View metadata, citation and similar papers at core.ac.uk

brought to you by CORE

provided by Digital Commons @ West Chester University

West Chester University
Digital Commons @ West Chester University

Sustainability Research & Practice Seminar Presentations

Sustainability Research & Creative Activities @ WCU

10-2-2019

The Biopsychology of Ending Poverty: Lessons from Research on Economic Instability, Household Chaos, and Child Cortisol

Eleanor D. Brown
West Chester University of Pennsylvania, ebrown@wcupa.edu

Follow this and additional works at: https://digitalcommons.wcupa.edu/srca_sp

Part of the Biological Psychology Commons, and the Child Psychology Commons

Recommended Citation
Brown, E. D. (2019). The Biopsychology of Ending Poverty: Lessons from Research on Economic Instability, Household Chaos, and Child Cortisol. Retrieved from https://digitalcommons.wcupa.edu/srca_sp/9

This Seminar Presentation is brought to you for free and open access by the Sustainability Research & Creative Activities @ WCU at Digital Commons @ West Chester University. It has been accepted for inclusion in Sustainability Research & Practice Seminar Presentations by an authorized administrator of Digital Commons @ West Chester University. For more information, please contact wcressler@wcupa.edu.

The Biopsychology of Ending Poverty

LESSONS FROM RESEARCH ON ECONOMIC INSTABILITY, HOUSEHOLD CHAOS, AND CHILD CORTISOL

ELLIE D. BROWN, PHD

WEST CHESTER UNIVERSITY

Acknowledgments

- Mentor: Brian Ackerman
- Collaborators: Kate Anderson, Mallory Garnett, Erin Hill
- WCU ECCEL research assistants
- Settlement's Kaleidoscope Preschool and other Head Start preschools
- WCU ORSP, CAS/CSM, and Psychology Department
- Journal of Family Psychology

Significance of Poverty

17 UN Sustainable Development Goals

- #1: END POVERTY IN ALL ITS FORMS EVERYWHERE
  - The targets under Goal 1 include aiming for a world where the poor are not vulnerable to climate change, and have "equal rights to economic resources."

Ending Poverty

- Structural change
- Cultural change
- Individual change
  - Those with economic power and resources
  - Those facing economic hardship

Traditional Frame

- Social address
- Deficit
- Individual blame

Traditional vs Alternative Frame

- Social address
- Deficit
- Individual blame
- Ecology
- Diversity
- Social causation

Social Address Model

- **Unit:** Individual
- **Cause:** Bad genes
- **Mechanism:** Faulty neural pathways
- **Symptoms:** Poor impulse control; academic failure and conduct problems
- **Treatment:** Eugenics, social control

Focus on Children in Poverty

- Diversity (in persons)
- Within group variation
- Ecology

Social Address vs Alternative Model

- **Unit:** Individual
- **Cause:** Bad genes
- **Mechanism:** Code for faulty neural pathways
- **Symptoms:** Poor impulse control; academic failure, and conduct problems
- **Treatment:** Eugenics, social control

- **Unit:** Ecology
- **Cause:**
- **Mechanism:**
- **Symptoms:**
- **Treatment:**

