarily because they are inadequately educated, have criminal records, or are physically unfit.

# RWJ Recommendation 1:

1

Make investing in America's youngest children a high priority. This will require a significant shift in spending priorities and major new initiatives to ensure that families and communities build a strong foundation in the early years for a lifetime of good health.

- Create stronger quality standards for early childhood development programs, link funding to program quality, and guarantee access by funding enrollment for all low-income children under age 5 in programs meeting these standards by 2025.
- Help parents who struggle to provide healthy, nurturing experiences for their children.
- Invest in research and innovation. Evaluation research will ensure that all early childhood programs are based on the best available evidence. Innovation will catalyze the design and testing of new intervention strategies to achieve substantially greater impacts than current best practices.

# ACES and Kids and Families

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- Conclude

# Child and Family Focus on ACES

- 87% of Children are seen in well child visits during the 0-3 age group.
- By screening children for ACES we position ourselves to engage in health promotion and prevention using early intervention approach.
- By screening children, we learn about the health of their parents.
- By screening children we can engage the entire family (e.g. the adults as well)
- By focusing on adult screening we will miss the vast majority of those at risk because few see their physicians regularly.

### Yale-Vermont Adversity in Childhood Scale (Y-VACS)

Hudziak, J.J. & Kaufman, J. (2014)

#### PARENT REPORT (PR)

*Instructions:* As much as we try to protect our children, bad things often happen to the ones we love. Children sometimes encounter a variety of different stressful experiences. For each of the following questions, please note in the Frequency column whether the experience happened to your child, and if it happened more than one time. If these experiences did happen, please record in the Severity column how severe you think they were. The first questions will focus on natural disasters, community, and health-related experiences.

Child's age: \_\_\_\_\_

Frequency:  
0 = Never  
1 = One time  
2 = More than once

Severity:  
1 = Mild or Suspected  
2 = Moderate  
3 = Severe

Frequency	Natural Disasters, Community, and Health-Related Experiences	[Record ages when events occurred]	Severity
0 1 2	1. Was your child ever exposed to floods, tornadoes, hurricanes, earthquakes, or other natural disasters?		1 2 3
0 1 2	2. A serious fire?		1 2 3
0 1 2	3. War, armed conflict, or terrorism?		1 2 3
0 1 2	4. Was your child ever involved in a car or other accident resulting in serious injury or someone's death?		1 2 3
0 1 2	5. Did someone outside the immediate family that your child loved pass away?		1 2 3
0 1 2	6. Did your child ever require hospital care for a medical problem?		1 2 3
0 1 2	7. Has your child witnessed community violence?		1 2 3
0 1 2	8. Has your child been bullied?		1 2 3
0 1 2	9. Has a non-household, non-family member forced your child to watch or do something sexual?		1 2 3
0 1 2	10. Other: Specify.		1 2 3

# ACES and Kids and Families

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# Camp R and R 2014



# Cooking



# Tai Chi-ing





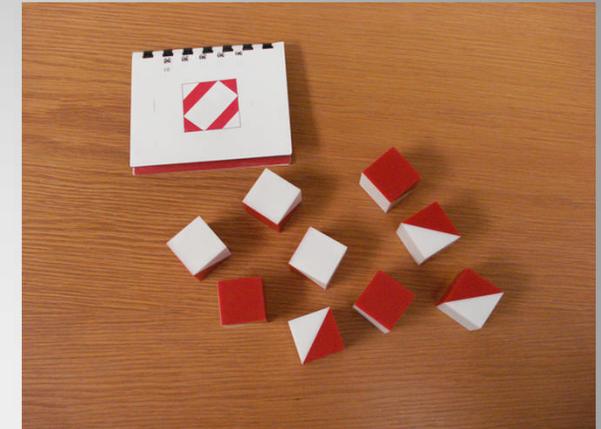
### RNA Collection:



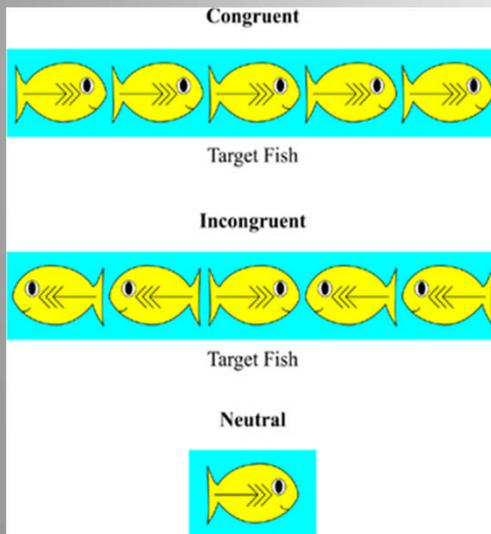
### DNA Collection:



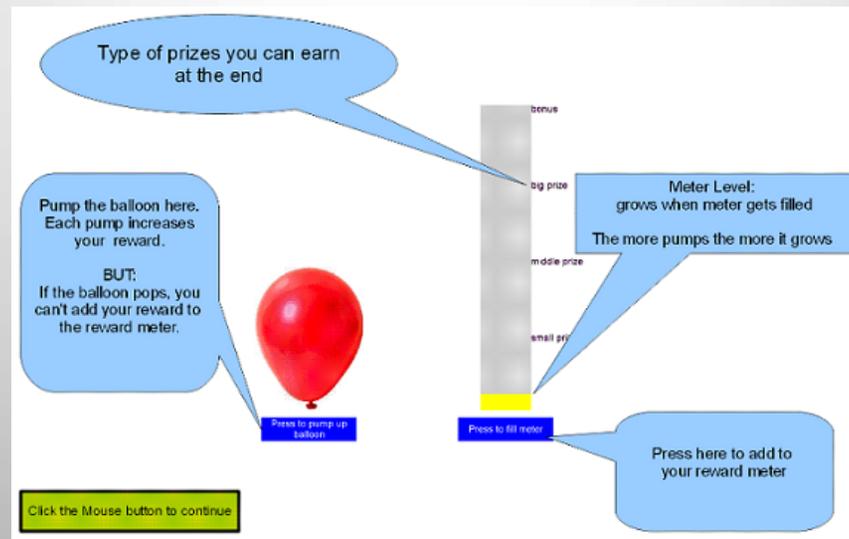
### WISC Block Subtest:



