the CANDLE study

3rd Annual Conference:
Pathways to Health and Well-Being

Infomercial Packet:
- Characteristics of CANDLE Sample
- Update Status:
  - Cohort
  - Bio-repository
  - Biomarkers
  - Genetics

the CANDLE study

THE CONDITIONS AFFECTING NEUROCOGNITIVE DEVELOPMENT AND LEARNING IN EARLY CHILDHOOD

Community, Family and Individual Characteristics for SE Problems and Physical Attributes

Fran Tylavsky, Dr. P.H., Principal Investigator

Professor, Preventive Medicine

Adverse Events(AE) and Childhood Adverse Events (ACE) in CANDLE

- Background

- Community Characteristics

- Maternal AE and ACE effects on SE and physical health in CANDLE children

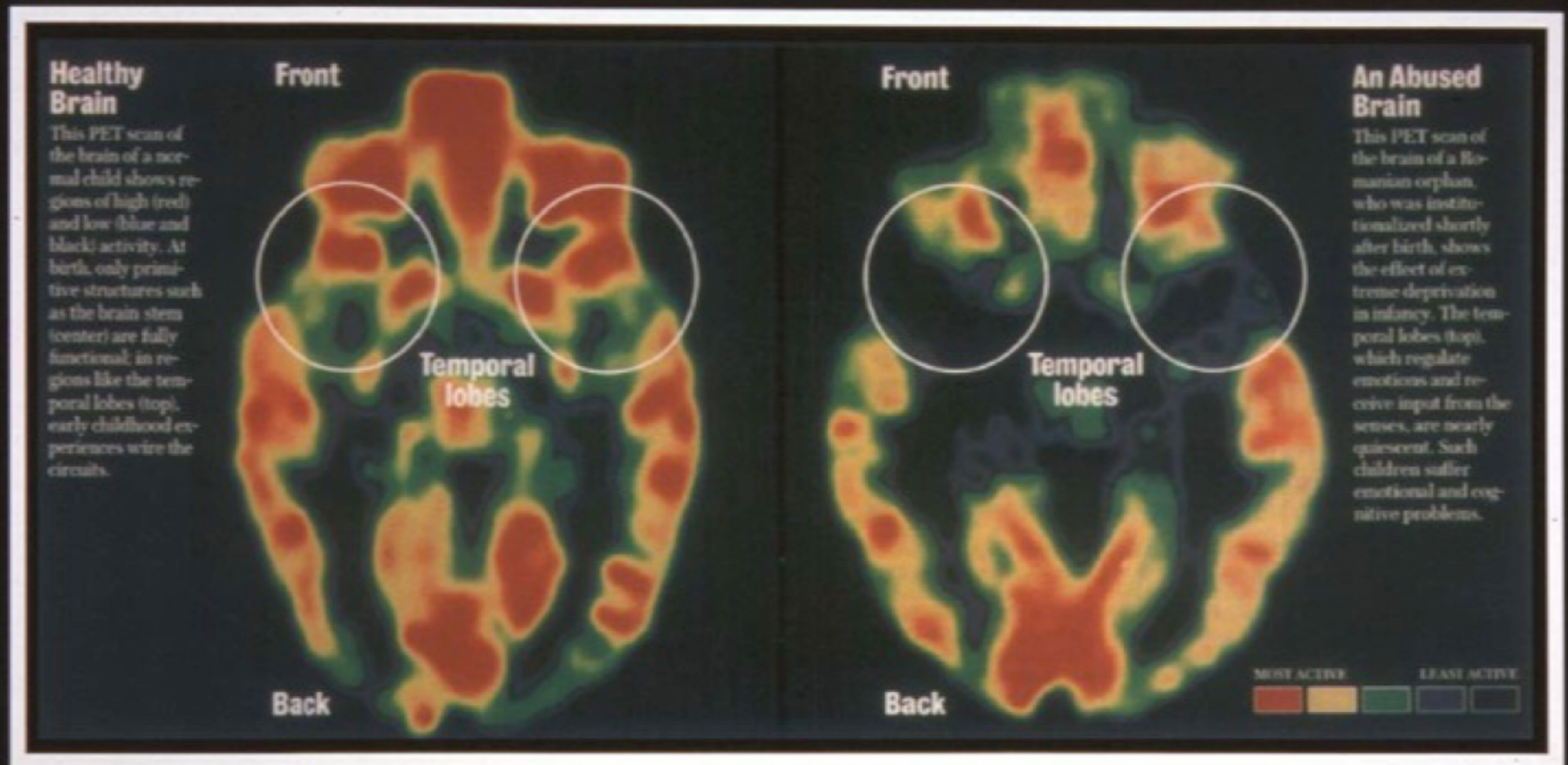- Individual Characteristics- Fred Palmer will present

Case Study AE vs. ACE

Tad   Tsarmina

Brain Images : The ACE Study

Healthy Brain — Front — Temporal lobes — Back

An Abused Brain — Front — Temporal lobes — Back

the CANDLE study

http://www.candlestudy.org

http://www.uthsc.edu/

http://www.theurbanchildinstitute.org

Adverse Experiences Can Last a Lifetime

Conception ➝ **Death**

Adverse Childhood Experiences

Disrupted Neurodevelopment

Social, Emotional and Cognitive Impairment

Adoption of Health-Risk Behaviors

Disease, Disability, & Social Problems

Early Death

Mechanisms by Which Adverse Childhood Experiences Influence health and Well-Being Throughout the Lifespan

Pergamon

Child Abuse & Neglect

Intimate partner violence and child maltreatment: Understanding intra- and intergenerational connections☆

Lynette M. Renner[a], Kristen Shook Slack[b,*]

[a] University of Missouri-Columbia, School of Social Work, Columbia, MO, USA
[b] University of Wisconsin, Madison, Institute for Research on Poverty, Madison, School of Social Work, 1350 University Avenue, Madison, WI 53706, USA

- What role or affect does adverse experiences of the mother have on factors that affect socio emotional and physical health in early childhood?

Risk Factors for ACE

- Children younger than 4 years of age

- Special needs that may increase caregiver burden (e.g., disabilities, mental retardation, mental health issues, and chronic physical illnesses)

- Parents' lack of understanding of children's needs, child development and parenting skills

- Parents' history of child maltreatment in family of origin

Risk Factors for ACE

- Substance abuse and/or mental health issues including depression in the family

- Parental characteristics such as young age, low education, single parenthood, large number of dependent children, and low income

- Nonbiological, transient caregivers in the home (e.g., mother's male partner)

- Parental thoughts and emotions that tend to support or justify maltreatment behaviors

Adverse Child Events (ACE) Relevance for SE and Physical Health in CANDLE

ACE

Childhood
Physical Abuse by parents/peers
Sexual Abuse
Witnessing family violence

Maternal:

