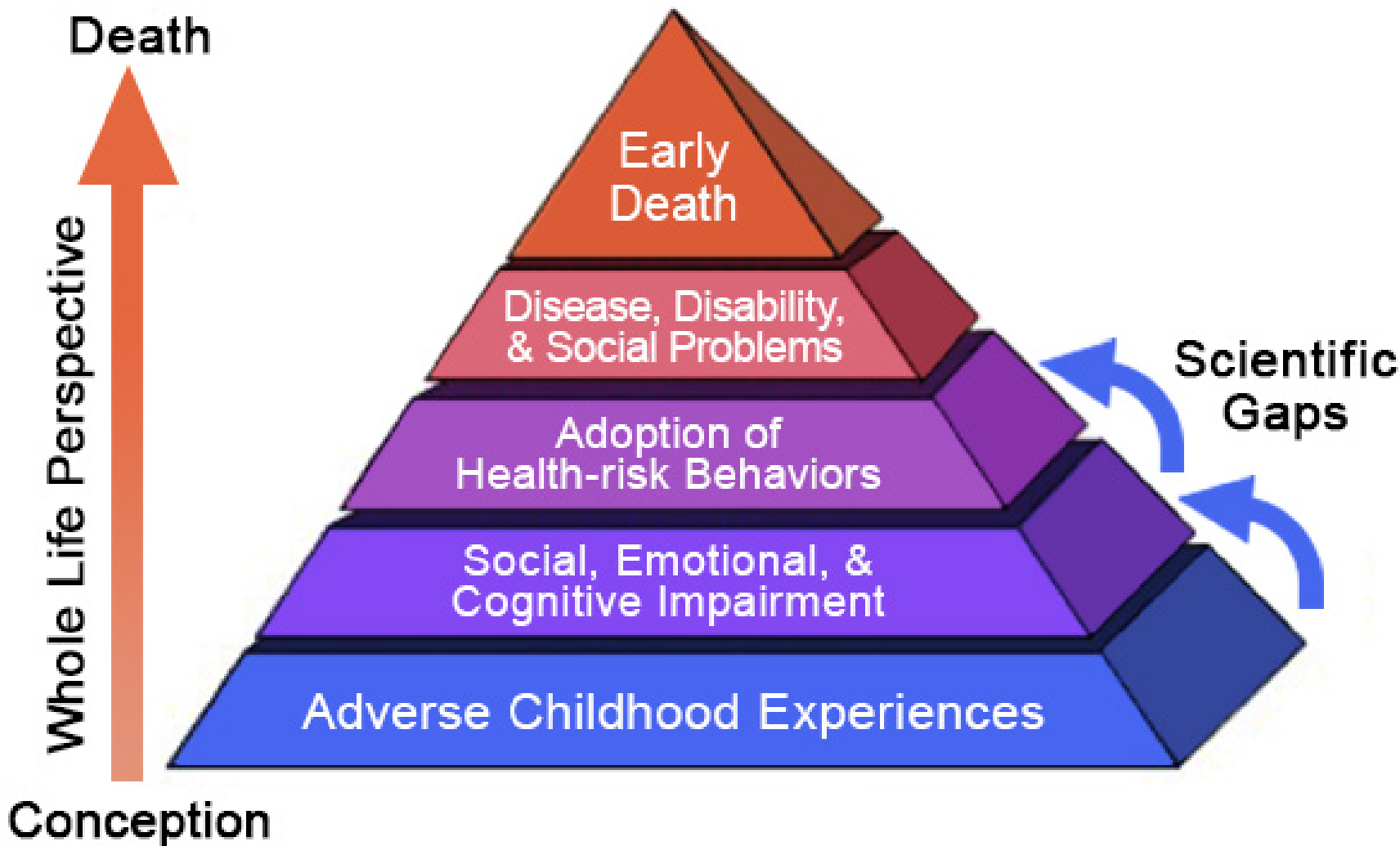

Epigenetic Processes Over Time Among Children With Early Adversity: Implications for Home Visiting Research