### Attention Network Task:



### Balloon Analogue Risk Task:

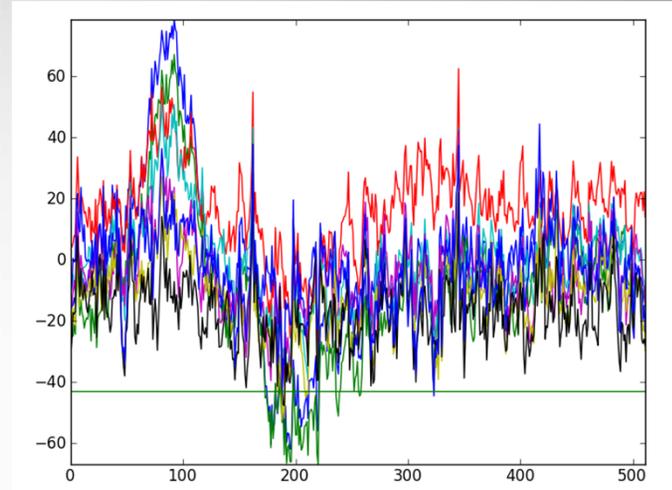


### Other Assessments:

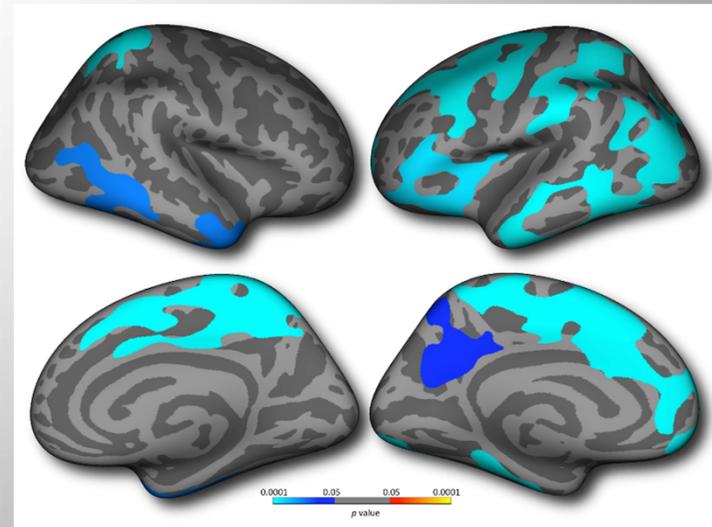
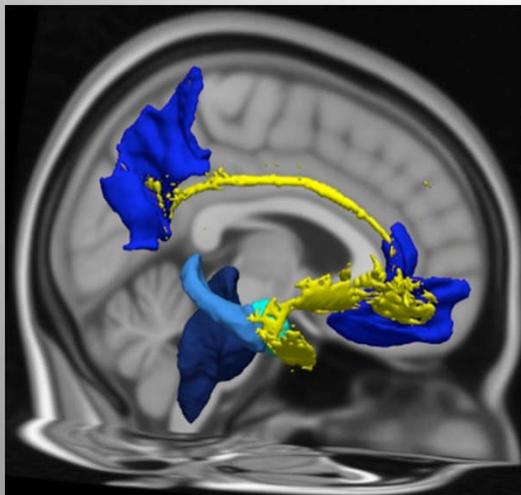


- UCLA Trauma Self Report
- UCLA PTSD Reaction Index
- ASEBA: Youth Self Report
- WISC: Information Subtest
- Personal Experiences Inventory
- Food Frequency Questionnaire
- ASSIS-R: Arizona Social Support Interview Schedule
- Self-Ratings of Pubertal Development
- NIH PROMIS: Depression, Anxiety, Anger
- Edinburgh Handedness Inventory

EEGs:

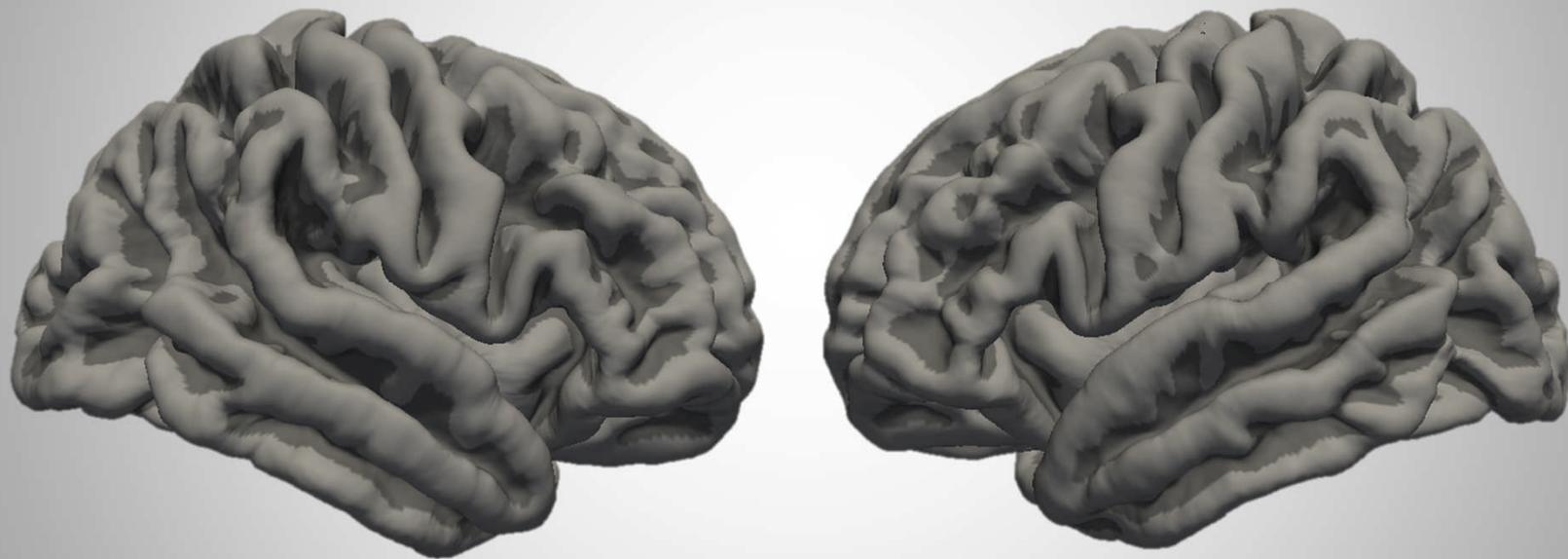


Structural and Functional Imaging:



# **Relationship Between Cortical Thickness and Adversity Score**

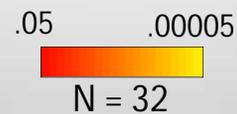
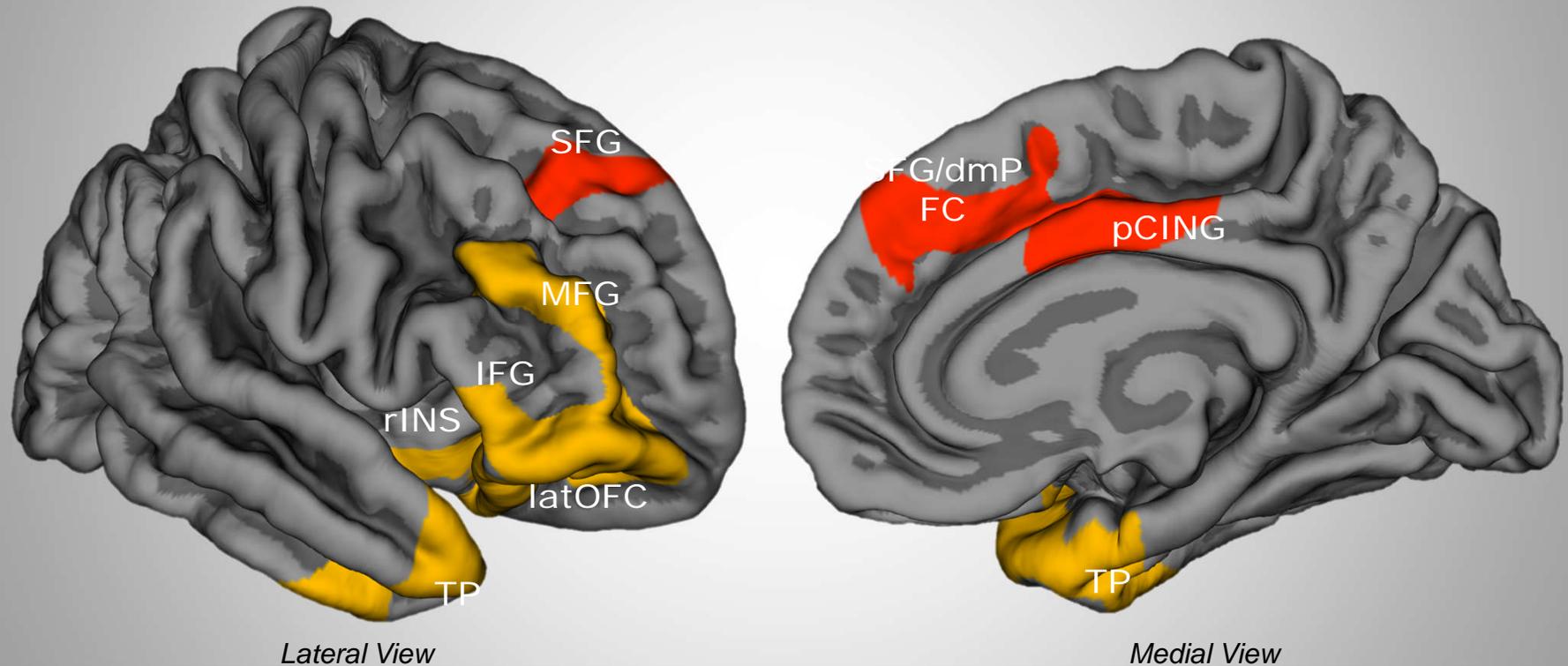
# Cortical Thickness and Intra-Familial YVACS