Socio-Emotional
Development
Depression, Anxiety, Anger
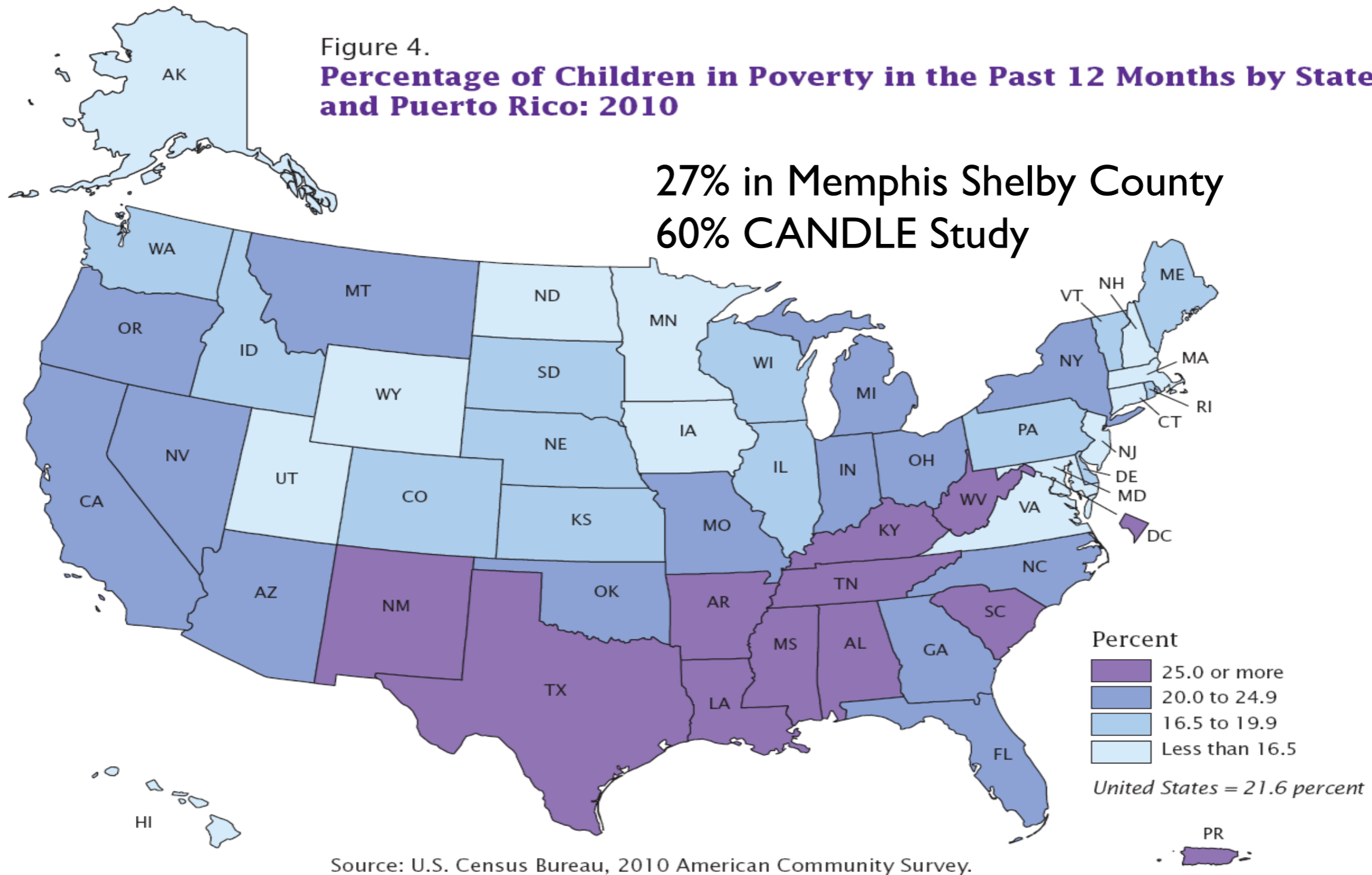Physical symptoms
Obesity
Chronic Disease

CANDLE Child:

Socio-Emotional Development
Depression, Anxiety, Anger
Physical symptoms
Obesity
Chronic Disease

Springer et al *Child Abuse & Neglect 31 (2007) 517–530)* ;Gonzelaz et al J of Psych Res 46 : 1475 2012; Midei, Obesity Reviews 12 159, 2011; Kvalevaag,Peds 131 463 2013; Kahn et al Arch Ped Adolesc Med 158 721, 2004

Figure 4.
Percentage of Children in Poverty in the Past 12 Months by State and Puerto Rico: 2010

27% in Memphis Shelby County
60% CANDLE Study

Percent
- 25.0 or more
- 20.0 to 24.9
- 16.5 to 19.9
- Less than 16.5

United States = 21.6 percent

Source: U.S. Census Bureau, 2010 American Community Survey.

the CANDLE study
http://www.candlestudy.org

http://www.uthsc.edu/   http://www.theurbanchildinstitute.org

% of Children with Emotional or Behavior Problems Reported by Parents

	US 2010 Census[1] 4-7 years,			CANDLE[2] 1-2 years
	Serious	Minor	Total	
Total in US	4.1	14.2	18.3	23.9
Poverty Level				
Below 200%	16	36.3	52.3	33.5
200% and above	4.6	14.6	19.2	12
Race				
Black	6.7	16.4	23.1	29.9
White	6.1	18.6	24.7	10.5
Family Structure				
Two parents	4.4	13.8	18.2	17.6
Mother only	9.6	21.0	30.6	31.7

[1]Child has difficulties in one or more the following areas: emotions, concentration, behavior or being able to get along with other people?

[1]Briief Infant Toddler Socio-Emotional Assessment: Possible Problem, Average 1 & 2 yr

THE URBAN CHILD INSTITUTE

Study Characteristics

The ACE[1] Study

- 17,000 middle-class adults
- 80% white, 10% black, and 10% Asian
- Average age 57 years
- 26% <= hs, 74% > hs
- Kaiser Permanente participants

[1]Adverse Child Events

CANDLE Study

- 1425 mother-child dyads
- 32% white, 68% black, and
- Average age of mother at time of delivery: 26 years
- 60% <= hs, 40%> hs
- 60% TennCare Insurance

the CANDLE study

Adverse Events(AE) and Childhood Adverse Events (ACE) in CANDLE

- Family AE and ACE- CANDLE

    - Primary Caregiver (Mother)

Maternal Adverse Events (AE)- Prevalence- CANDLE

3rd Trimester Questionnaires:

Traumatic Life Events (3rd Trimester)

- 20 Events possible
  - Whole life (AE) -16 questions
  - Childhood (ACE)-4 questions

    (44%- reported yes to ACE)
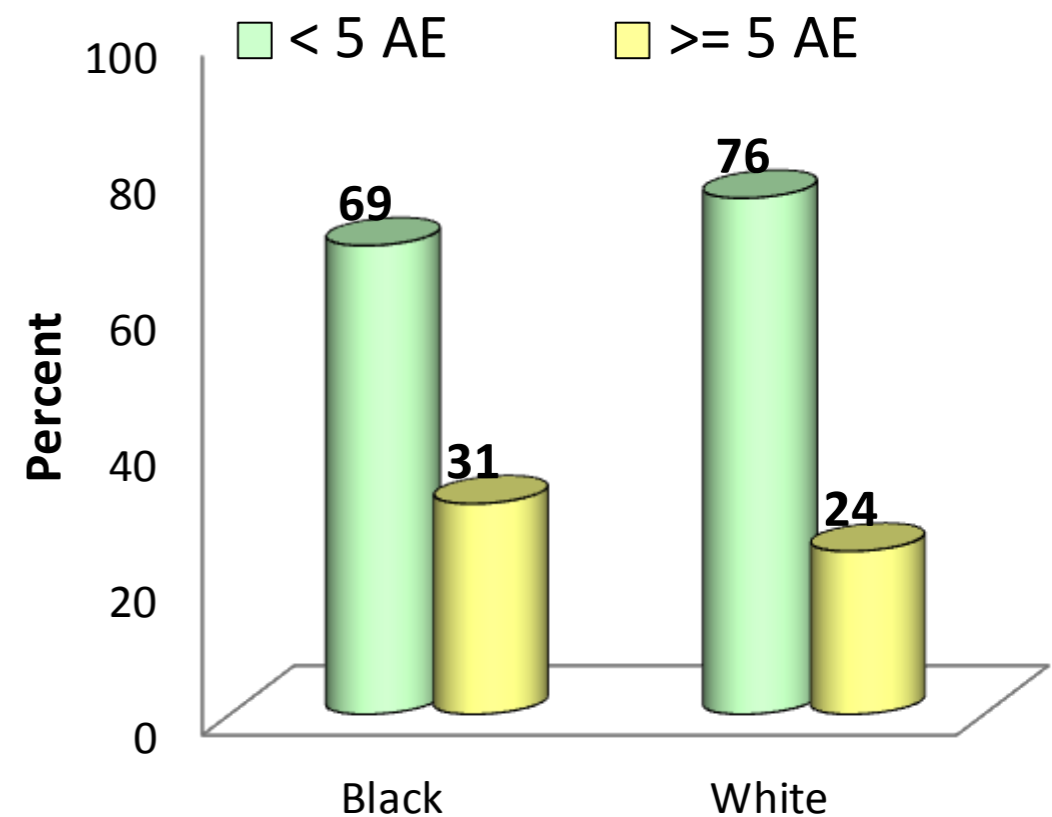
Maternal Adverse Events (AE)- Prevalence