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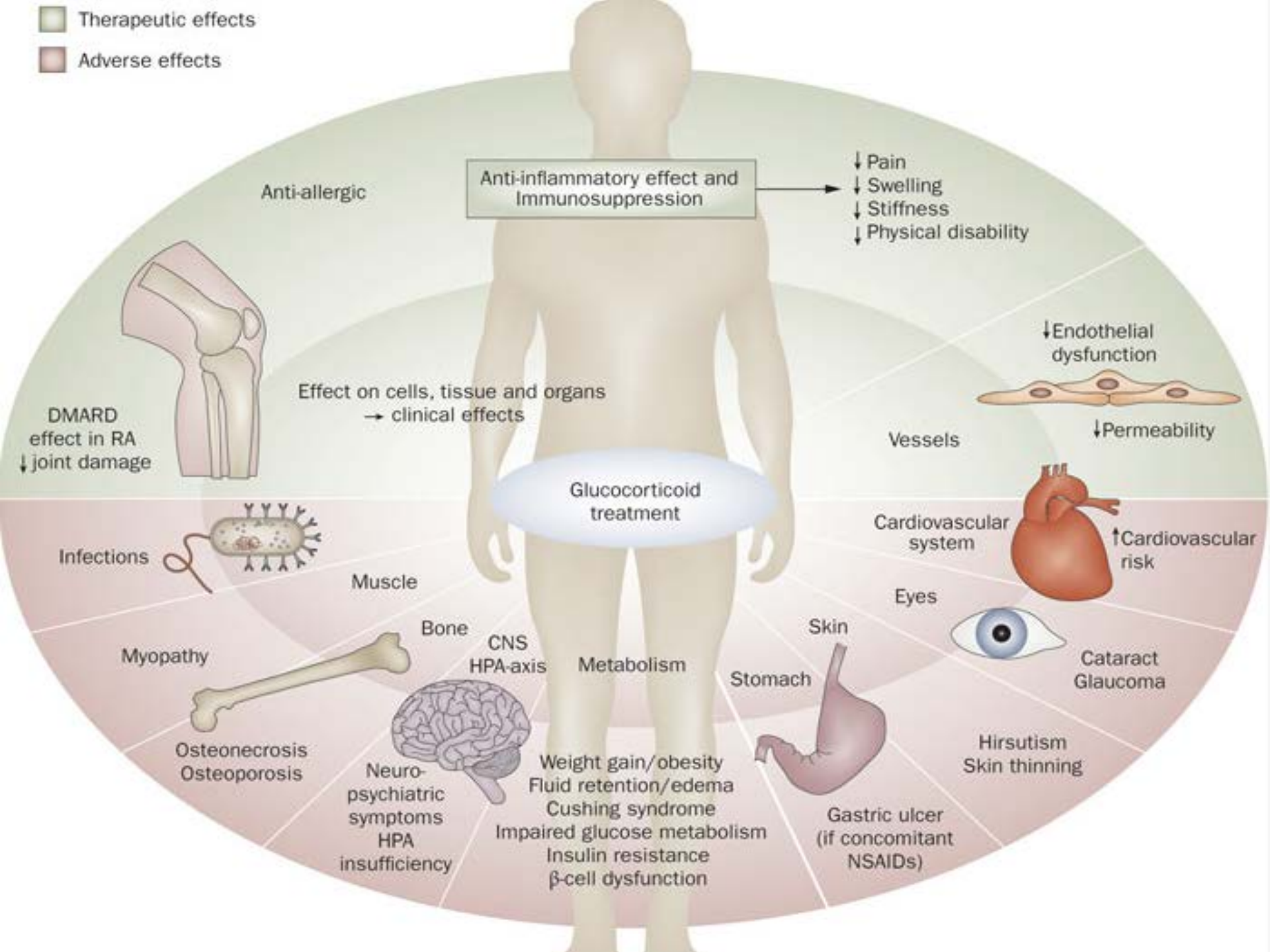




"THEY WERE IDENTICAL TWINS UNTIL JIM JOINED THE ARMY AND JOHN
"JOINED THE PEACE CORPS."

Therapeutic effects

Adverse effects





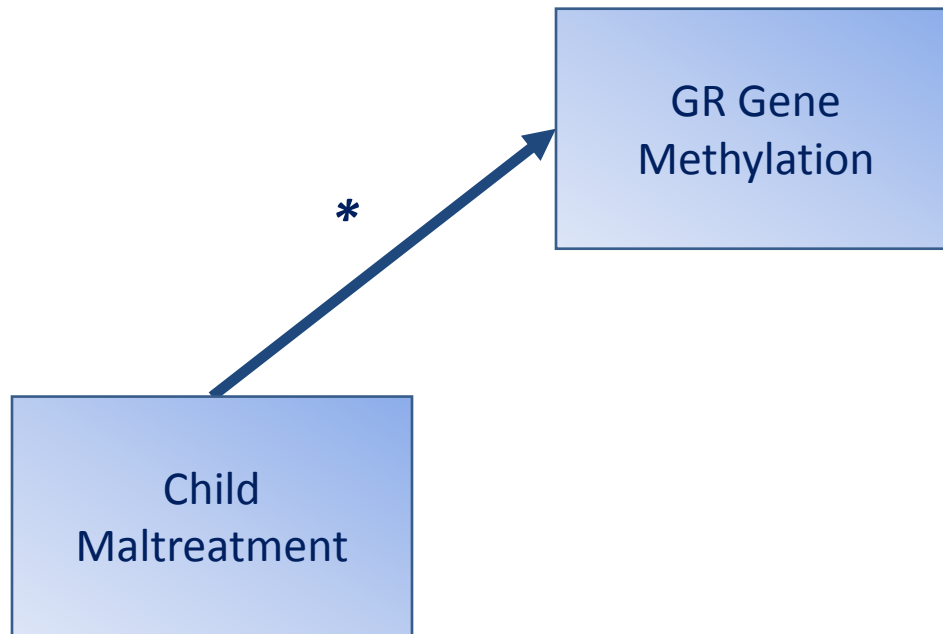
NIMH R01MH083704

- **Impoverished, mixed race families, children aged 3-5**
- **Families studied at home**
- **Maltreated**, N=134
Episode of moderate-severe abuse and/or neglect in last 6 months
- **Non-maltreated**, N=126
Recruited from low income clinic and childcare centers, no RI child protective service record of maltreatment.