.05 .00005  
N = 32

*Controlling for age, TBV, and sex;  
whole-brain cluster correction ( $p < .05$ )*

# “Sex by Intra-Familial YVACS” Interaction on Cortical Thickness



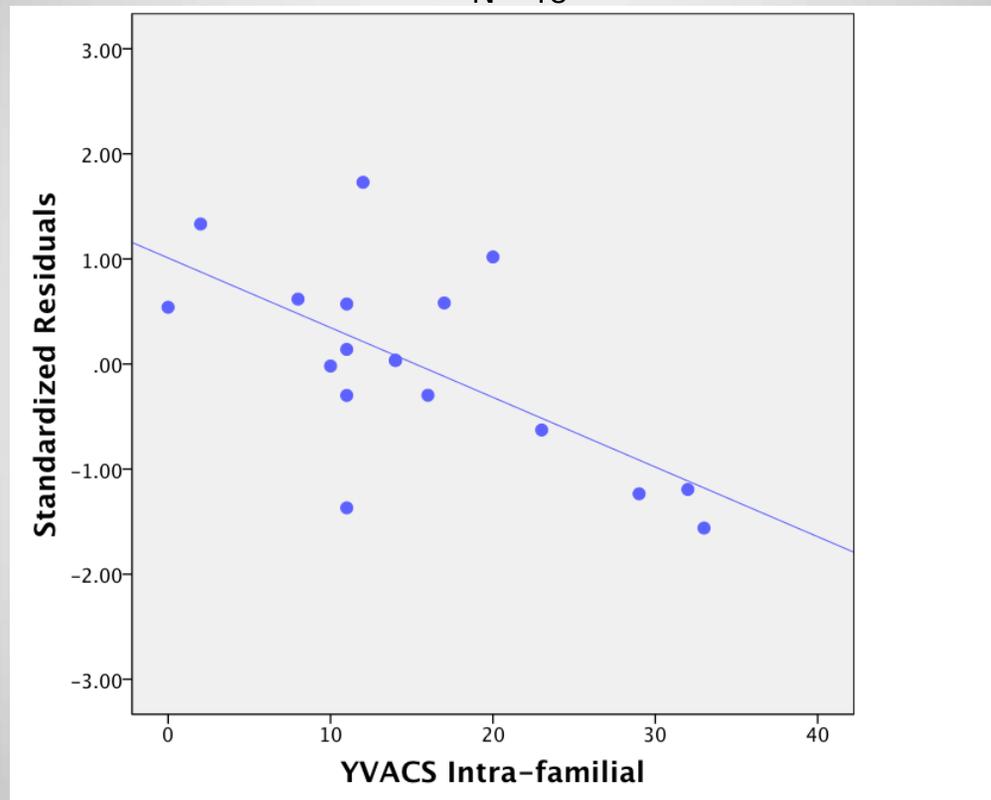
Controlling for age, TBV, and sex;  
whole-brain cluster correction ( $p < .05$ )

**Females**

# Cortical Volume and YVACS in Females

Intra-familial YVACS vs. Total Cortical Volume (Females)

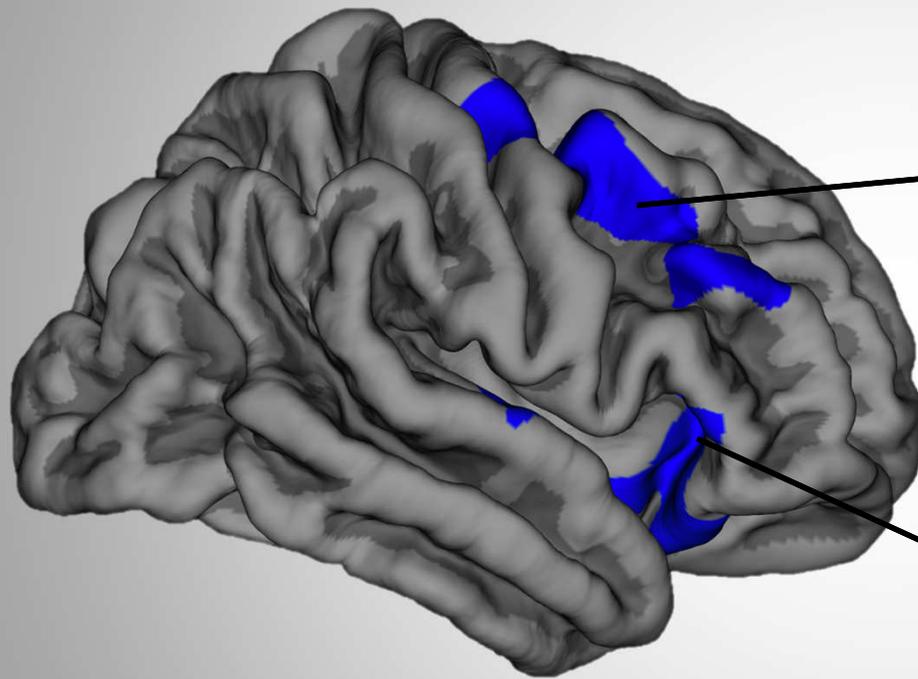
N = 18



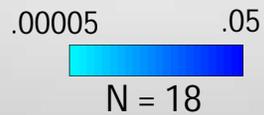
$$r = -.74, p = .001$$

\*\* Adjusted for age and total brain volume

# Cortical Thickness and Intra-Familial YVACS in Females

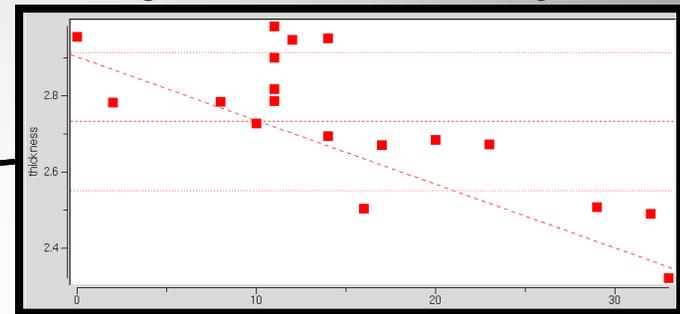


*Lateral View*



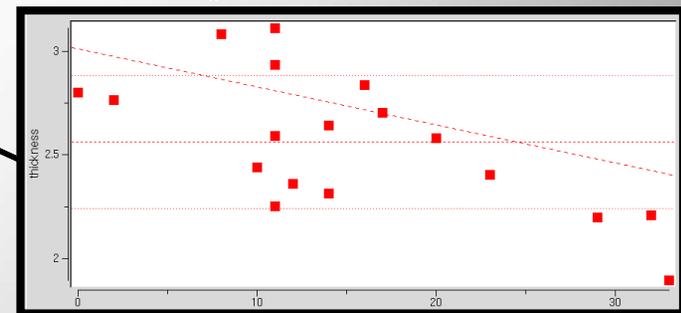
*Controlling for age and TBV;  
whole-brain cluster correction ( $p < .05$ )*