Cumulative Contextual Risk

- Diversity (in context)
- Ecology, as a whole
- Synergy
- Equifinality

Social Address vs Alternative Model

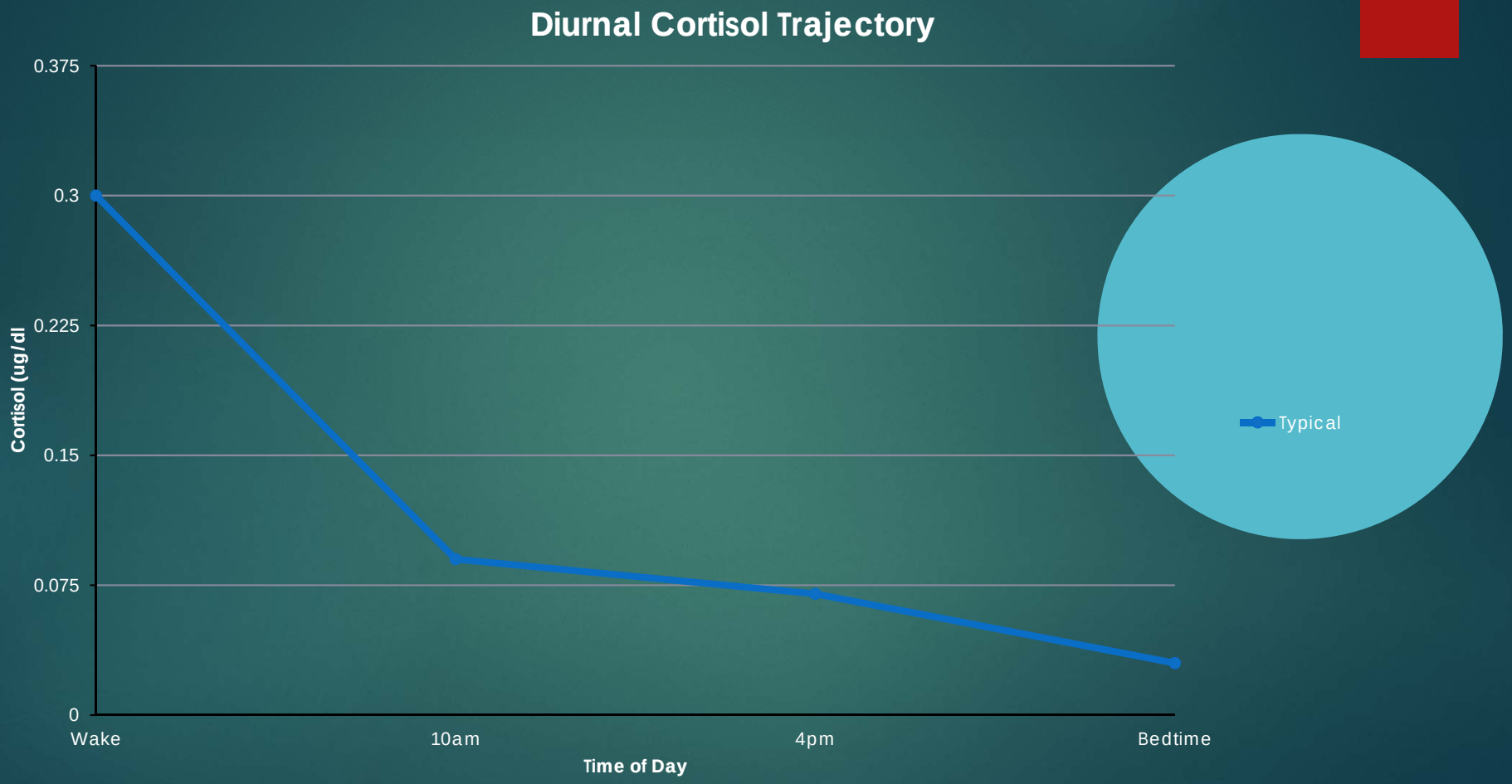
- **Unit:** Individual
- **Cause:** Bad genes
- **Mechanism:** Code for faulty neural pathways
