# Resilience in Health Disparities

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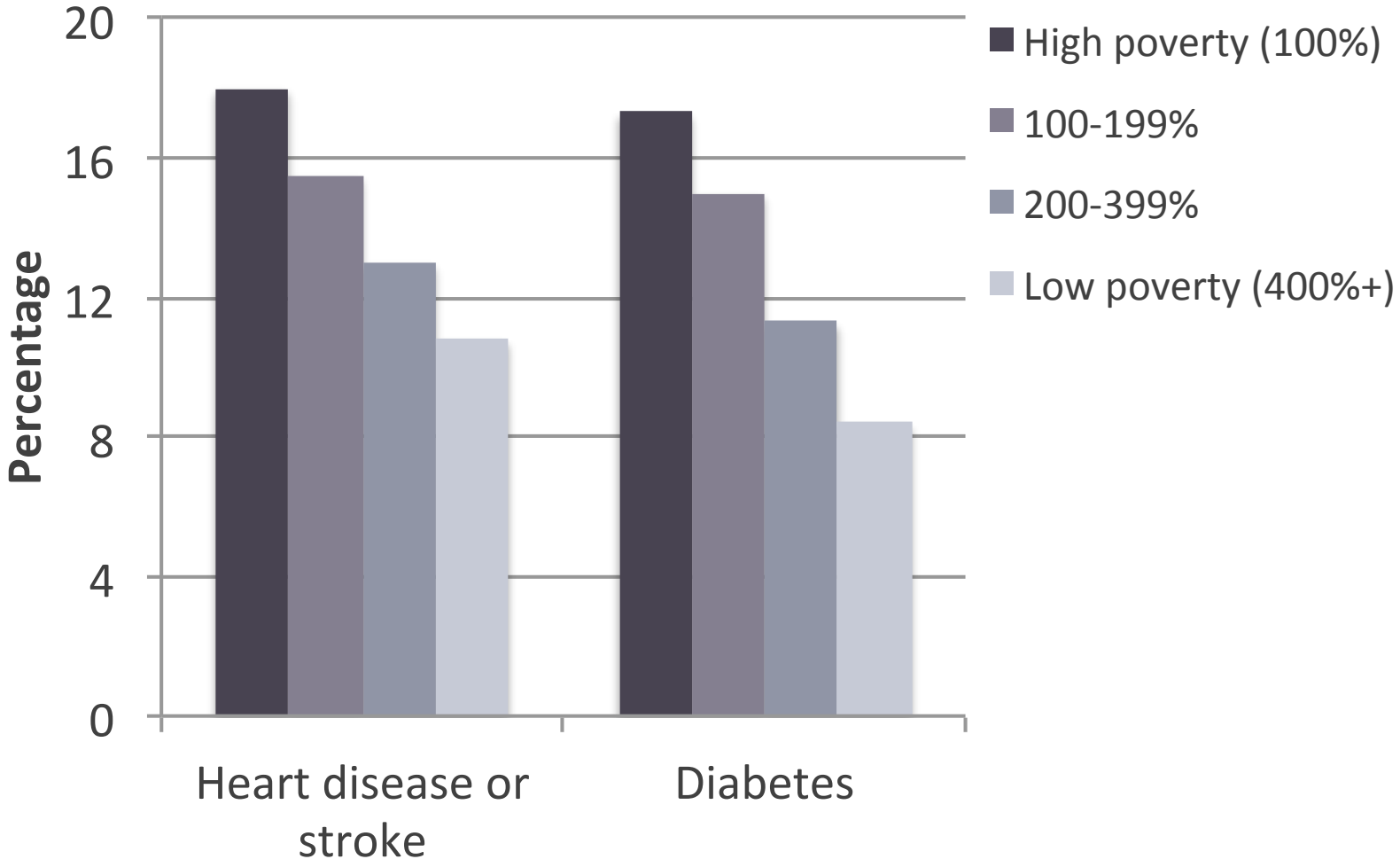