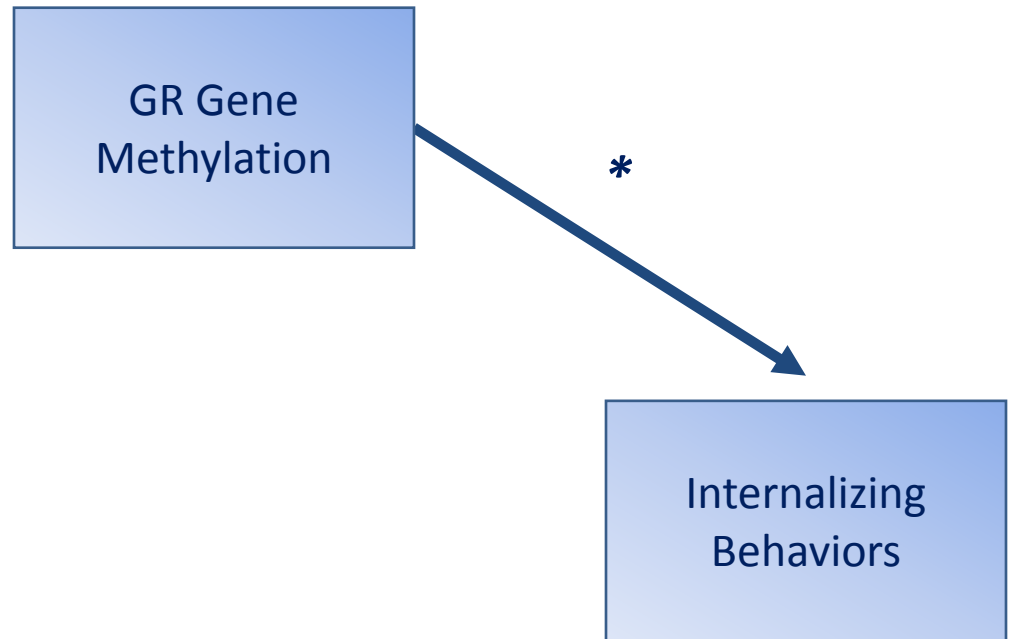
- **Interviews and Questionnaires**
 - Psychiatric symptoms and diagnoses
 - Social support, parenting, environmental enrichment/poverty
- **Additional Adverse Exposures:**
 - Parental loss, parental arrest
 - Food insecurity, clothing, paying bills
 - Moves, homelessness, violence
- **Cortisol and inflammatory proteins**
 - During normal daily routine
 - During challenging/stressful play tasks
- **Saliva DNA**
 - Candidate genes and exome array
 - Gene methylation (*NR3C1*, *FKBP5*, *5HTR2A*)
 - Telomere length
 - Mitochondrial DNA
- **6 Month Follow Up**