3rd Trimester Questionnaire: Conflict Tactics Scale

Psychological Abuse (insulted, swore, yelled)- Black- 69%, White- 65%

Negotiation with Partner: - Black-94%, White- 99%
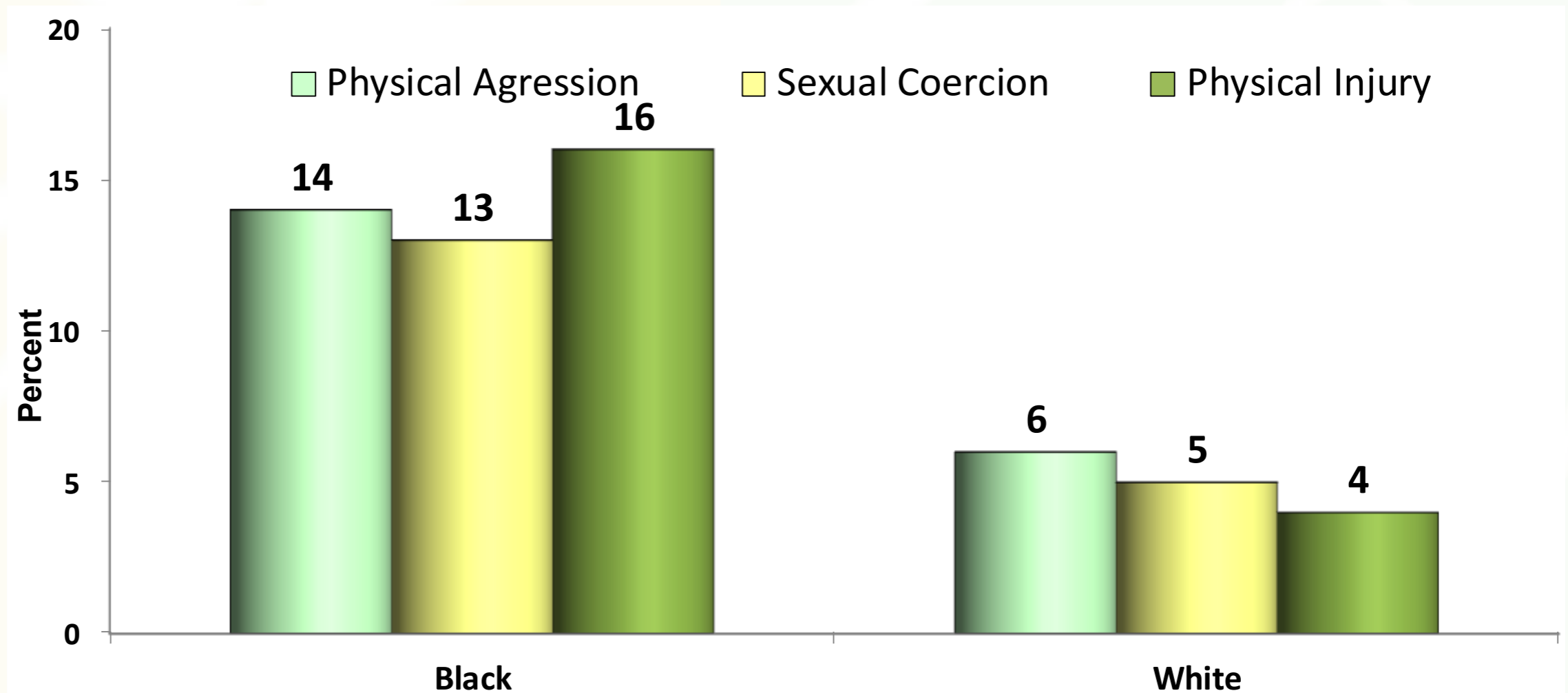
Prevalence of Adverse Experiences

Characteristic	Prevalence (%)		
	ACE	CANDLE	
		Black	White
Abuse (child)			
Psychological	11	31	16
Physical	28	7	6
Sexual	22	17	13
<u>Neglect</u>			
Emotional	15	-	-
Physical	10	-	-

Source for CANDLE: Traumatic Life Event Questionnaire; and Conflict Tactics Scale

Prevalence of Adverse Experiences

Characteristic	Prevalence (%)		
	AE	CANDLE	
		Black	White
Household			
Alcoholism or drug use in House	27	-	23-
Loss of biological parent < 18 yrs	23	-	-
Unexpected loss of a close friend or loved one	-	68	58
Depression or mental illness	17	11-12	7-9
Mother Treated violently	13	29	9
Imprisoned household member	5	37	16

Source for CANDLE: Traumatic Life Event Questionnaire; and Conflict Tactics Scale