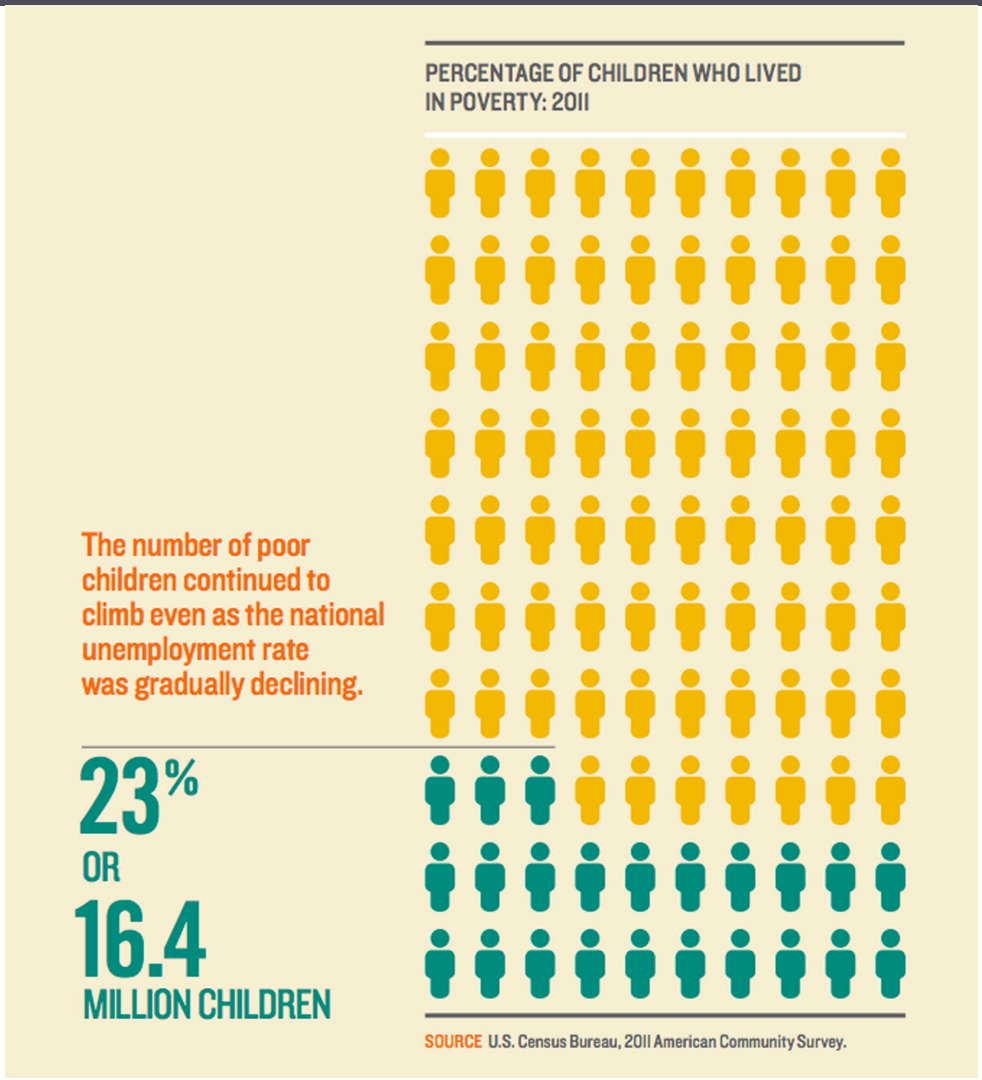
American Psychosomatic Society meeting
Patricia R. Barchas Lecture
March 9, 2018