- **Symptoms:** Poor impulse control; academic failure, and conduct problems
- **Treatment:** Eugenics, social control

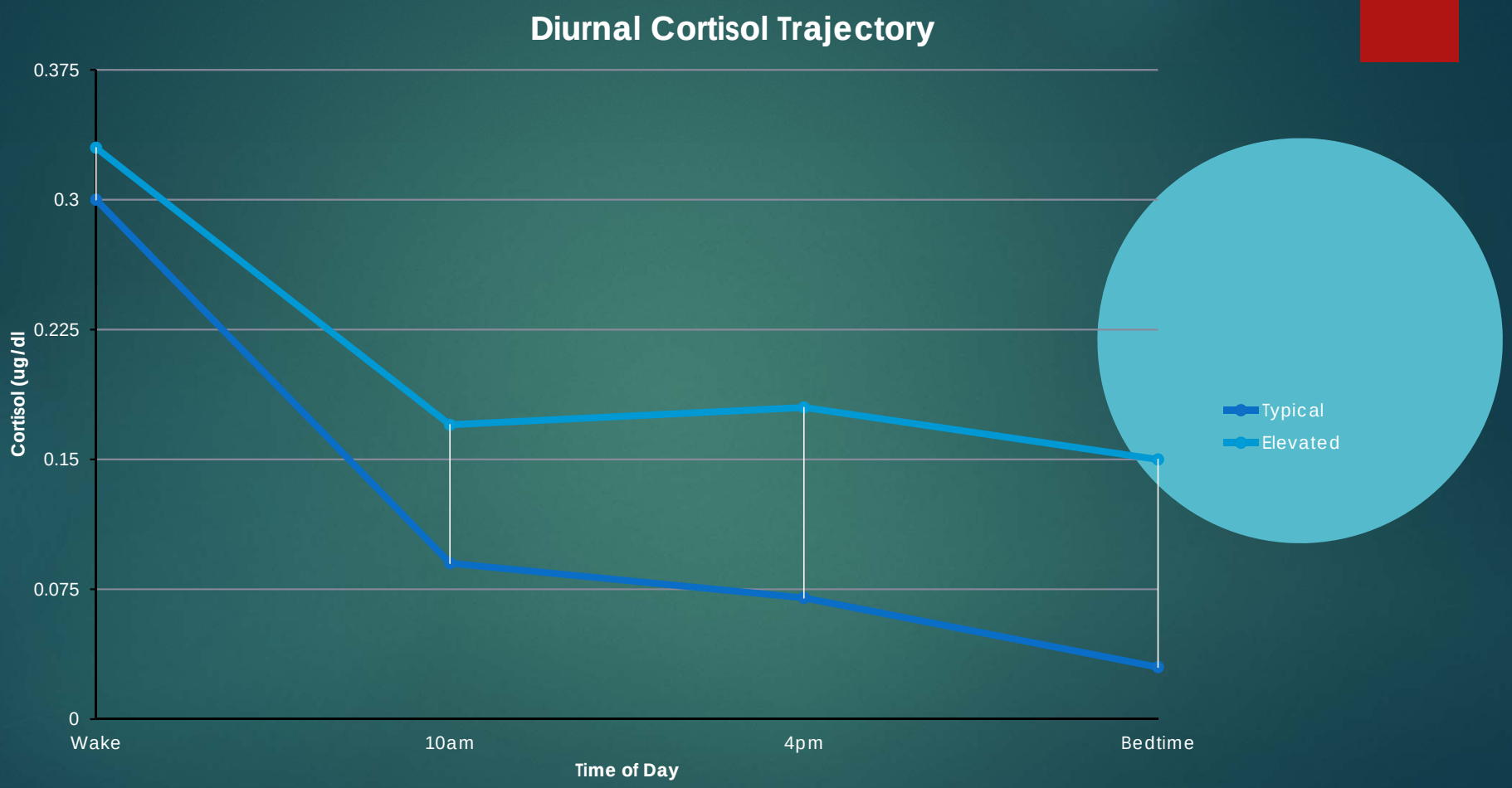
- **Unit:** Ecology
- **Cause:** Cumulative risk
- **Mechanism:**
- **Symptoms:**
- **Treatment:**