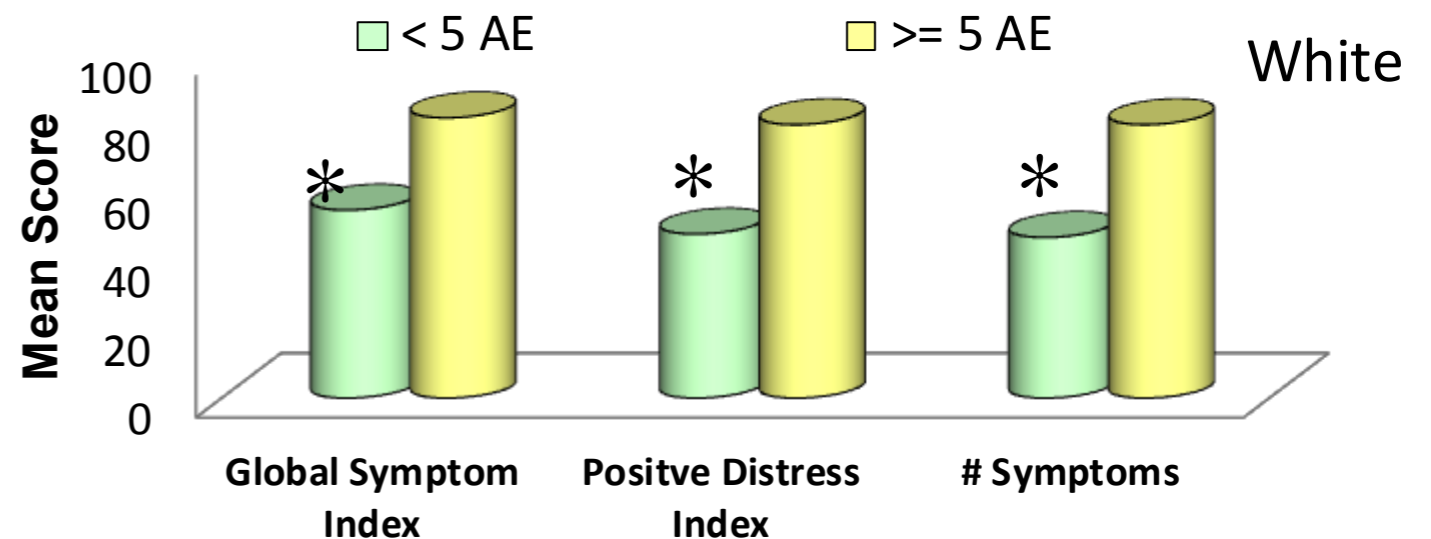# AE and Maternal Characteristics
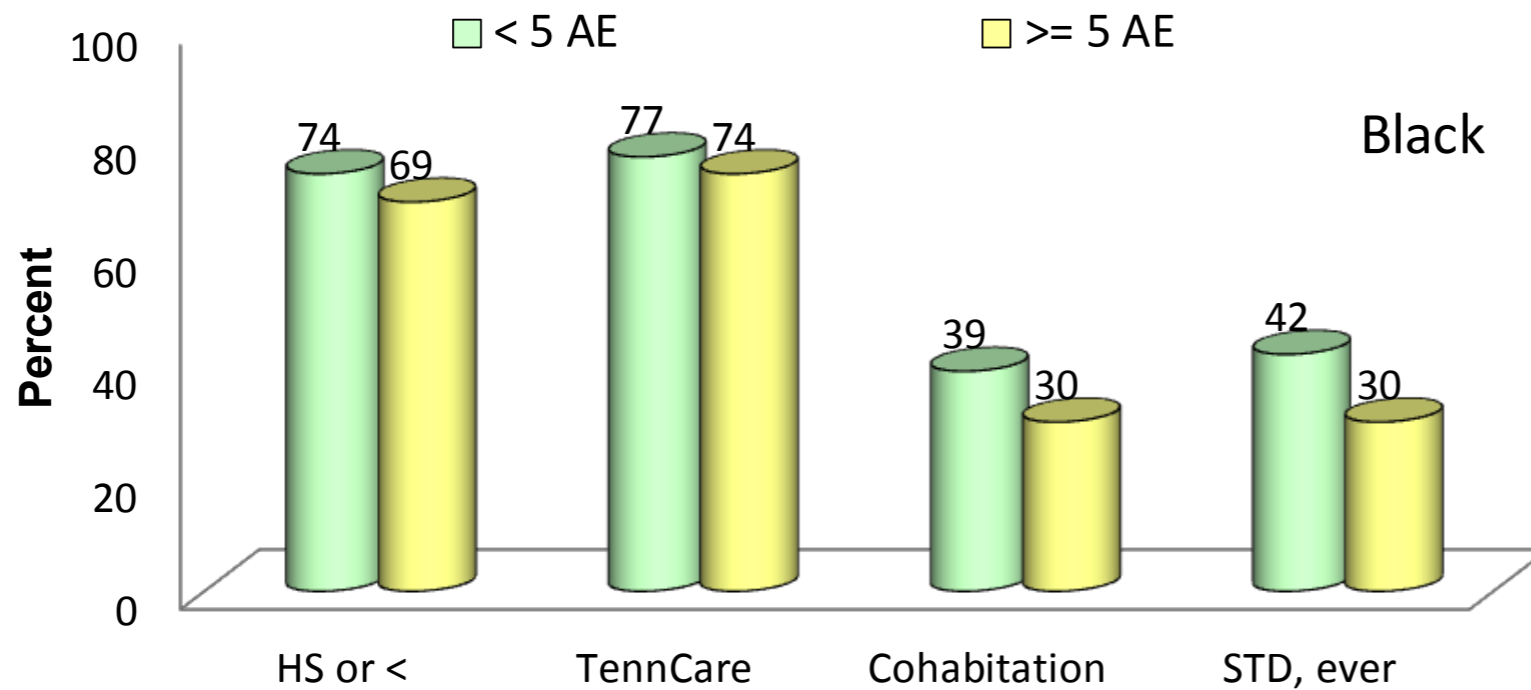
> 5 ACE:
Blacks had younger mothers,

* P< 0.01
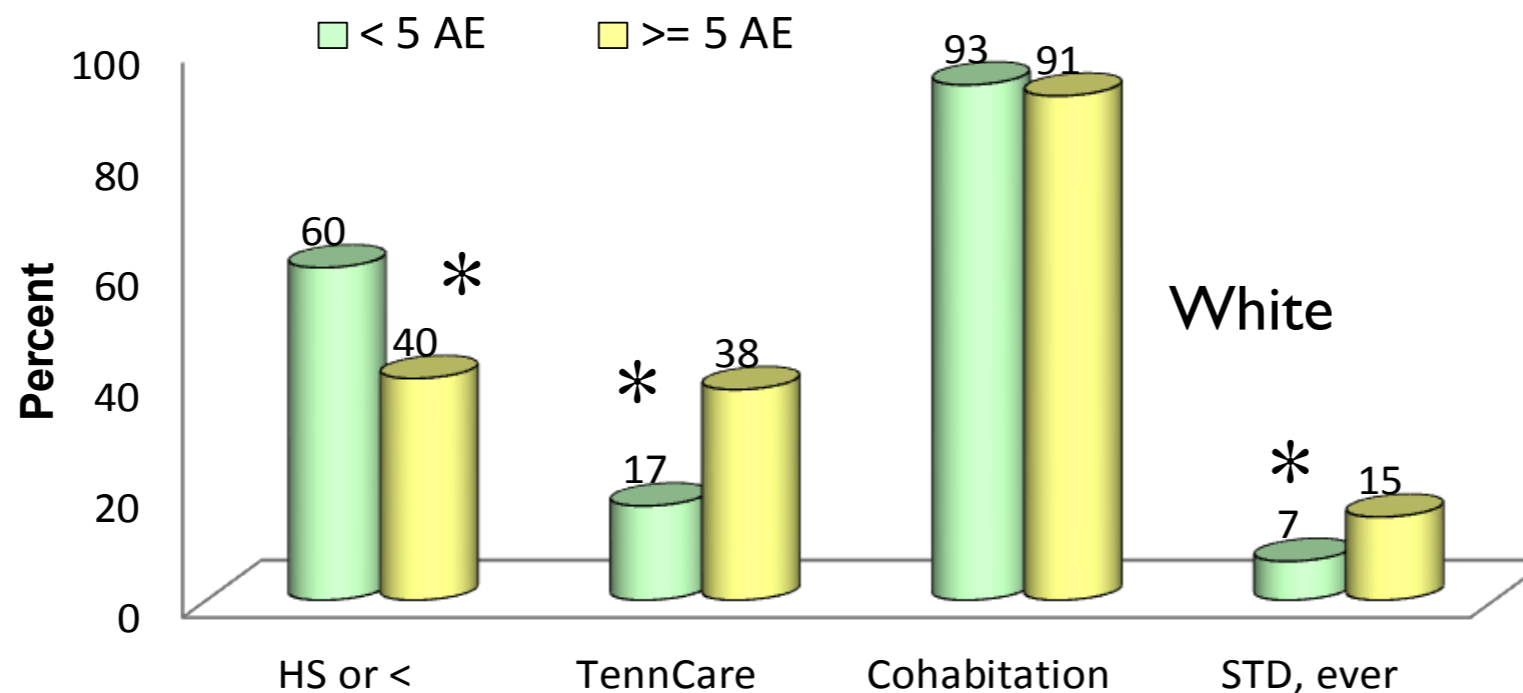
> 5 ACE:
Whites No Difference in mother's age