# Poverty and Health



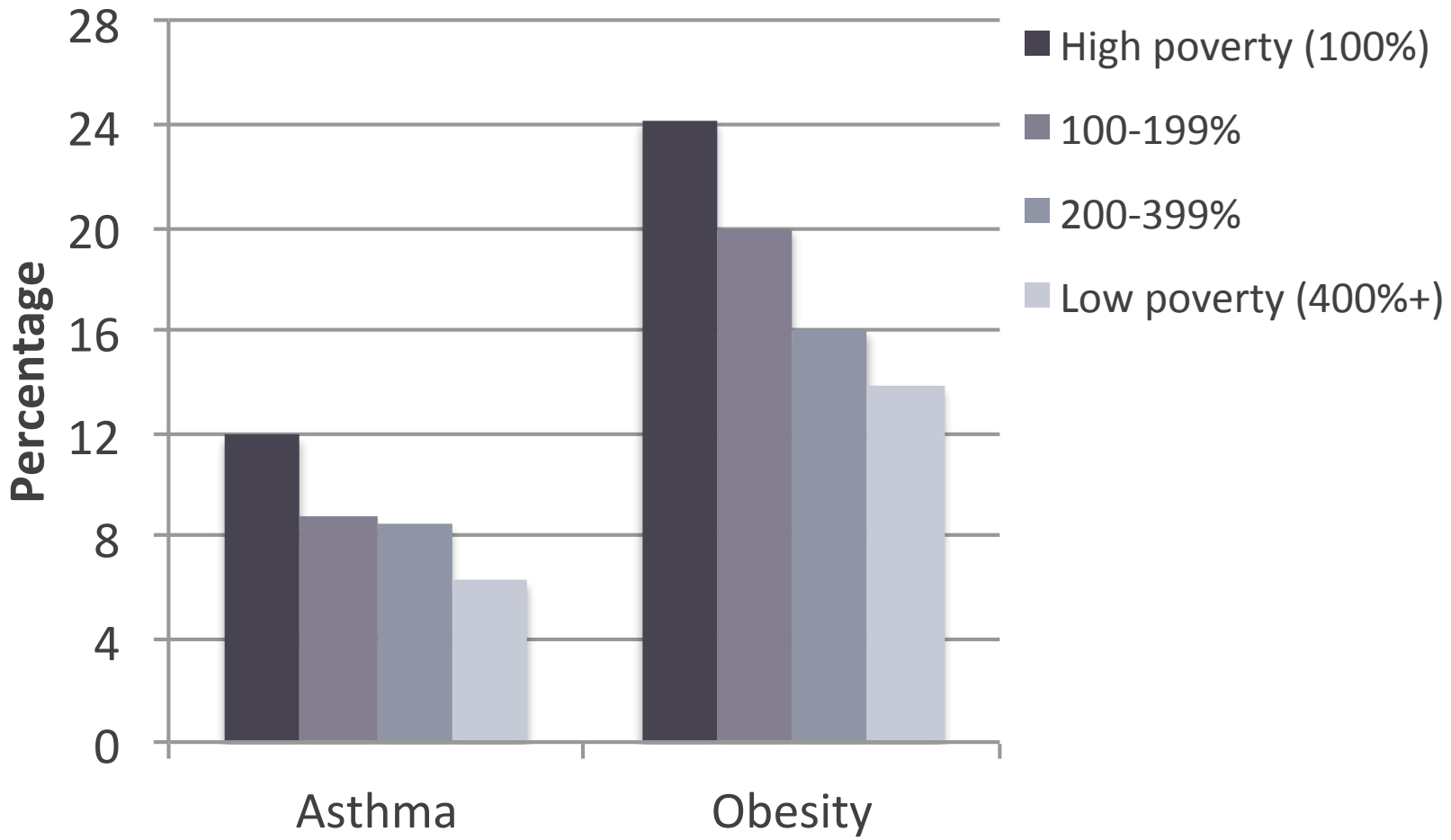

(CDC/Natl Center Health Statistics, 2015)

# Poverty in Children




(US Census Bureau, 2011)