Right Middle Frontal Gyrus



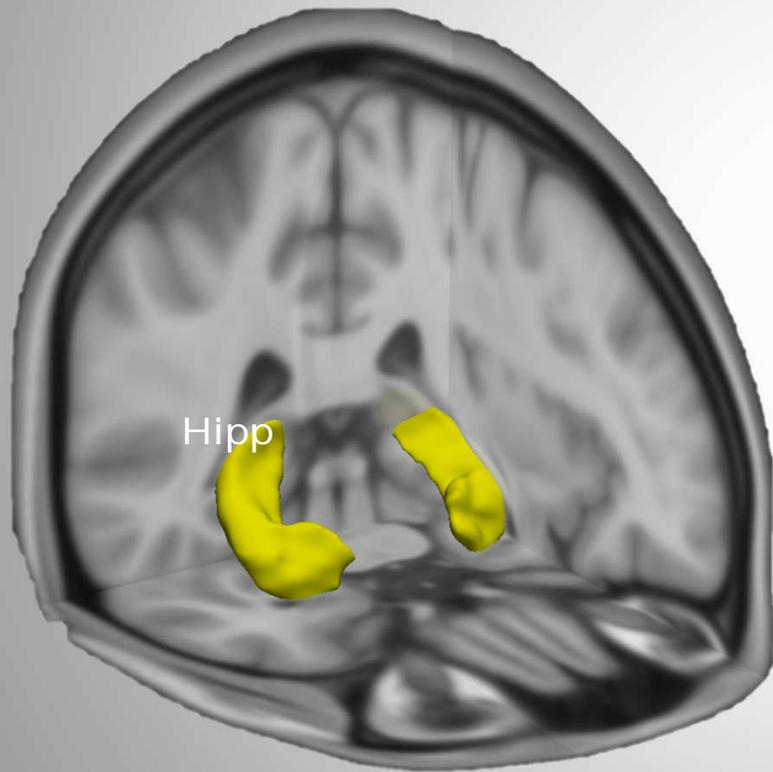
I-F YVACS

Right Anterior Insula

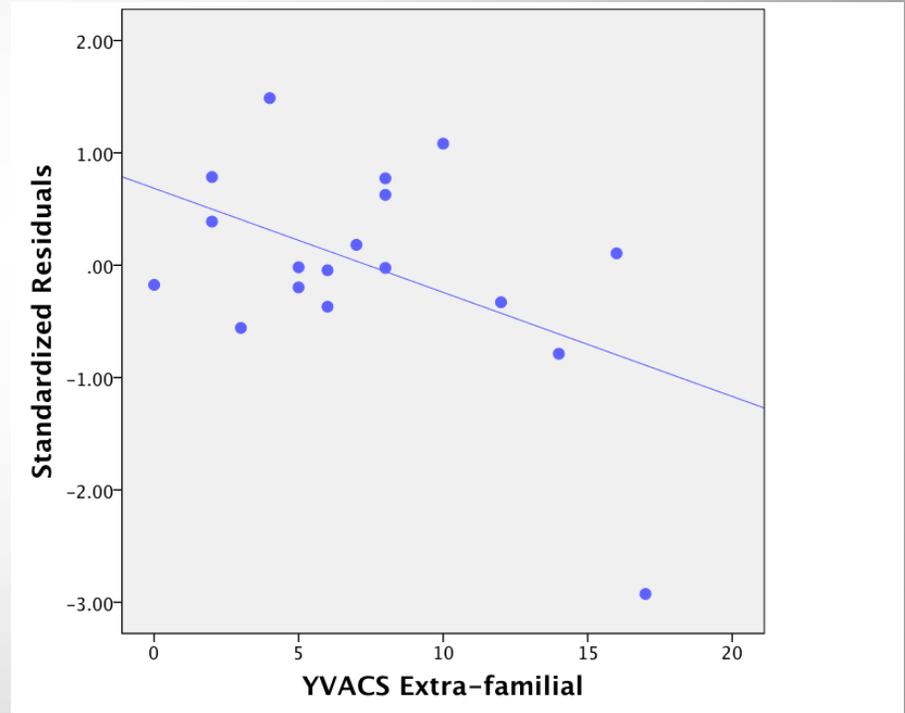


I-F YVACS

# Hippocampal Volume and Extra-Familial YVACS in Females



Extra-familial YVACS vs. Right Hippocampal Volume (Females)  
N = 18

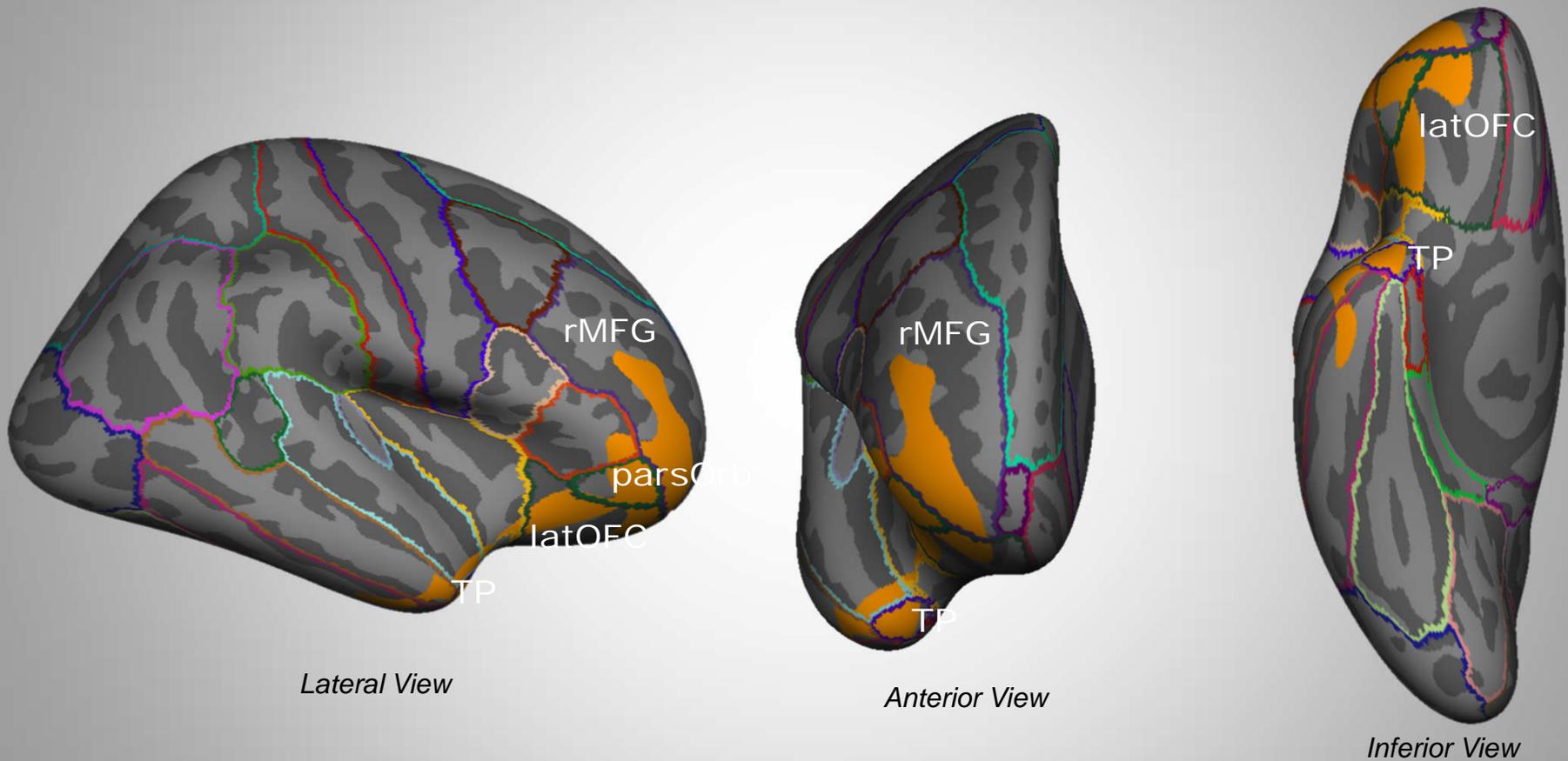


$$r = -.50, p = .048$$

\*\* Adjusted for age and total brain volume