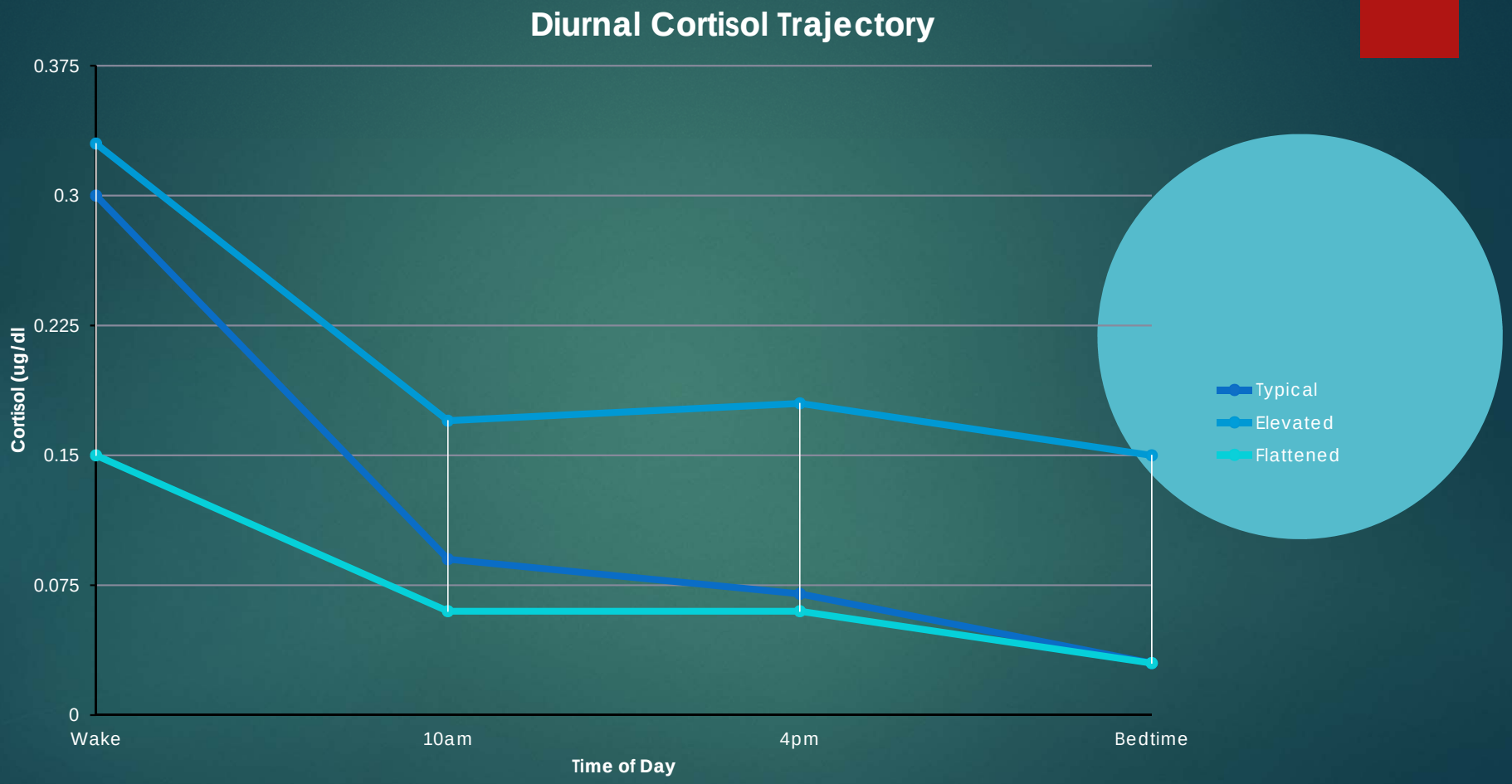
Instability and Chaos

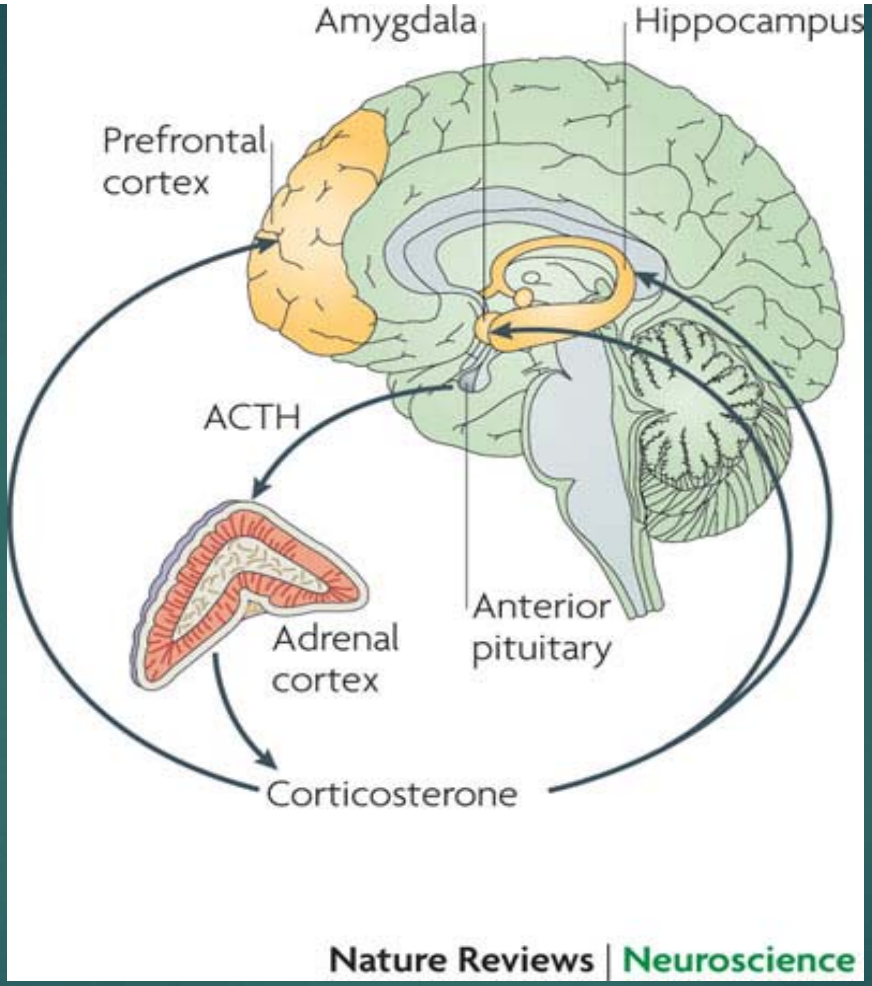
- Diversity (in process)
- Unpredictability of proximal processes
- Burdens stress response systems
- Impact on brain and behavior

Hypothalamic Pituitary Adrenal (HPA) Axis


Diurnal Cortisol Trajectory
0.375
0.3
0.225
0.15
0.075
0
Cortisol (ug/dl
Wake
10am
4pm
Bedtime
Time of Day
Typical


Diurnal Cortisol Trajectory
0.375
0.3
0.225
0.15
0.075
0
Cortisol (ug/dl
Wake
10am
4pm
Bedtime
Time of Day
Typical
Elevated


Diurnal Cortisol Trajectory
0.375
0.3
0.225
0.15
0.075
0
Cortisol (ug/dl
Wake
10am
4pm
Bedtime
Time of Day
Typical
Elevated
Flattened