AE and Maternal Functioning- CANDLE

Brief Symptom Index -3rd Trimester

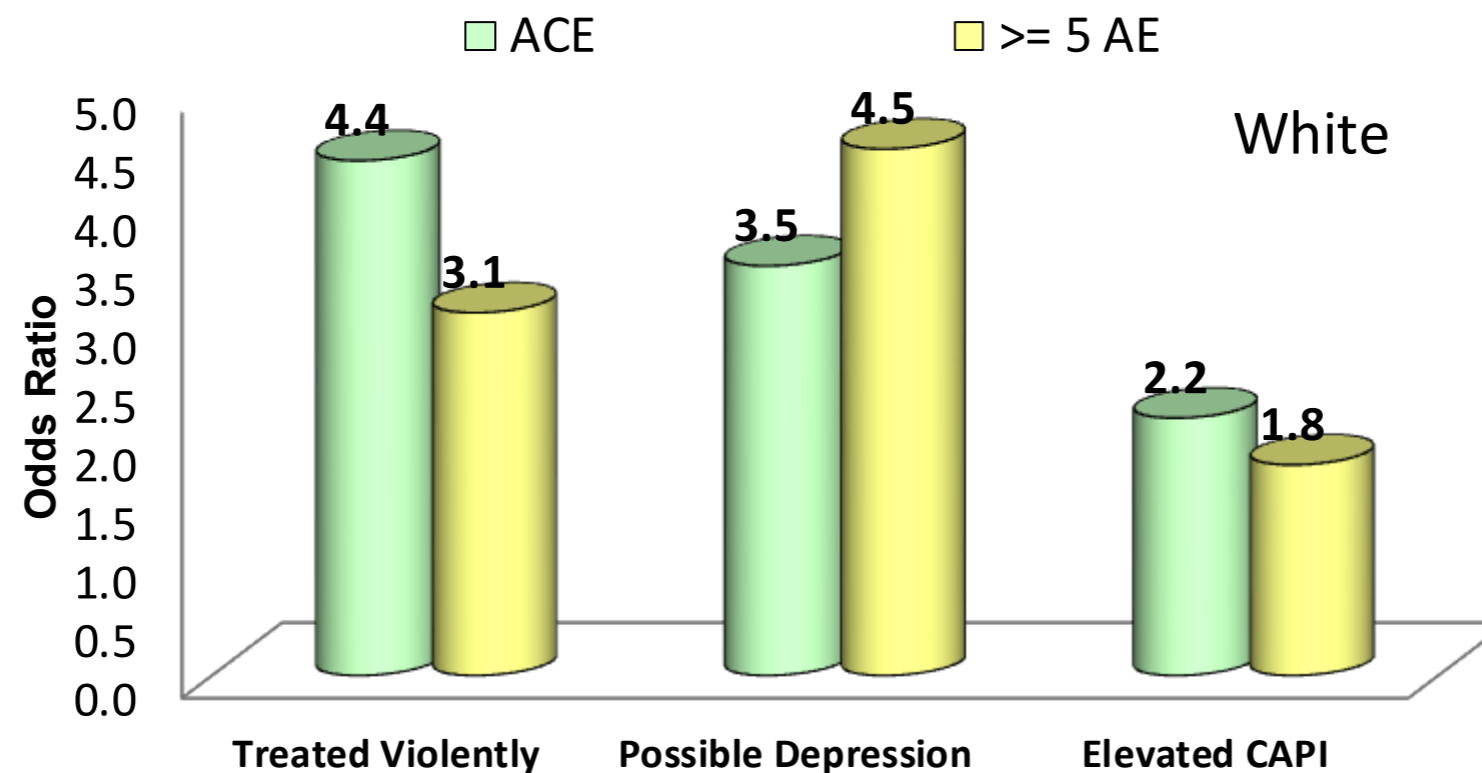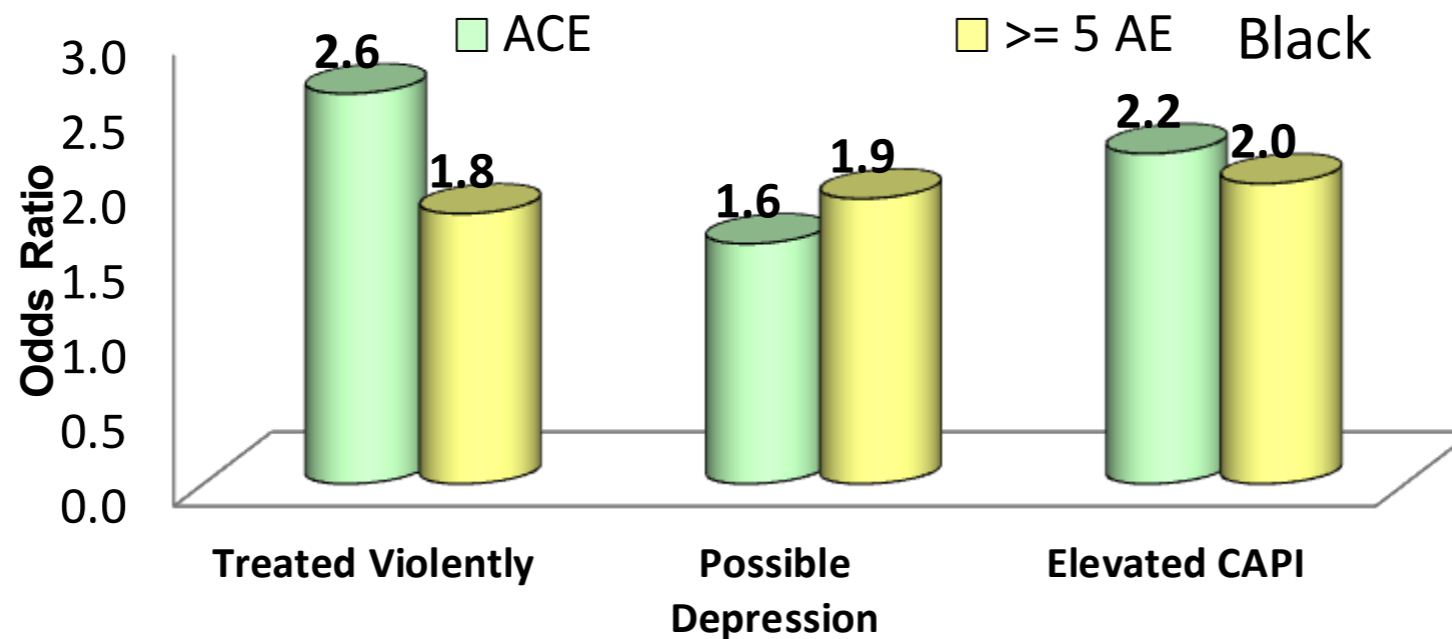

Black

$*$ P< 0.0001

White
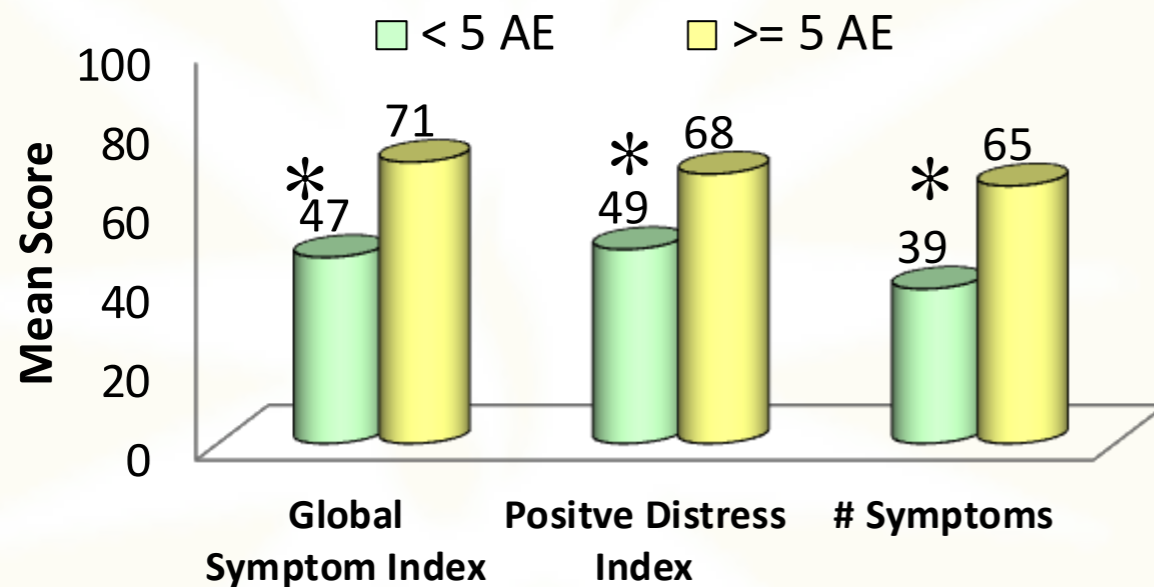
- Similar Results Sub scales
  - Hostility
  - Somatization
  - Depression
  - Anxiety