**Males**

# Cortical Thickness and Intra-Familial YVACS in Males



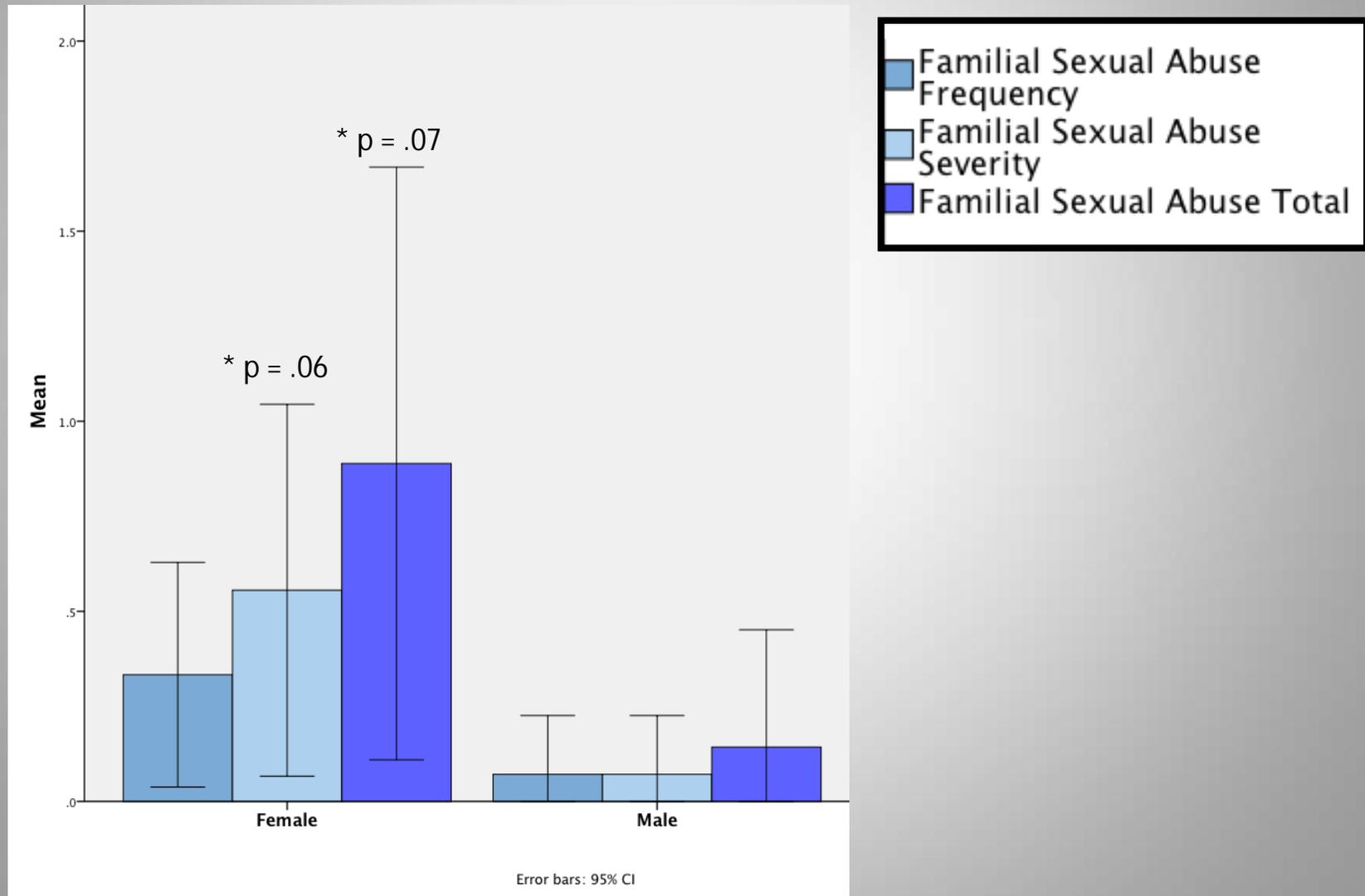
.05 .00005

N = 14

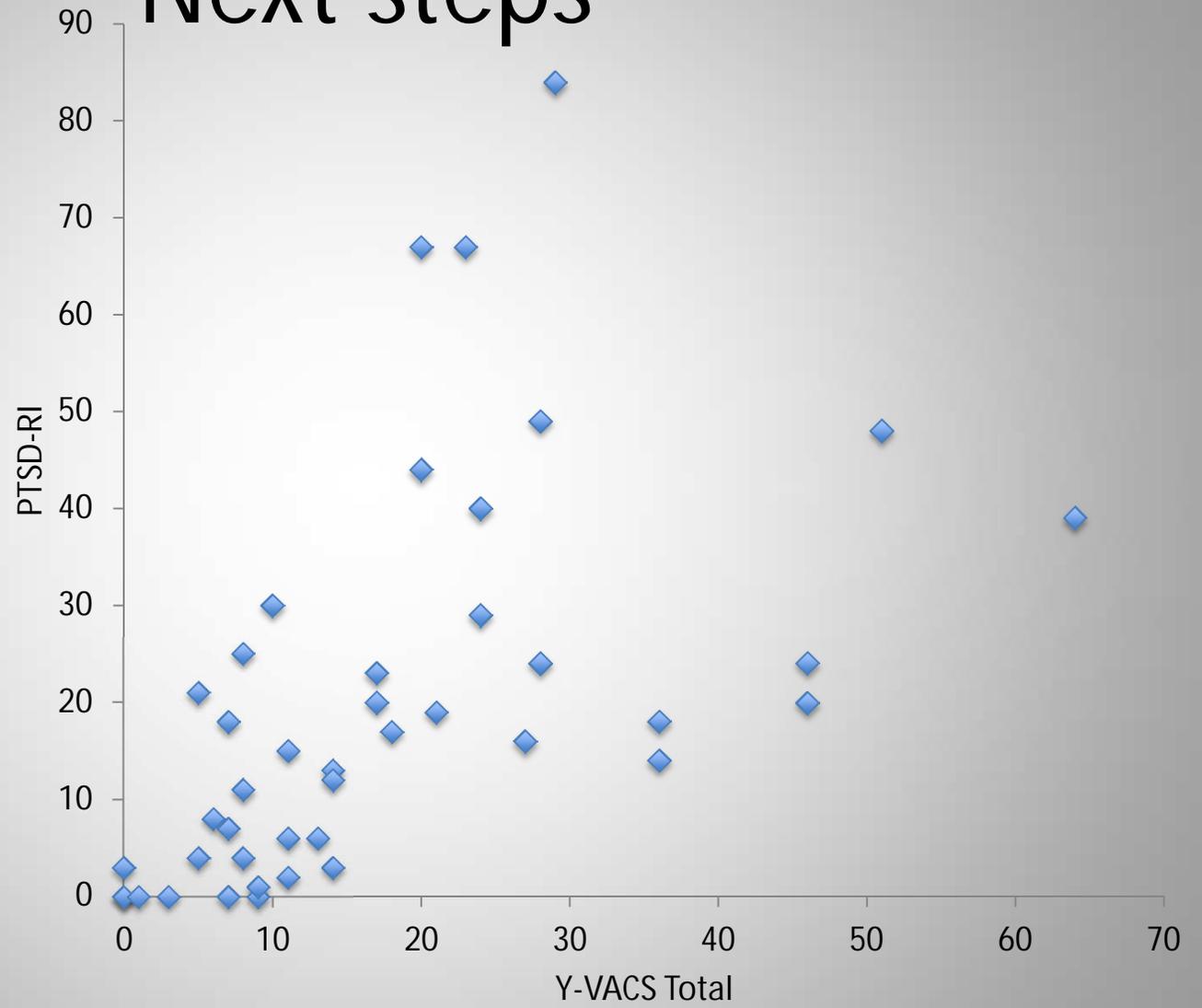
Controlling for age and TBV;  
whole-brain cluster correction ( $p < .05$ )

- Why might the relationship between adversity and cortical structure differ between the sexes?
- In the present sample, are there differences in the types of adversity that males and females experience?