Stress hormones and AMPA receptor trafficking in synaptic plasticity and memory

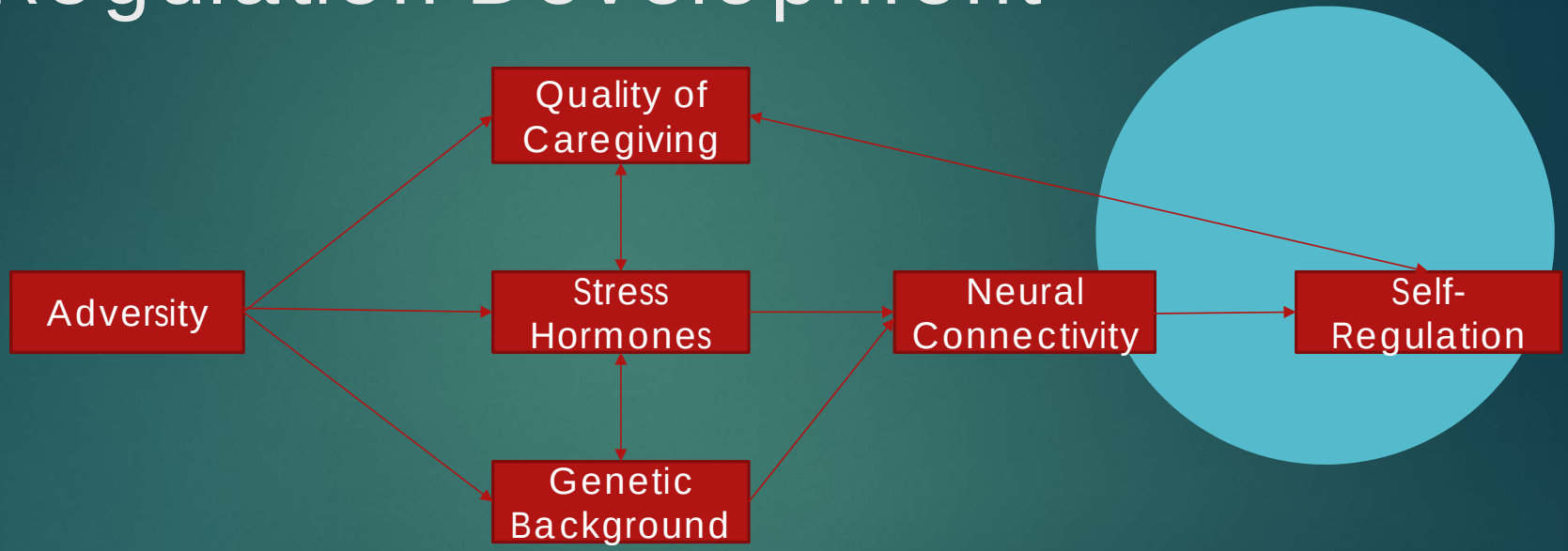
Harmen J. Krugers, Casper C. Hoogenraad & Laurent Groc

Nature Reviews Neuroscience **11**, 675-681 (October 2010)

HPA Axis

- Diversity (across time)
- Adaptive → problematic
- High allostatic load
- Experiential canalization

Model of the Experiential Canalization of Self-Regulation Development



Blair, C., & Raver, C.C. (2012). Child development in the context of adversity: Experiential canalization of development. *American Psychologist, 67,* 309-318.

Social Address vs Alternative Model

- **Unit:** Individual
- **Cause:** Bad genes
- **Mechanism:** Code for faulty neural pathways
- **Symptoms:** Poor impulse control; academic failure, and conduct problems
- **Treatment:** Eugenics, social control

- **Unit:** Ecology
- **Cause:** Cumulative risk; instability and chaos
- **Mechanism:** Unpredictable proximal processes, high allostatic load, experiential canalization
- **Symptoms:** Self-regulatory difficulties; cognitive and social-emotional problems
- **Treatment:**

Gaps in Understanding

- Poverty "gets under the skin"
  - Emergent area of research
- Limitations of family investment models
  - Few studies include robust account of contextual risk
- Unique importance of instability and chaos
  - Few studies examine isolate instability and chaos
  - No studies isolate economic instability in relation to cortisol
  - No studies examine chaotic living conditions as a family process variable in relation to young children's cortisol

Present Study

- Economic adversity in relation to child cortisol
- Limitations of family investment models
- Prepotency of economic instability
- Role of chaotic living conditions