DNA Methylation: *NR3C1*

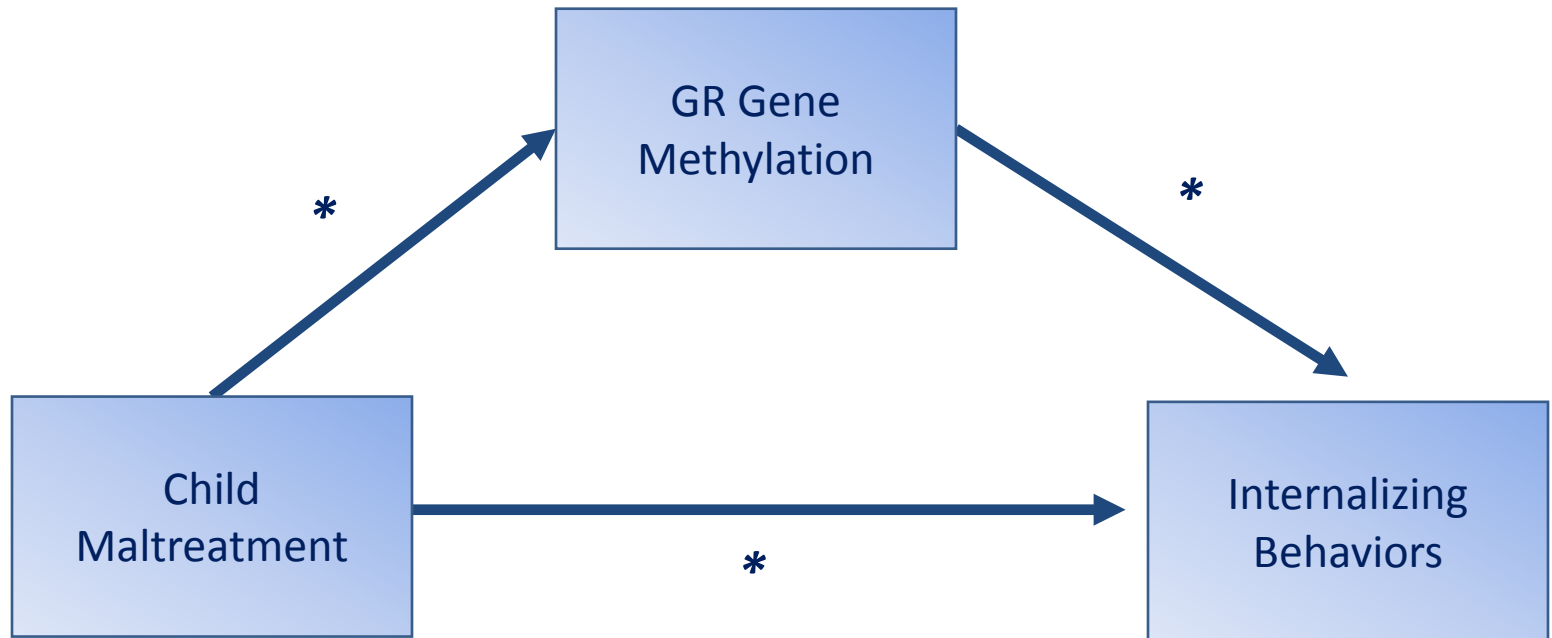
DNA Methylation: *NR3C1*



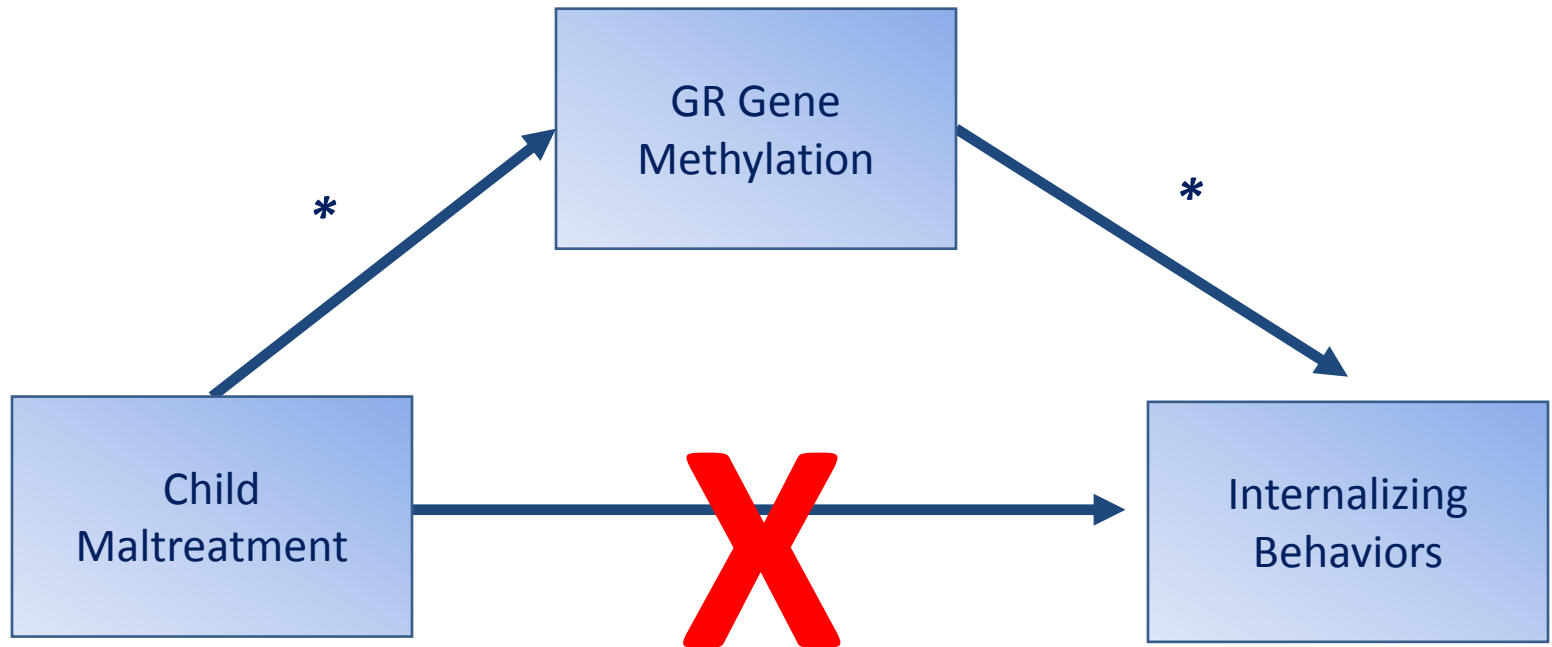
DNA Methylation: *NR3C1*