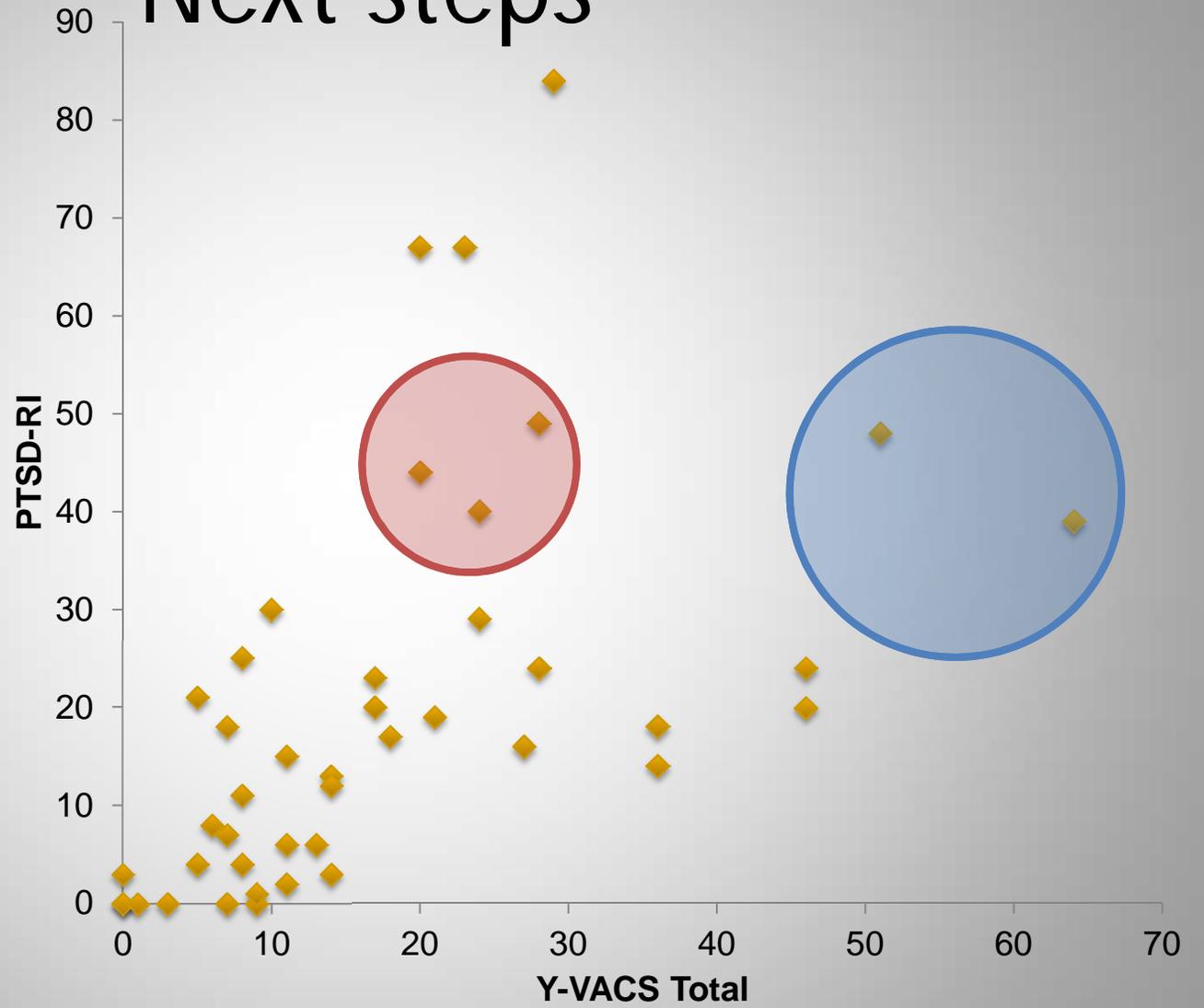
# Familial Sexual Abuse



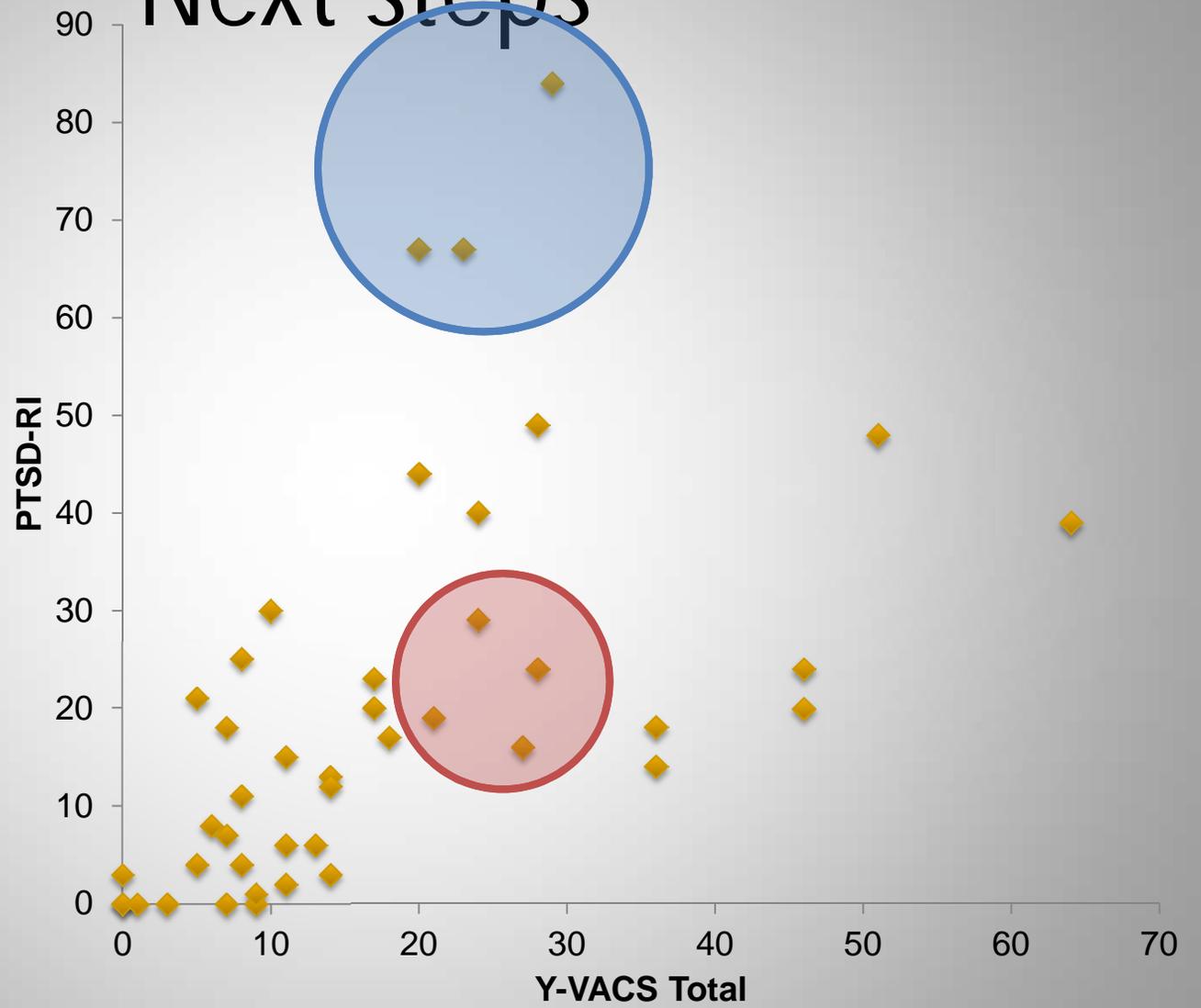
# Next steps



# Next steps



# Next steps



# ACES and Kids and Families

- Review (very briefly) VT ACES
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- Conclude

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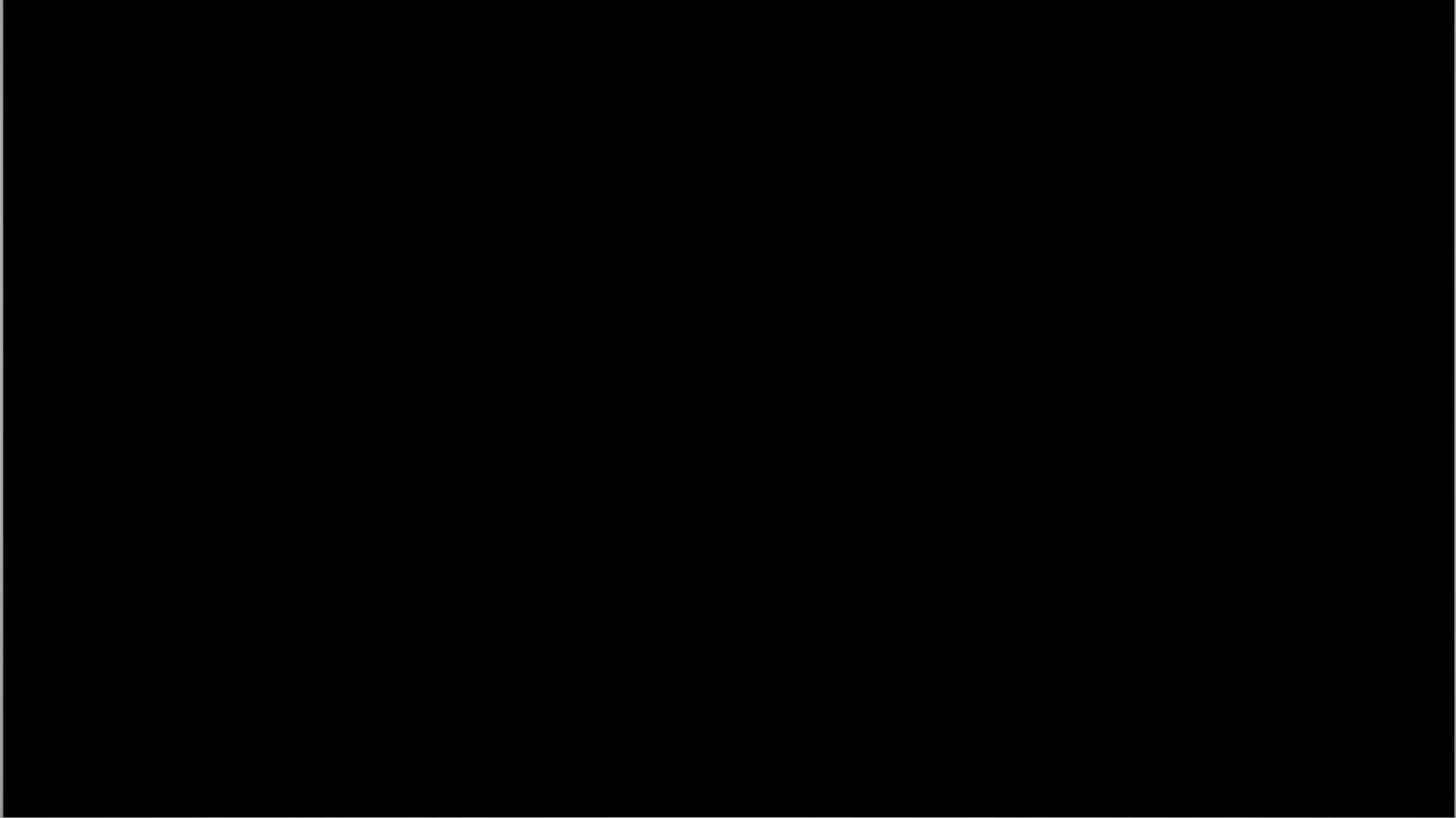
# What do we do about it?

- The Vermont Family Based approach is one method to implement strategies directly aimed at reducing child abuse and neglect through promoting the health of the entire family, preventing illness when possible, and intervening at a family level when struggles are apparent.

# What is the VFBA

- Careful (family based) Screening.
  - All members of a family should be screened for emotional health.
- Tailored Health Promotion
  - All families deserve to have the knowledge on brain healthy strategies to raise healthy children and stay healthy as a family.
- Tailored Prevention
  - Parent training, CBT of parental illness etc.
- Tailored Intervention (that incorporates Promotion and Prevention).

What to do about it?



# Summary:

- The current intervention focused approach of health care is not working in our country.
- Well respected think tanks around the world have identified the need to move towards health promotion and prevention using an early childhood, family focused approach.
- Potential areas for benefits include changes (reductions) in health care costs, reductions in incarcerations, improved school performance and community health.
- We have a model developed using a psychiatric health promotion, illness prevention, family based intervention approach (The Vermont Family Based Approach) to do this work in Vermont.