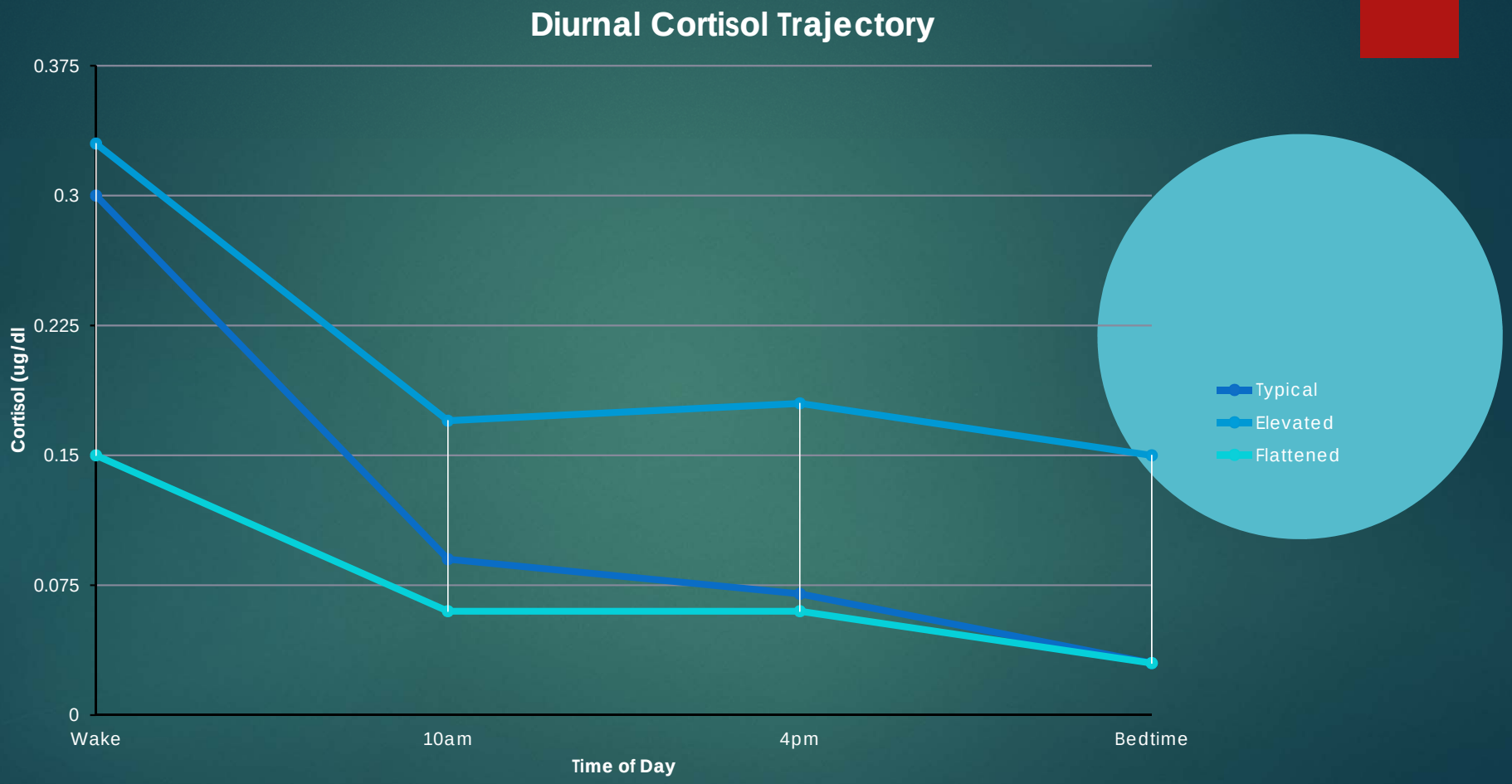
Participants

- 374 children, and caregivers
- 50.8% female
- 55.1% African American, 15.2% Latino/Hispanic American, 9.9% Asian American, and 19.8% Caucasian/European American.
- Mean age was 4 years, 1 month
- 98.3% of the children were from poor or low-income families.

Procedure

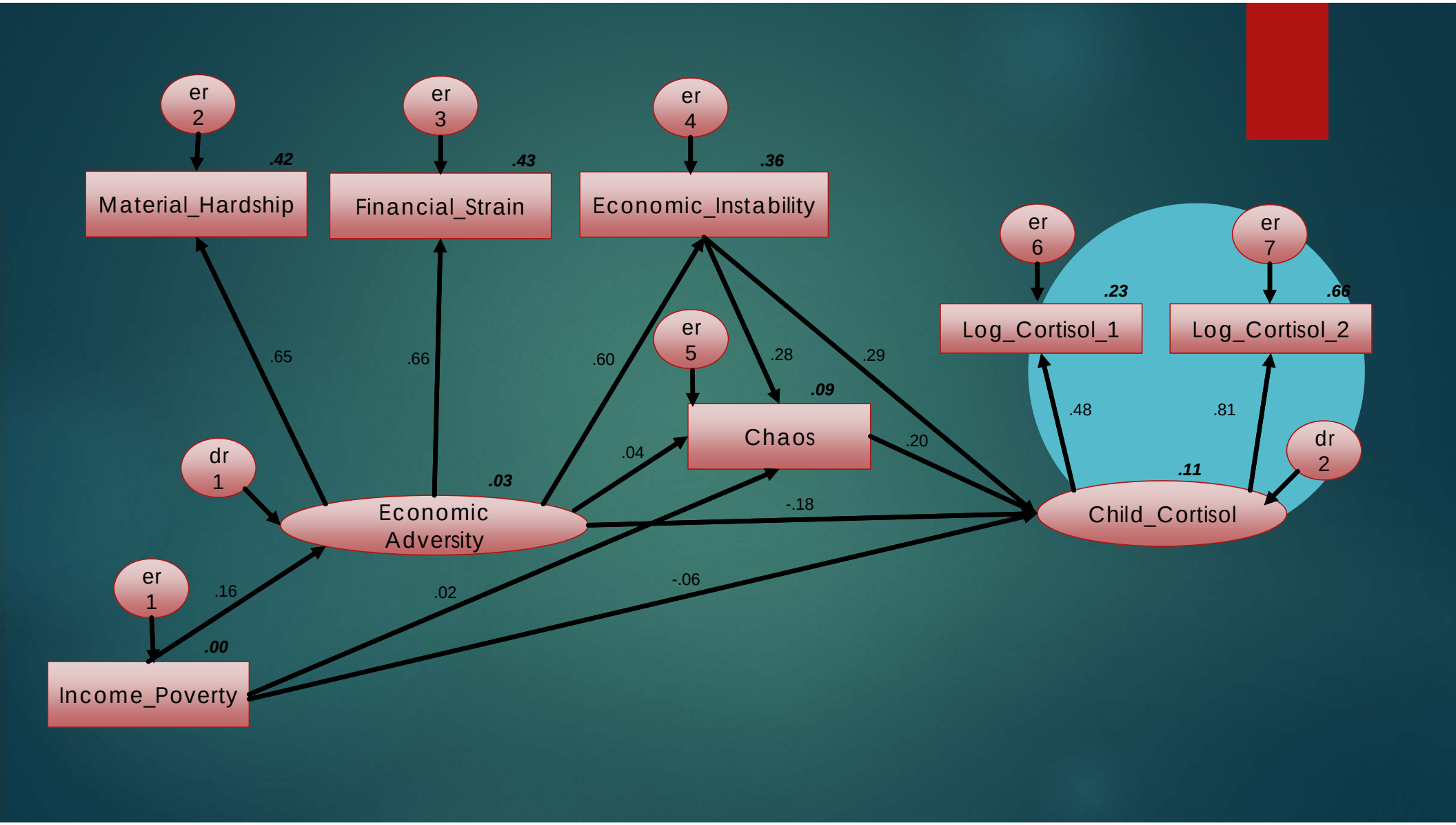
- Ethical standards
- Recruitment
- Parent Measures
  - Demographics
  - Economic Events
  - CHAOS
- Child Measure
  - Cortisol