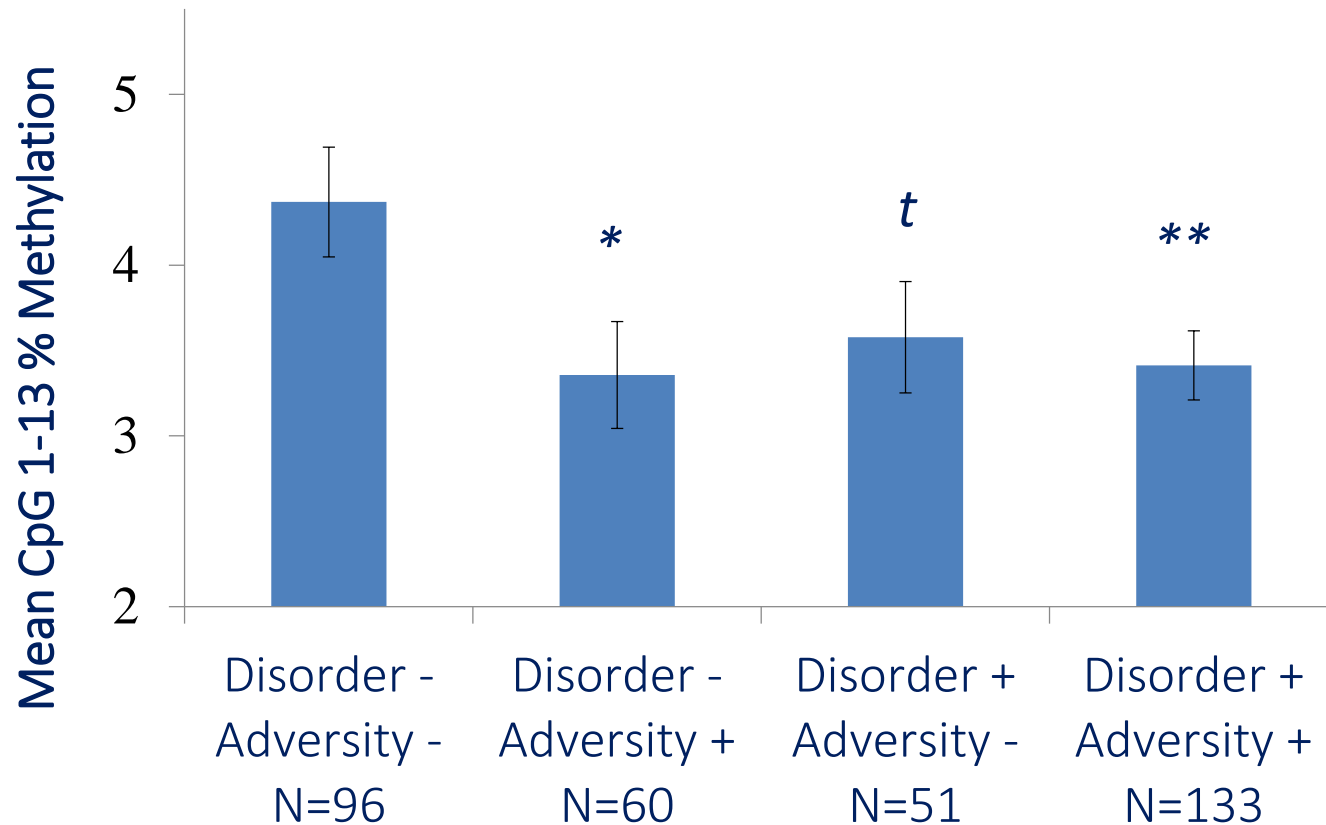
DNA Methylation: *NR3C1*



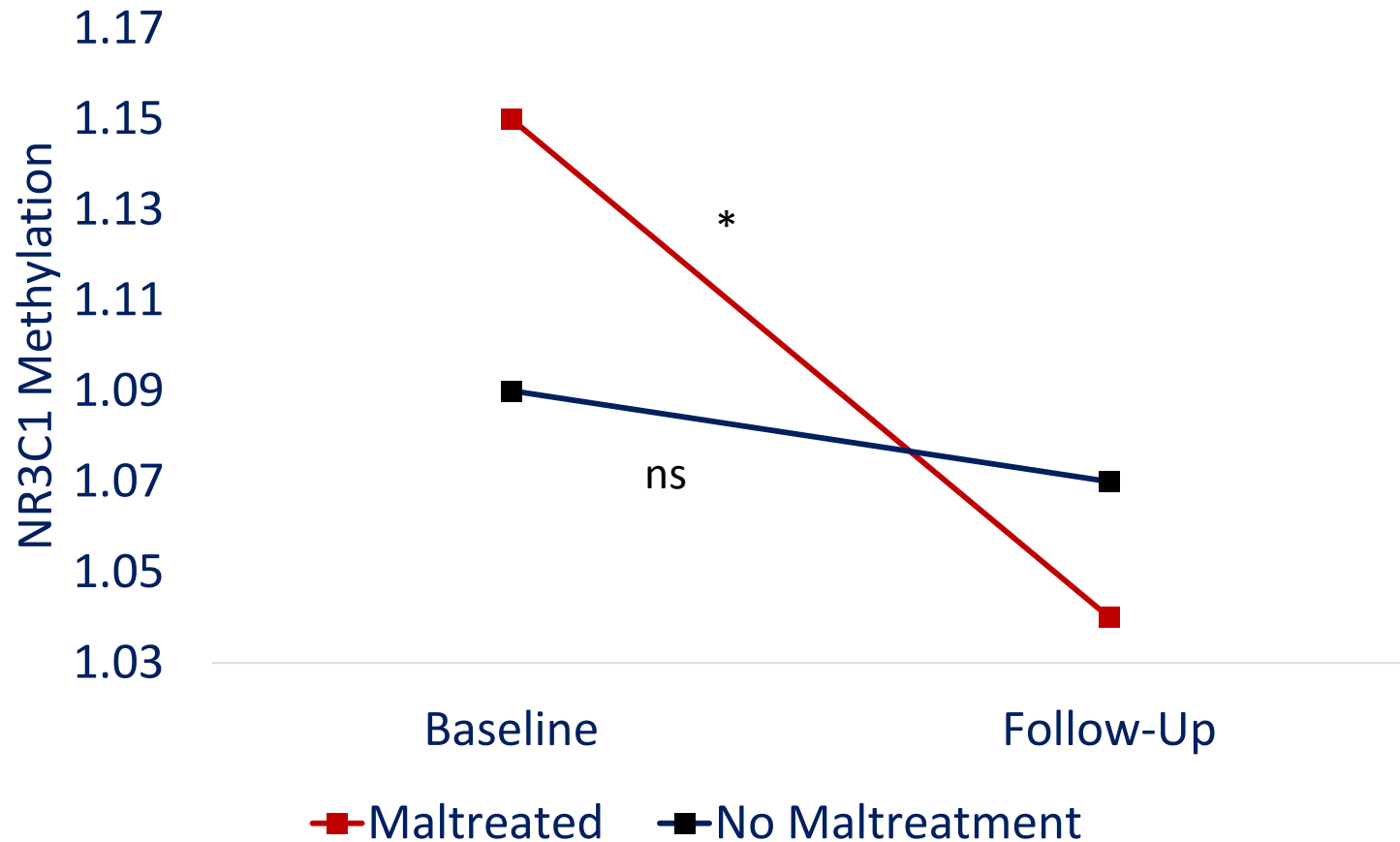
DNA Methylation: *NR3C1*