  - Paranoid Ideation
  - Psychoticism

BSI- Brief Symptom Inventory; Derogatis & Melisaratos, 1983

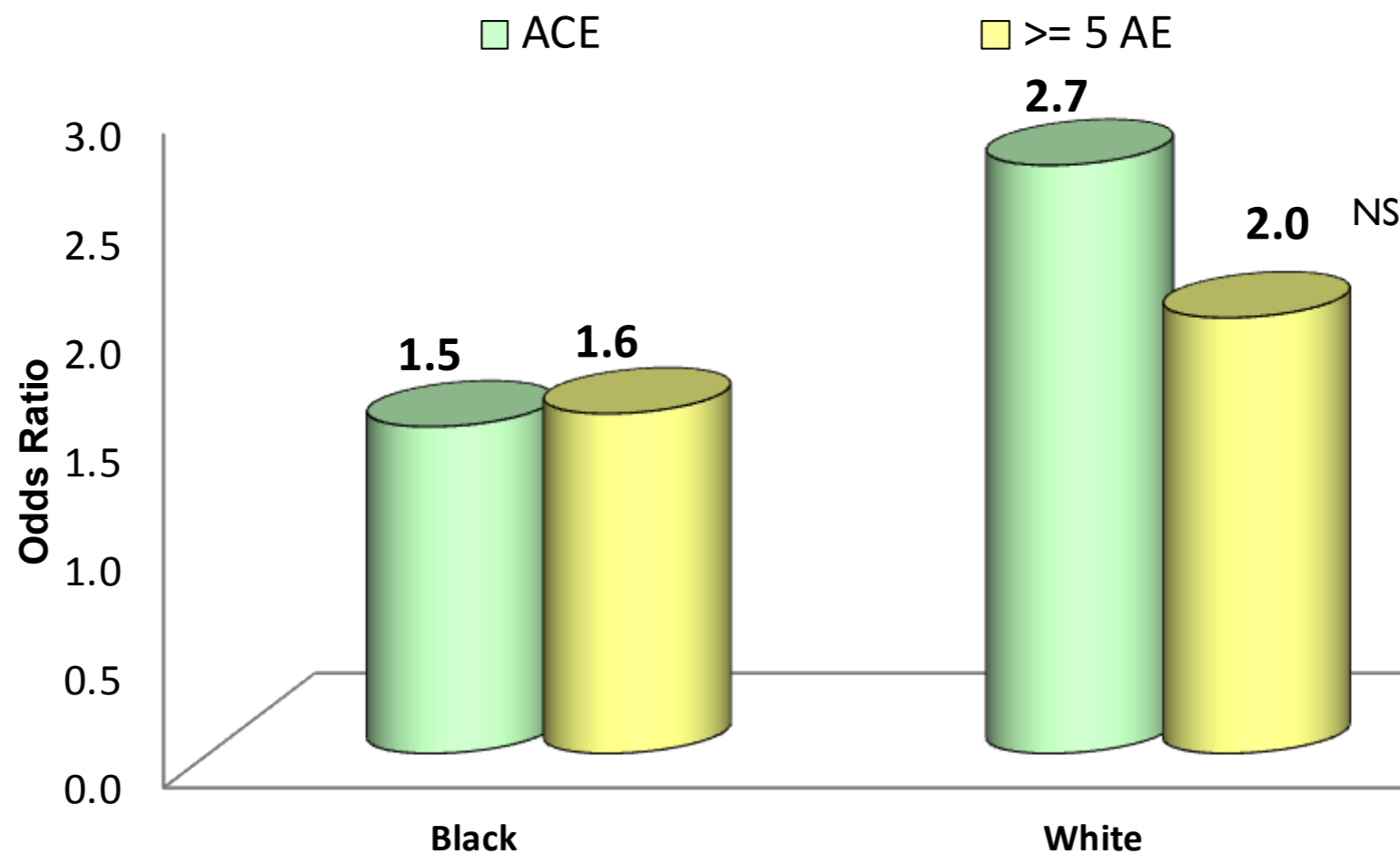# Odds Ratio for Maternal Treatment or Functioning: ACE or AE
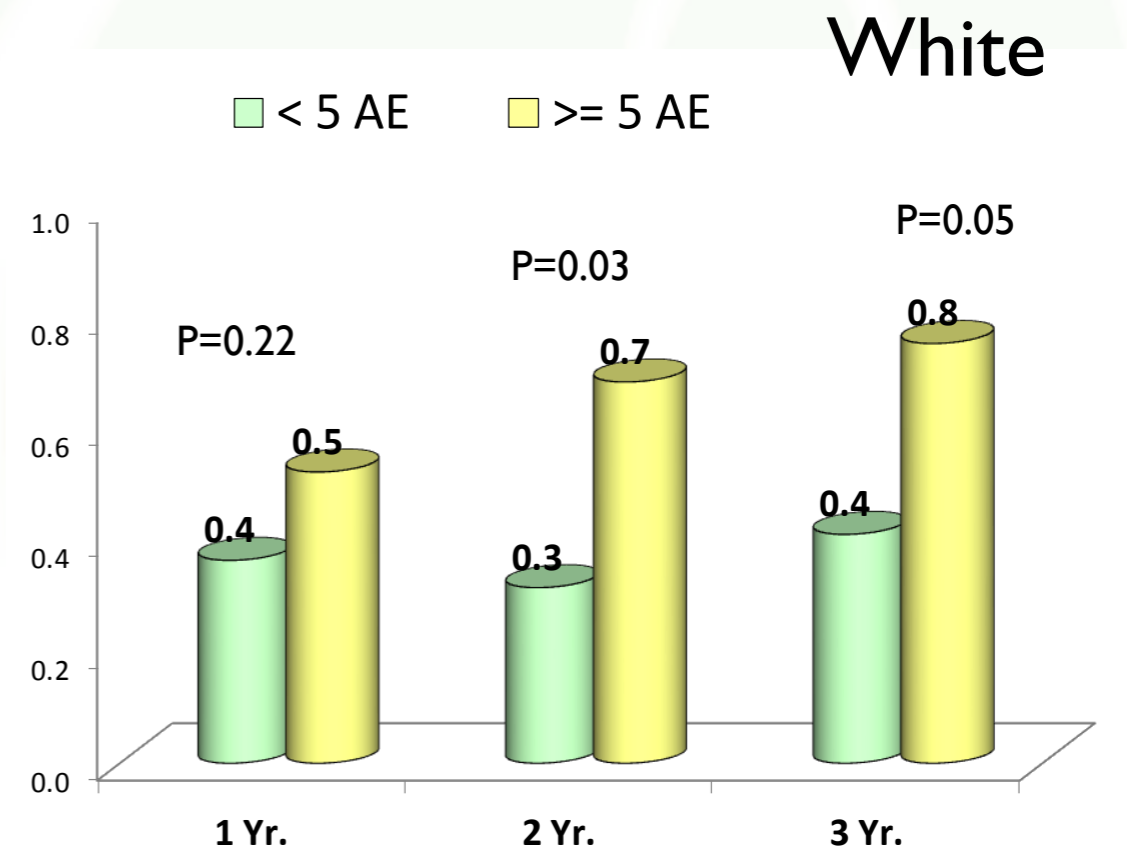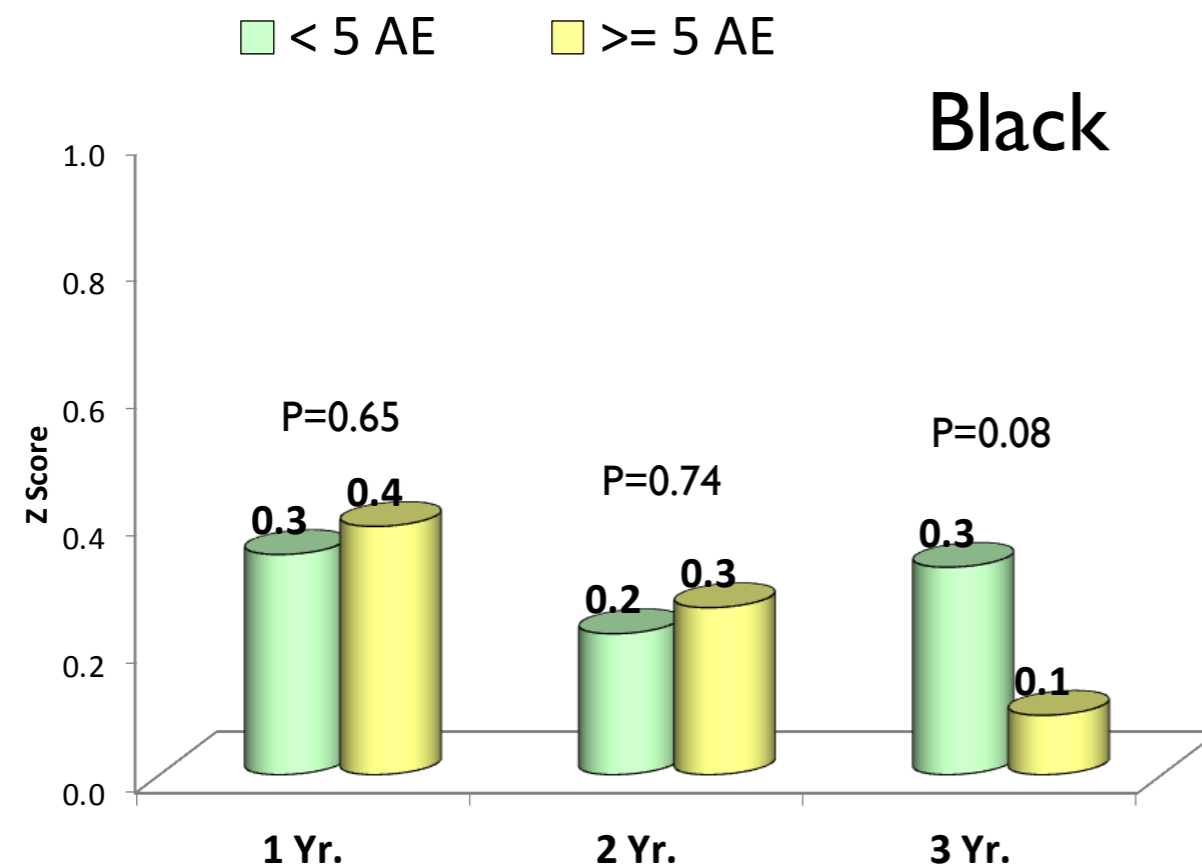
AE or ACE and Maternal Health Indices