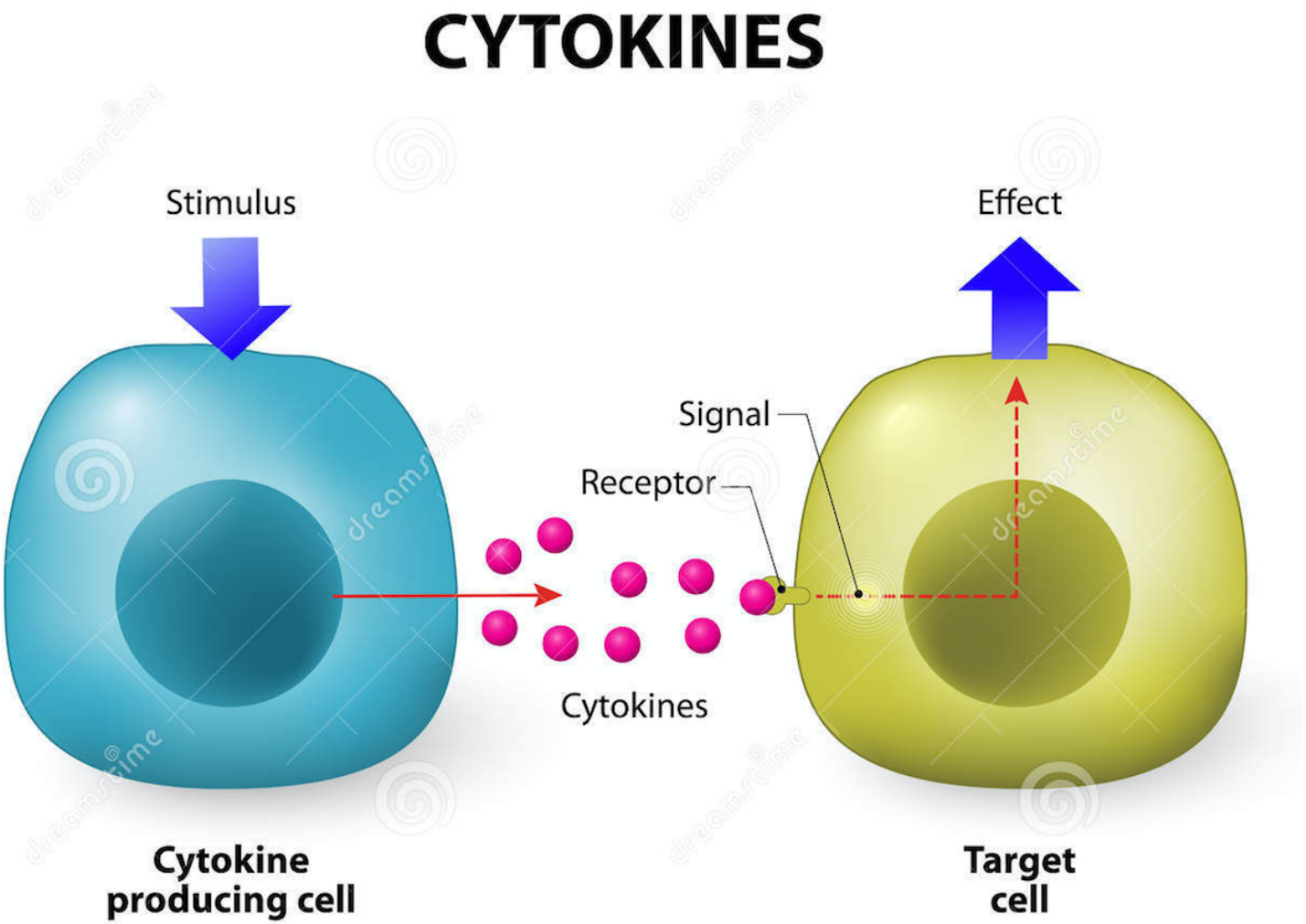
# Poverty and Child Health




(CDC/Natl Center Health Statistics, 2015)

What are the biological mechanisms that explain this relationship?