NR3C1 Methylation: 340 Healthy Adults

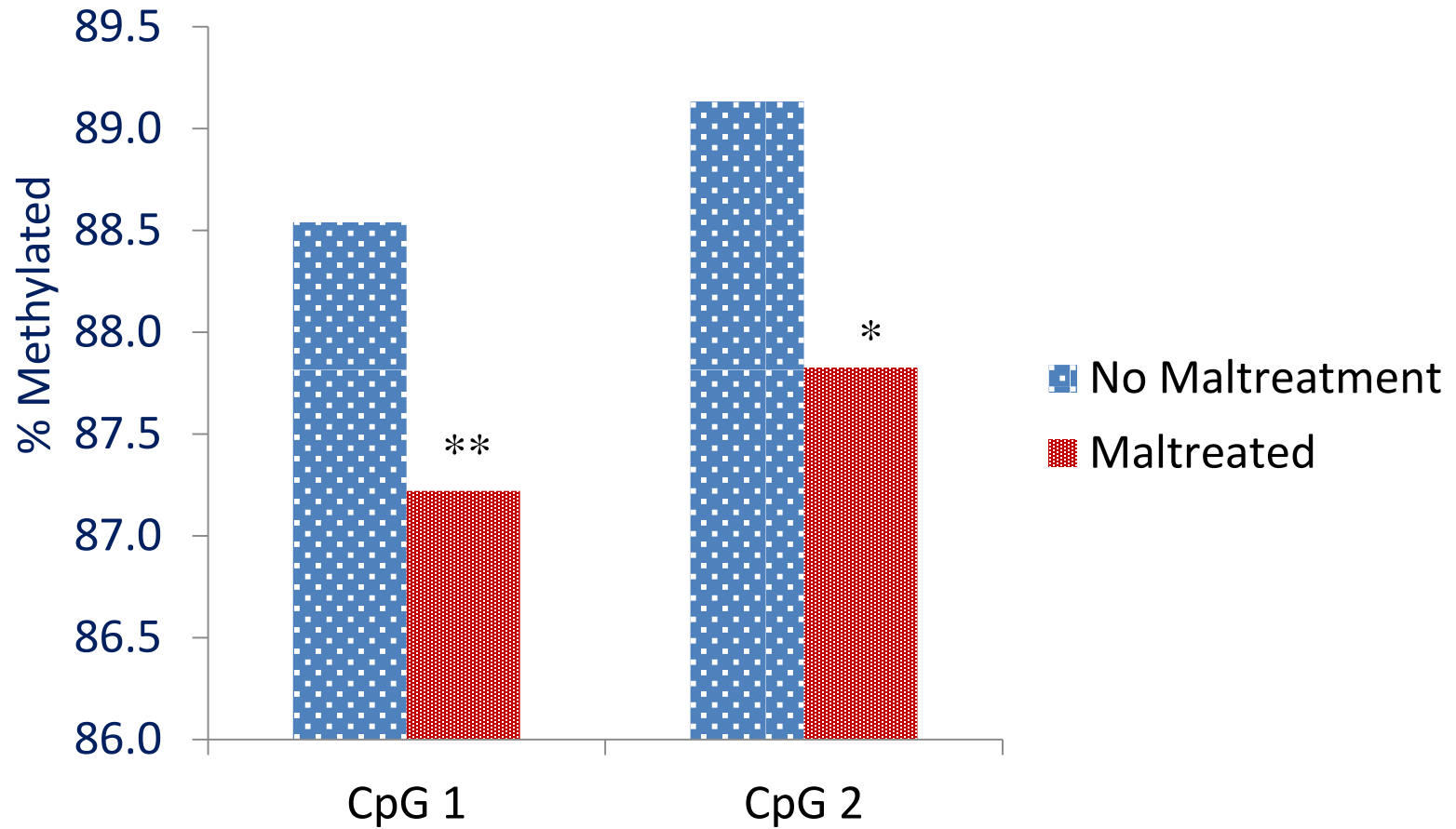


Longitudinal Change *NR3C1* Methylation

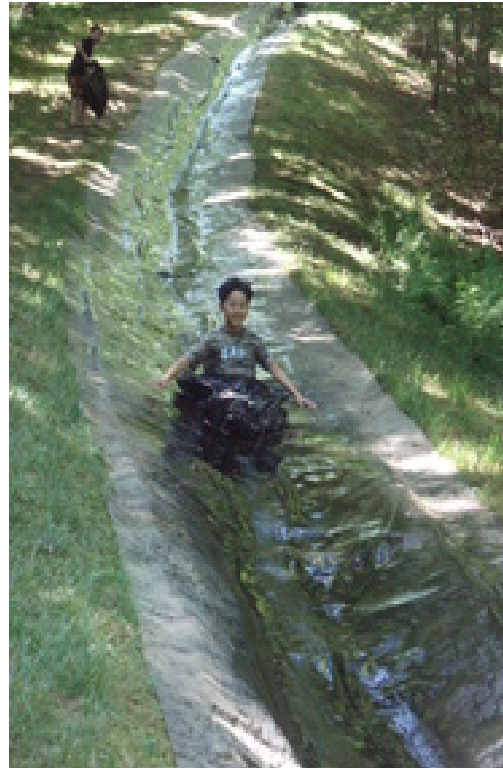