- No effect on
  - BMI
  - Blood Pressure

THE URBAN CHILD INSTITUTE

Odds for Maternal Report of SE Problems- CANDLE Child

AE's and CANDLE Child's Weight for Length/Height at 1-3 years
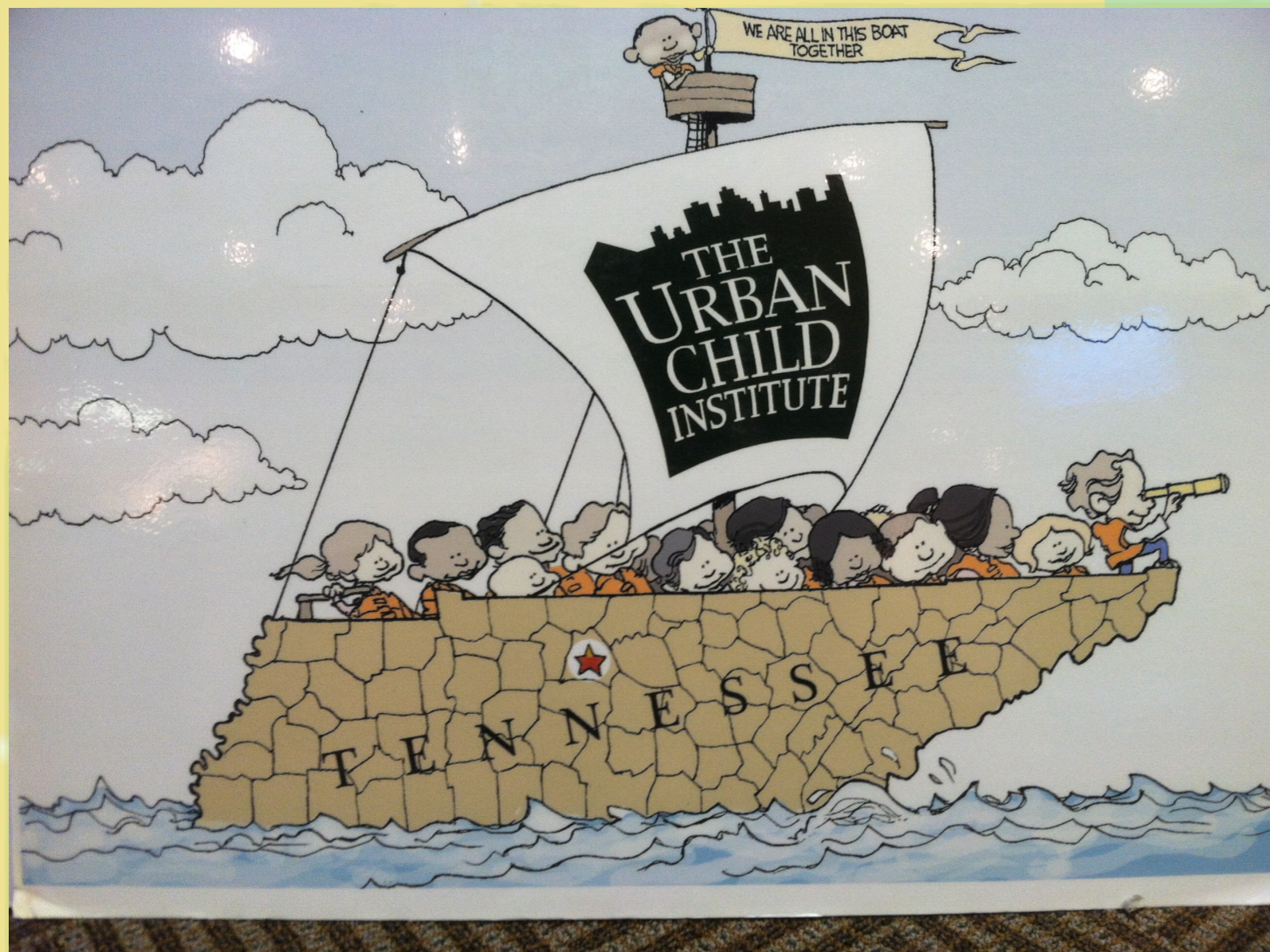
Case Study AE vs. ACE