# ACES and Kids and Families

- Review (very briefly) VT ACES
- Present Child Family Argument
- Present (very briefly) Vermont Adversity Data
- Present a potential solution (the Movie).
- Conclude with recommendations for the State and Blueprint Vermont

# Our Coalition asks?

- Where are the children and families in the current proposals for healthcare reform?
- Who is advising the legislature and Blueprint about the physical and emotional health of children and families (because they are not talking to us)?

# Our Coalition offers

- We are State, National, and International experts who choose to live and work in Vermont. WE would be thrilled to sit down at the table with legislatures and the Blueprint team.
- We want to play a LEAD role in deciding what is best for Vermont Children and Families.
- We welcome the legislature and others to come to us for the advice you need.

# Coalition Continued

- We want to work with and help the Blueprint and Governor meet their goals for a safer and healthier Vermont.
- We are the experts, and we will help advise the Blueprint to get to the place the State needs to get to.
- We are the collective voice of children and family health in Vermont.

# Fostering Collaboration & Innovation across Maternal and Child Health Projects

Agenda – February 12, 2015 8:00am - 3:00pm

Time	Session
8:00	<b>Welcome and Overview</b> Judy Shaw, EdD, MPH, RN, Executive Director, VCHIP Breena Holmes, MD, Director, Maternal and Child Health Garry Schaedel, MHS, Health Policy Analyst, VCHIP Sara Barry, MPH, Assistant Director, VCHIP
9:00	<b><u>Projects with perinatal and infant focus</u></b> 1. Obstetric Outreach Marjorie Meyer, MD, Eleanor “Sissy” Capeless, MD, Maureen Matthews, RN, IBCLC 2. Vermont Regional Perinatal Health Project Charles Mercier, MD, Adrienne Woike, NP 3. Vermont Green Mountain Fetal Alcohol Spectrum Disorders Project Susan Ryan, PhD, Executive Director, Center on Disability and Community Inclusion, UVM 4. Improving Care for Opioid-Exposed Newborns Anne Johnston, MD, Associate Professor, UVM 5. Improving Breastfeeding Supports in Primary Care Settings Karen Flynn, WIC Program, Anya S. Koutras, MD, FAAFP

Time	Session
11:00	<b><u>Projects for younger children to adolescents</u></b> 6. Child Health Advances Measured in Practice Sara Barry, MPH, Assistant Director, VCHIP 7. Vermont Youth Health Initiative (YHII) Barbara Frankowski, MD, MPH, Alyssa Consigli, RD, VCHIP 8. Child Chronic Care Initiative Richard “Mort” Wasserman, MD, MPH, VCHIP 9. Injury Prevention Eliot Nelson, MD, UVM Department of Pediatrics;
1:00	10. Improving Child & Adolescent Health Care in Family Medicine Practices John King, MD, UVM Department of Family Medicine 11. Child Psychiatry Initiative James Hudziak, MD, UVM Department of Psychiatry 12. Strengthening the Capacity of Schools and PCPs to Promote Youth Mental & Behavioral Health Bernice Garnett, MPH, ScD, UVM Dept. of Education

# Proposed path for Vermont leadership to follow:

- ADVOCATE FOR TAKING A CHILD AND FAMILY FOCUSED APPROACH
- ADVOCATE FOR COLLABORATION WITH THE EXPERTS IN VERMONT WHO HAVE DEVOTED THEIR CAREERS TO IMPROVING THE HEALTH AND WELLBEING OF CHILDREN AND FAMILIES
- ADVOCATE FOR ILLNESS PREVENTION (PARENT TRAINING, BT, CBT).
- TAKE A FAMILY BASED APPROACH

Thank you.



# Blueprint ACE-Informed Practice in the Blueprint Vermont

Maternal Early Child Sustained Home Visiting:  
Sydney, Australia

Durham Connects: Durham County, NC

# Blueprint Recommendations

- Did not include key stakeholders mentioned above in discussions.
- Engaged and very junior person from Dartmouth and generated a very poor set of recommendations for which there is pretty solid evidence that the programs do not work.

# Early Home Visiting: MESCH

- No effect – minimal effect
  - Two studies meet Federal DHHS quality criteria, but with reservations
  - Primary outcome measures
    - Child Health: NO EFFECT
      - 3 measures
    - Maternal Health: NO EFFECT
      - 6 measures
    - Positive Parenting Practices: Potential Effect
      - 5 measures: NO EFFECT
      - 1 measure: POTENTIAL EFFECT

# Early Home Visiting: MESCH

- Potential Favorable Effect on Parenting
  - HOME subscale: Increased Maternal Responsivity
    - Blinding compromised
    - Subjective assessment
    - Subscale is a poor predictor of later outcomes
    - No improvement on other HOME subscales

# Early Home Visiting: MESCH

- Secondary outcome measures
  - Majority: no effect
  - Potential Positive effects, not cost effective
    - Increased knowledge of SIDS recommendation, but NO CHANGE IN BEHAVIOR
    - Increased breastfeeding: many, many more cost effective interventions

# Early Home Visiting: MESCH

- Cost effectiveness
  - Didn't evaluate cost effectiveness
  - Urban vs. Rural
    - Sydney Australia: 4.6 million population
  - Rural home visiting programs cost more per visit

# Early Home Visiting: MESCH

- In Summary: Minimal to No Effect, Higher Cost

# Early Home Visiting: Durham Connects

- Newer program
- Initial studies not complete. Primary outcome not yet reported: <https://clinicaltrials.gov>
- Early reports of secondary outcomes show decreased Emergency Care Utilization, report 3:1 cost savings.
- Early reports are problematic:
  - Control families were sicker before intervention
  - Cost of intervention was drastically underestimated
  - Context: urban vs. rural

# Early Home Visiting: Durham Connects

- Control group was sicker
  - Control group, the group with higher Emergency Care Utilization
    - Had higher levels of maternal mental health problems: anxiety ( $p < 0.05$ ), depression, substance abuse
      - Reported as an effect, but no pre-intervention measure
    - Had higher levels of birth complications ( $p = 0.04$ ), low birth weight, and prematurity
      - Before intervention

# Early Home Visiting: Durham Connects

- Sicker children and families need more care
  - Increase in cost per family: \$2114
    - \$30 over 6 months in emergency room visit cost
    - \$2084 over 6 months in hospital admissions
  - Greatest increase in cost was due to increased hospital admissions, not emergency room visits—makes sense if you have a sicker control group

# Early Home Visiting: Durham Connects

- Drastically underestimated cost
  - Reported cost of Durham Connects program: \$700 per family for 6 months
  - Average cost of established evidence based early home visiting programs: \$3,889 per family for 6 months
  - Increase in cost for emergency care utilization in controls: \$2114 for 6 months.
  - Emergency care may be less expensive than Durham Connects

# Early Home Visiting: Durham Connects

- Urban vs. Rural
  - Durham County:
    - 4,777 resident births over 6 months
    - 298 square miles
  - Vermont
    - ~3,000 resident births over 6 months
    - 9,623 sq miles
  - Implications for cost effectiveness
    - Rural Home Visiting costs more per visit

# Early Home Visiting: Conclusions

- Both Durham Connects and Maternal Early Child Sustained Home Visiting
  - Wrong context: urban vs. rural
  - High cost
  - Thus far, reports show minimal effect
- Should we bring these programs to Vermont?
  - Recommend not experimenting with these programs during budget shortfall

# Vermont: Vanguard of Child Health

- Vermont Children's Hospital and the VCCYF
  - State, National, and International Expertise in Child Health
  - Would like to work with Blueprint
  - Saddened that we were not consulted
  - Committed to improve the health of all Children in Vermont

# Proposed Solutions