DNA Methylation: *FKBP5*

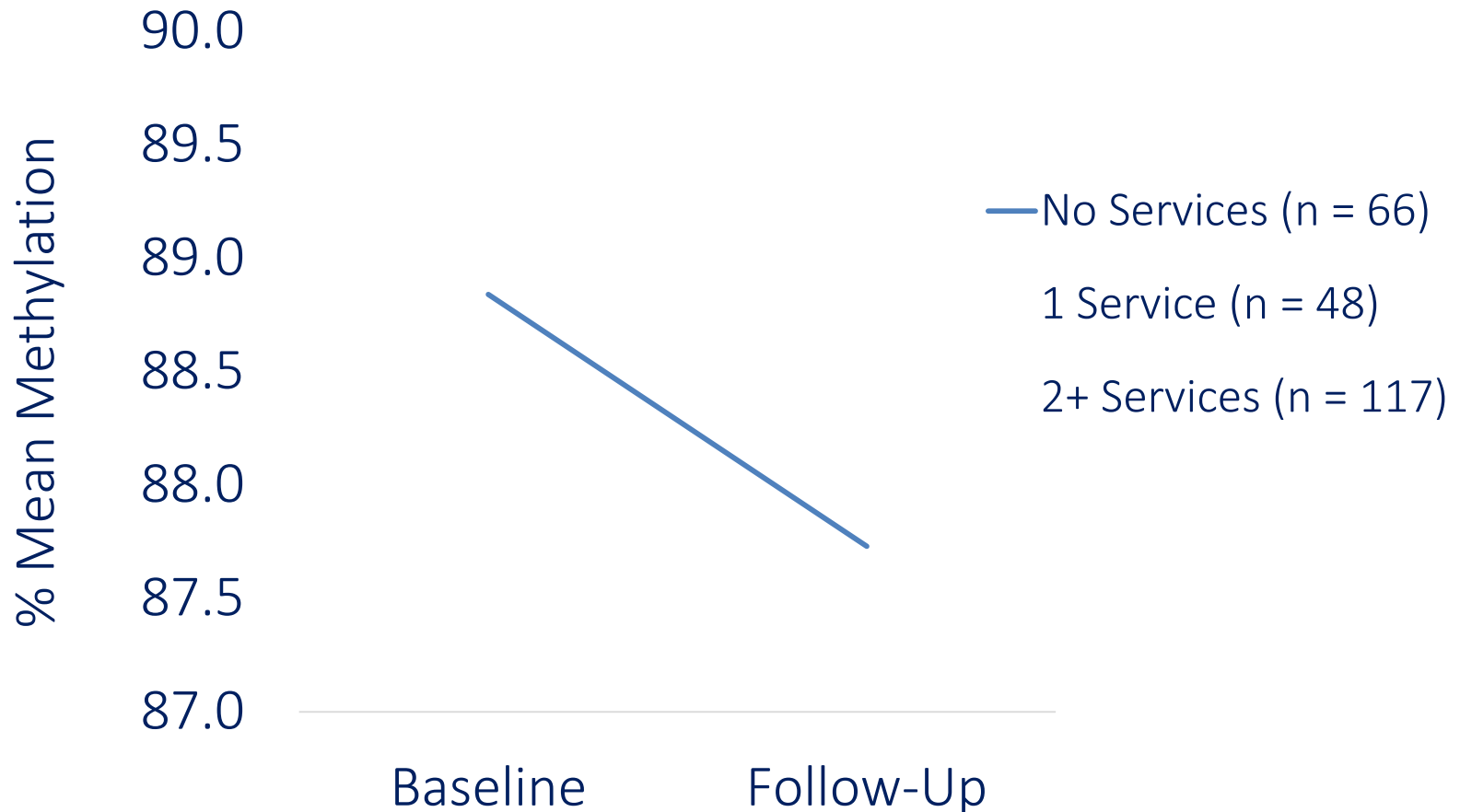
DNA Methylation: *FKBP5*



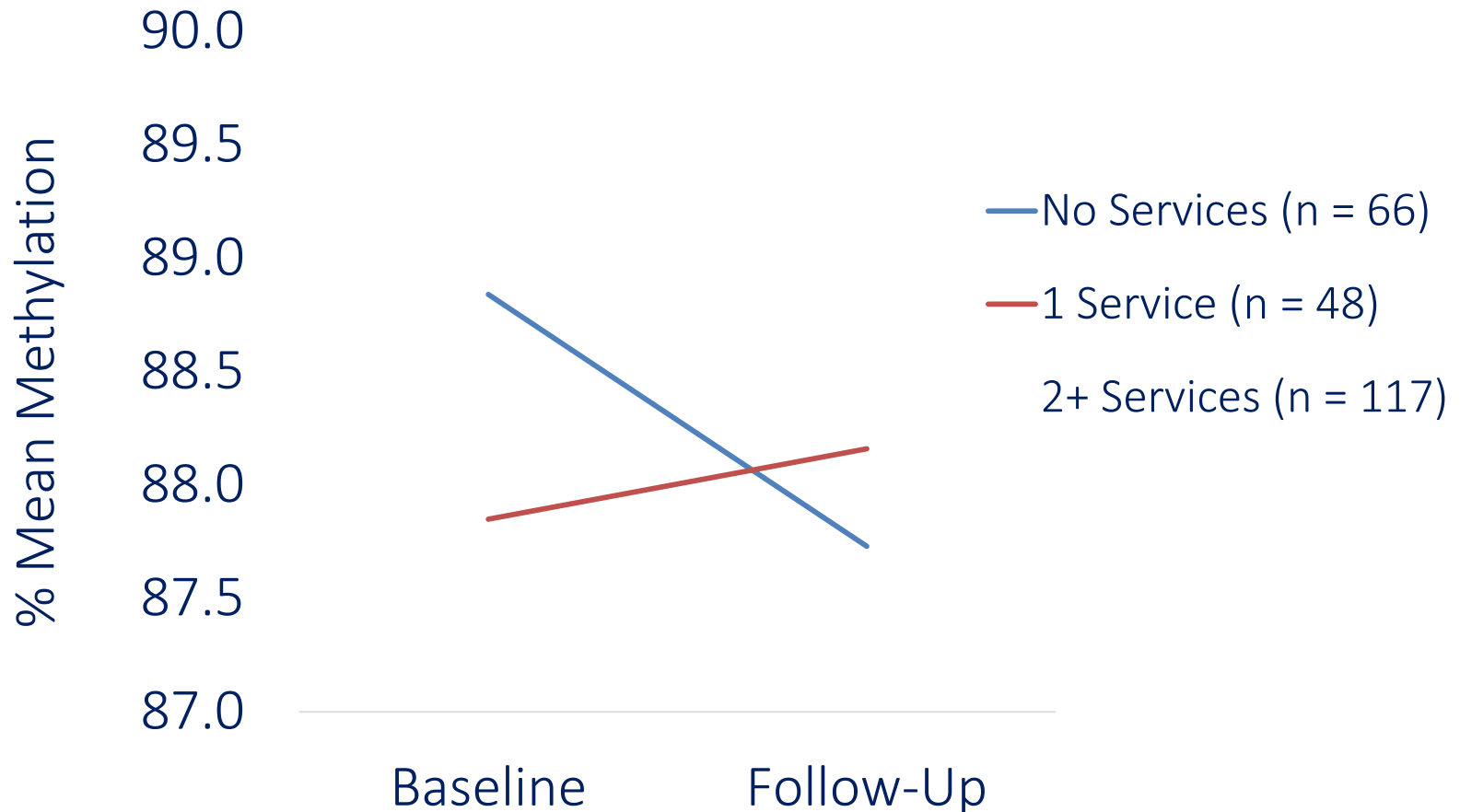
How do we promote resilience???