# Inflammation

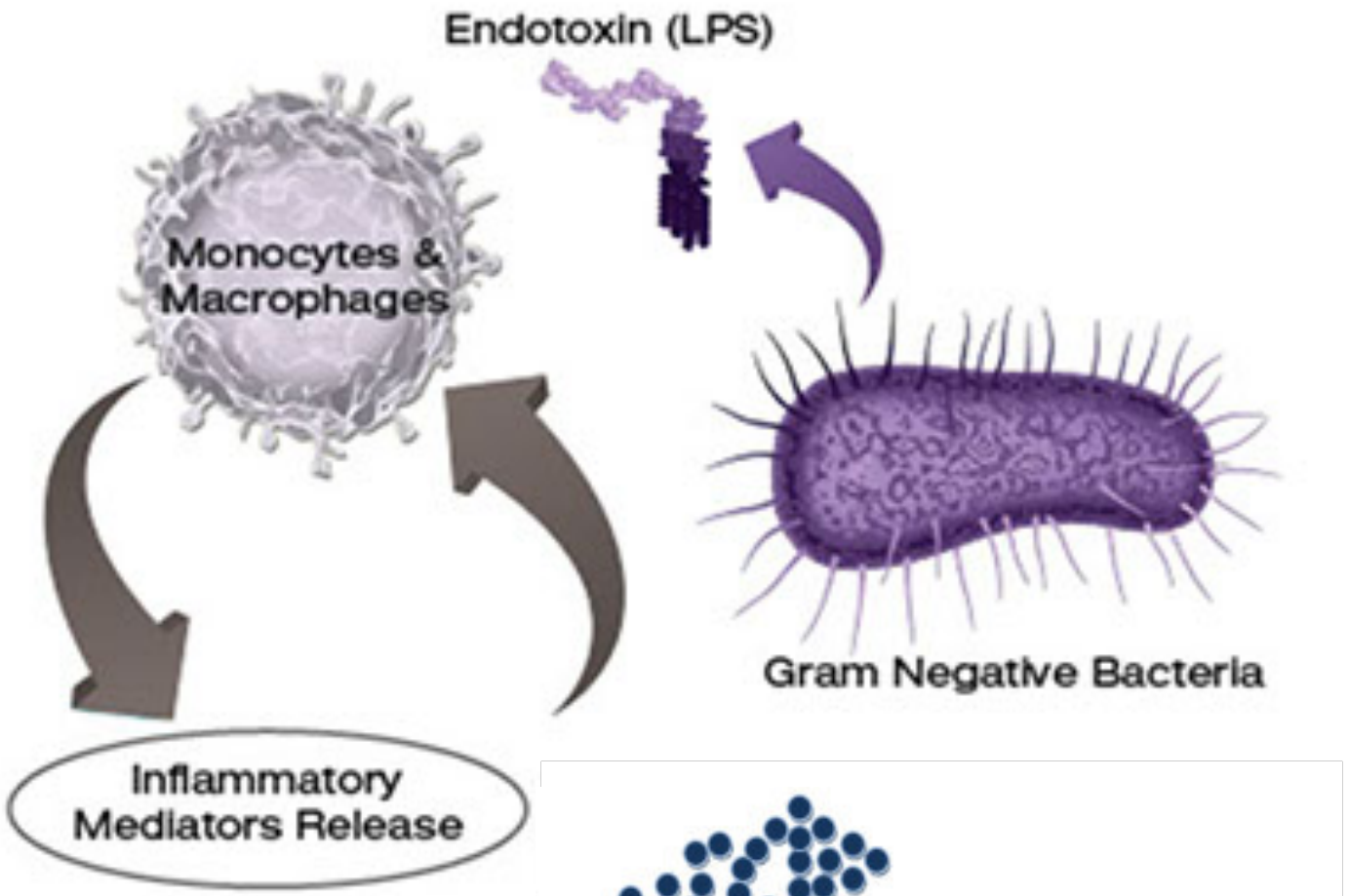


# Pro-Inflammatory Phenotype

- Excessive inflammatory responses to microbial challenges
- Insensitivity to inhibitory hormonal signals