Tad

Tsarmina

1994-2006

1998-2013

Role of Genetics/Epigenetics and other confounders?

CANDLE Participants:

parents and their children

the CANDLE study

the CANDLE study

- **CANDLE Staff**

  Maureen Sorrells, MPH, Study Manager

  Matt Hood, MS, Research Specialist

- **Emerging Science Coordinator**

  Amy Scheck, MA

- **Data Analysts**

  Thuy Nguyen, MPH

  Angela Moore, MPH, CPH

  Yanhua Qu, PhD

  Caiqin Liu, MD, MS

- **Biostatisticians**

  Mehmet Kocak, PhD

  Quynh Tran, PhD

- **CANDLE Research Assistants**
- **Cognitive Examiners**
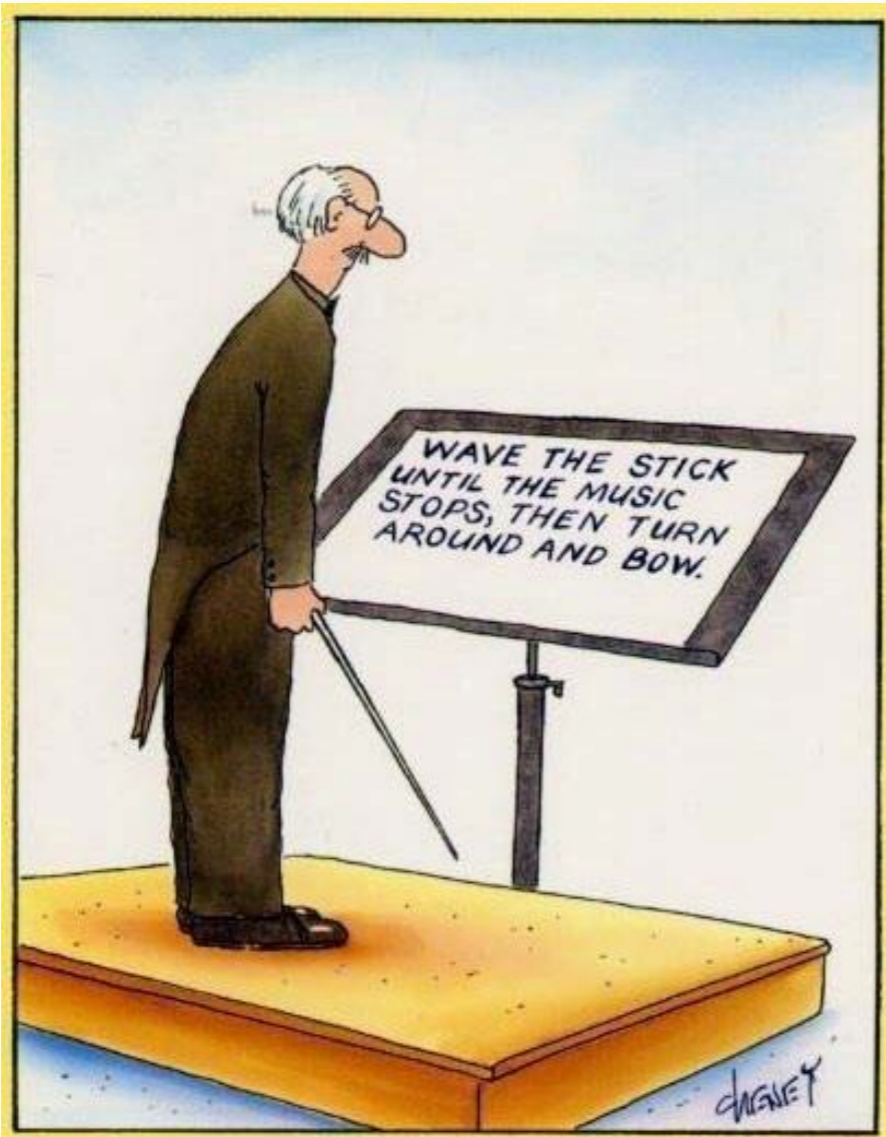
WAVE THE STICK UNTIL THE MUSIC STOPS, THEN TURN AROUND AND BOW.

University of Tennessee Health Science Center at Memphis
Grant Somes (deceased), Ron Adkins (now NIH), Julia Krushkal, Adkins (now NIH), Fred Palmer, Fridtjof Thomas, Jeanie Peeples, Priyanka Jani, Laura Murphy, Carolyn Graff, Pamela Connor, Andy Bush, Risa Ramsey, Owen Phillips, Marion Hare, Anand Kulkarni,
Charles Handorf, Vickie Park, Catherine Wentworth, Phyllis Richey, Karen Johnson, Sunny Anand, Fred Perkins, Mark McMannis,
Rob Williams, Wonsuk Yoo, Liang Hong, Mehmet Kocak,
Gail Beeman, Dennis Black, Roozbeh Rezaie, Andy Papanicolaou, Eszter Völgyi, Carolyn Harraway-Smith, Lauren Benner, Beni Mozhui

University of Memphis
Tom Sutter, Doug Imig, Phyllis Betts, Sunil Mather, Kris Berlin, ShaKema Blackmon, Jeffery Foran, Fawaz Myazek, Wilfried Karmaus

University of Southern Mississippi
Natalie Williams

University of Alabama at Birmingham
Chandrika Piyathilake

Vanderbilt University   **George Washington University**
Kecia Carroll, Tina Hartet,   Uri Colon-Ramos
Amy Non, Phani Veeranki

University of Southern California **Mount Sinai School of Medicine** Pat Levitt, Alexander Bonin   Roslind Wright, MD

Tulane University   **Johns Hopkins School Of Medicine**
Felicia Rabito   Robert Hamilton

Emory   **University California San Francisco**
Alicia Smith,   Nicki Bush PhD
James Schroeder   Kaja LeWinn, PhD

CHILDREN'S FOUNDATION RESEARCH CENTER OF MEMPHIS
at Le Bonheur Children's Medical Center

Genomics & Bioinformatics

Eunice Kennedy Shriver
NICHD
National Institute of Child Health & Human Development

Center for Integrative & Translational Genomics
citg.uthsc.edu

the CANDLE study

THE UNIVERSITY of TENNESSEE HEALTH SCIENCE CENTER
TODAY'S DISCOVERIES, TOMORROW'S HEALTHCARE SOLUTIONS
CLINICAL & TRANSLATIONAL SCIENCE INSTITUTE

URBAN CHILD INSTITUTE