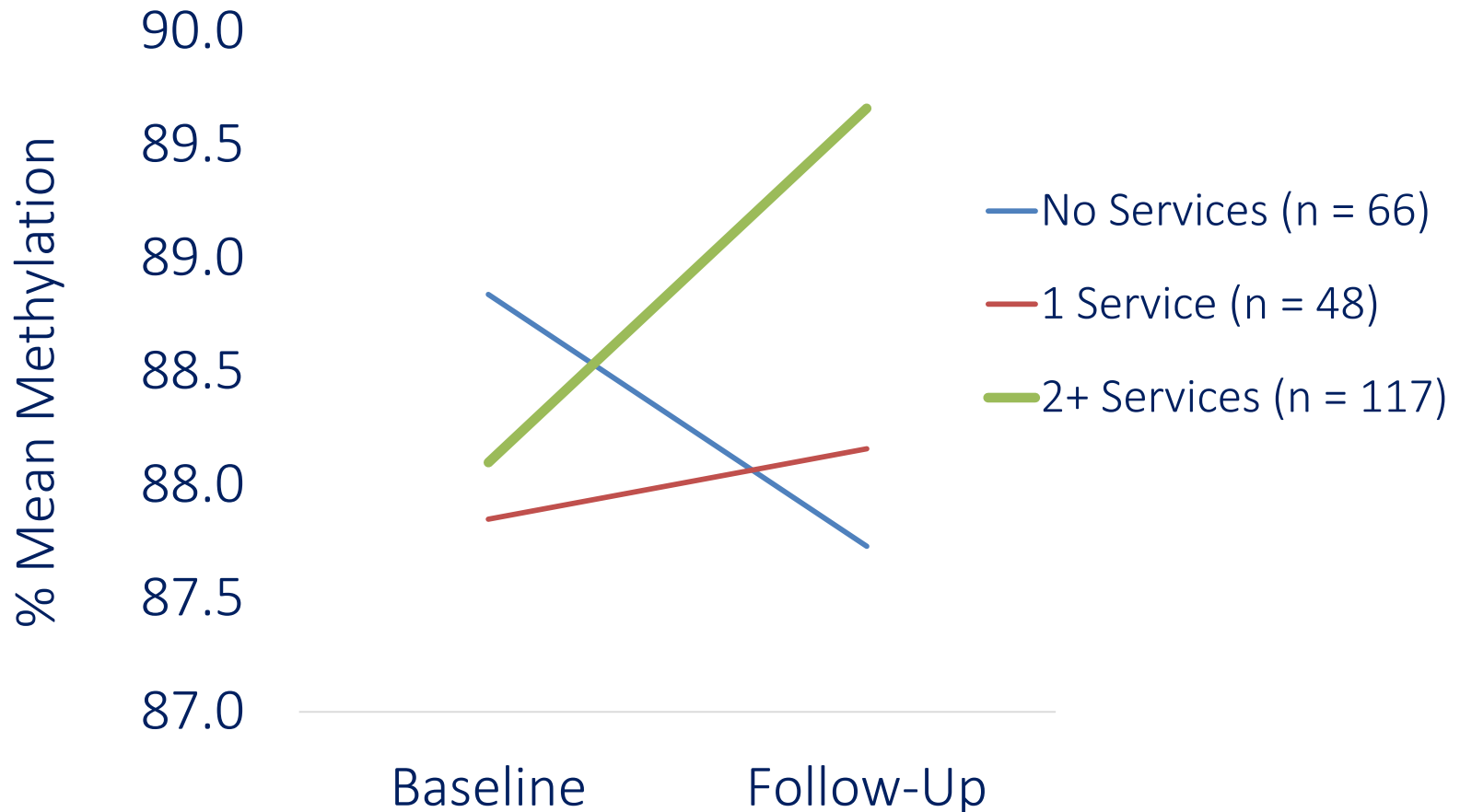
DNA Methylation: *FKBP5*



DNA Methylation: *FKBP5*



DNA Methylation: *FKBP5*



Utilization of Epigenetics Research to Support Interventions and Policy

Are there sensitive periods for epigenetic processes?

- Inform the developmental timing of preventive interventions

How quickly does methylation occur in response to stress?

- Identification of appropriate time to provide services following acute stressor or life event

How does methylation change in response to intervention?

- Methylation as a biomarker of treatment efficacy

Methylation as a marker of toxic stress

- Demonstrate effects of stress on biology and the brain to compliment behavioral health outcomes

Maternal ACES and Home Visiting Study

- **Impoverished families** who have been referred to RI Home Visiting
- **Prenatal period through 1 year postpartum**
- **Maternal reports** of childhood and perinatal stress
- **Observations** of mother-infant interaction and infant behavior
- **Interviews** to assess service utilization
- **Home visiting record review**

- **Saliva DNA** from mothers and infants
 - **Gene methylation**
 - **Telomere length**
 - **Mitochondrial DNA**
- **Pediatrician Reports** of Infant Health Outcomes



Community Partners



Hasbro Children's Hospital
The Pediatric Division of Rhode Island Hospital
A Lifespan Partner



Funding Support



NIMH R01MH083704 HRSA R40MC28318
NICHD R01HD086487 HRSA H25MC00270
BBRF 21296