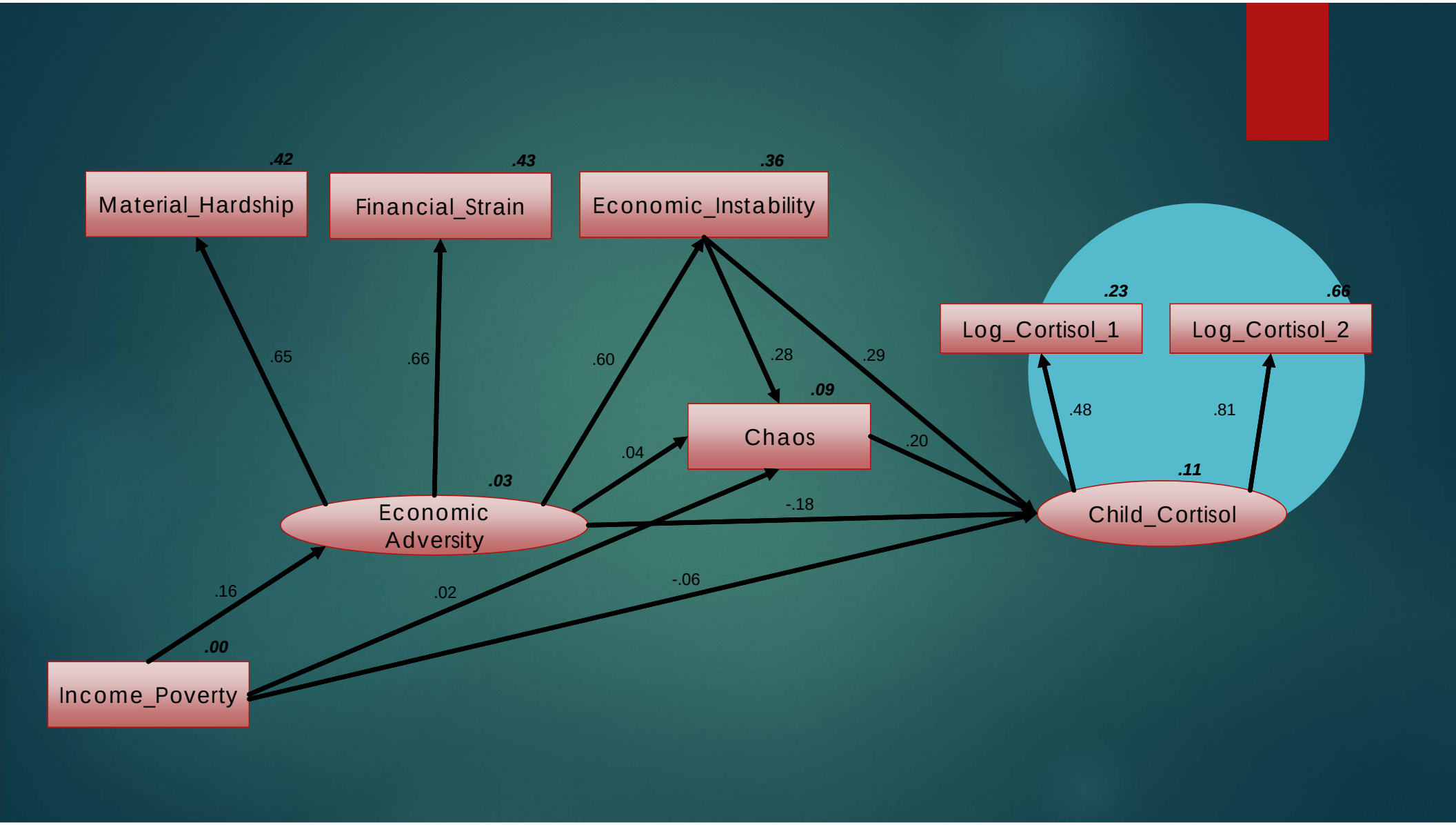
Child Cortisol


Diurnal Cortisol Trajectory
0.375
0.3
0.225
0.15
0.075
0
Cortisol (ug/dl
Wake
10am
4pm
Bedtime
Time of Day
Typical
Elevated
Flattened

Data Analyses

- Zero-order correlations
- Structural equation modeling
  - Latent variables:
    - Economic Adversity
      - Three subscales
    - Child cortisol
      - Two days
  - Path model
    - Income, economic hardship, family chaos, child cortisol


er 2
er 3
er 4
.42
.43
.36
Material_Hardship
Financial_Strain
Economic_Instability
er 6
er 7
.23
.66
Log_Cortisol_1
Log_Cortisol_2
.65
.66
.60
er 5
.28
.29
.09
Chaos
.48
.81
dr 1
.04
.20
dr 2
.03
.11
Economic Adversity
-.18
Child_Cortisol
er 1
.16
.02
-.06
.00
Income_Poverty


.42
Material_Hardship
.43
Financial_Strain
.36
Economic_Instability
.23
Log_Cortisol_1
.66
Log_Cortisol_2
.65
.66
.60
.28
.29
.09
Chaos
.48
.81
.20
.04
.03
Economic Adversity
.11
Child_Cortisol
-.18
.16
.02
-.06
.00
Income_Poverty

Summary of Results

- Income → Economic Adversity → Economic Instability, Financial Strain, Material Hardship, Family Chaos
- Economic Adversity → Economic Instability → Child Cortisol
- Economic Adversity → Chaos → Child Cortisol
- Economic Instability → Child Cortisol
- Economic Instability → Family Chaos → Child Cortisol

Limitations

- Snapshot representation
- Parent report
- Morning cortisol
- Present sample

Implications

- Income is necessary, not sufficient
- Unique significance of instability
- Role of family-level chaos
- Deconstruction of moral model

Contribution of the Present Study

- Diversity (persons, contexts, processes, time)
- Social causation
- Intervention

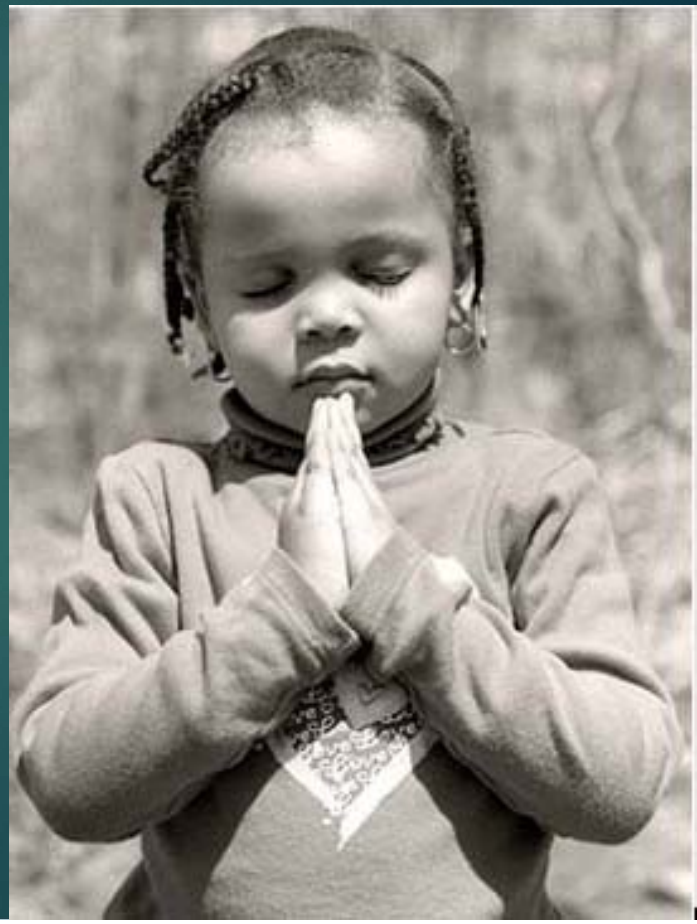
Social Address vs Alternative Model

- **Unit:** Individual
- **Cause:** Bad genes
- **Mechanism:** Code for faulty neural pathways
- **Symptoms:** Poor impulse control; academic failure, and conduct problems
- **Treatment:** Eugenics, social control

- **Unit:** Ecology
- **Cause:** Cumulative risk; instability and chaos
- **Mechanism:** Unpredictable proximal processes, high allostatic load, experiential canalization, concurrent effects
- **Symptoms:** Self-regulatory difficulties; cognitive and social-emotional problems
- **Treatment:** Possibilities for prevention and intervention

Biopsychology of Ending Poverty

- Poverty alleviation
  - Fernald & Gunnar (2009)
- Stability
  - Economic resources
  - Microsystem processes
- Stress reduction
  - Brown et al (2017)
- Early childhood



Conclusion

- More than money
- All about money
- Ending poverty is possible
- Requires a change in frame