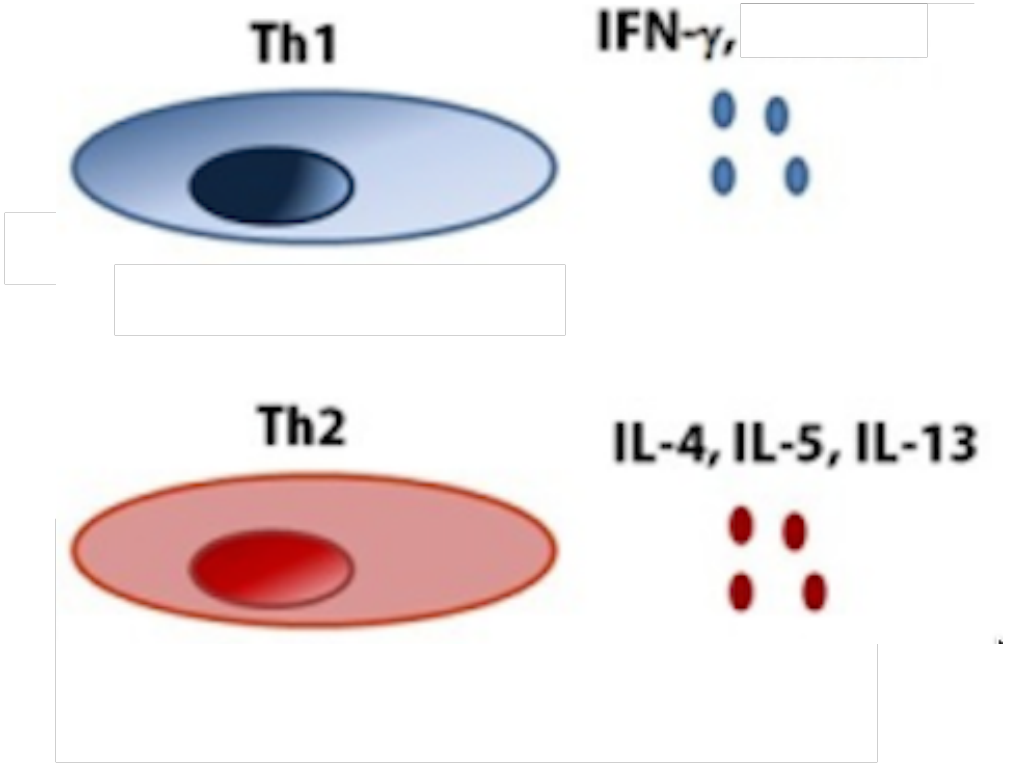
(Miller, Chen, & Parker, Psych Bull, 2011)

# In vitro Testing

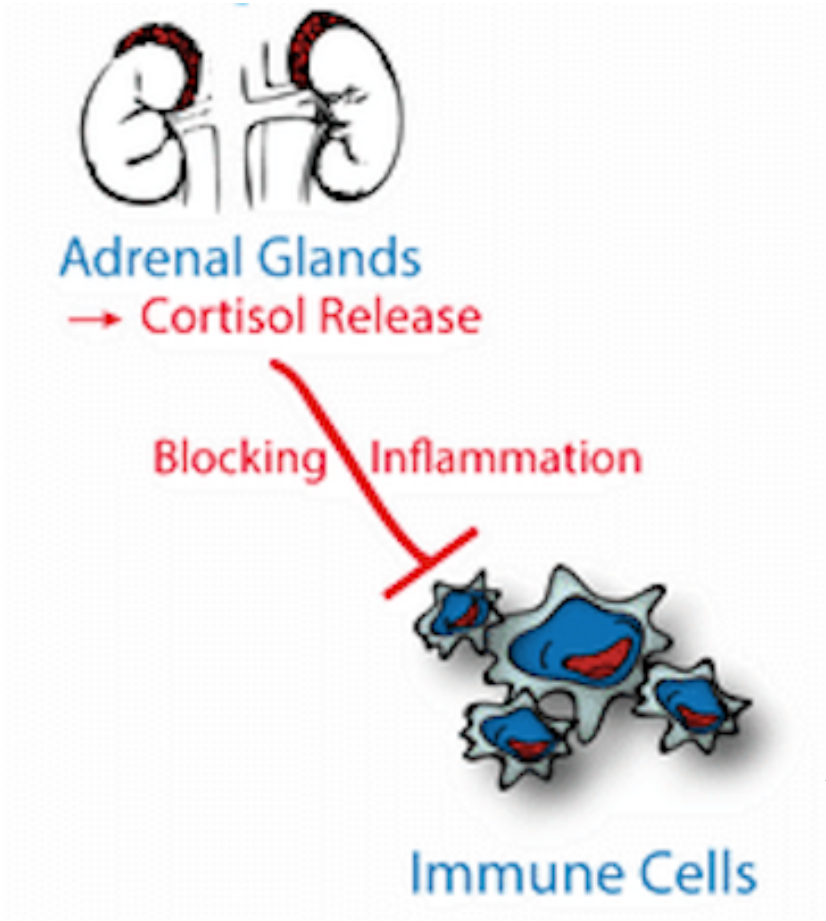


# In vitro Testing in Asthma

PMA/INO



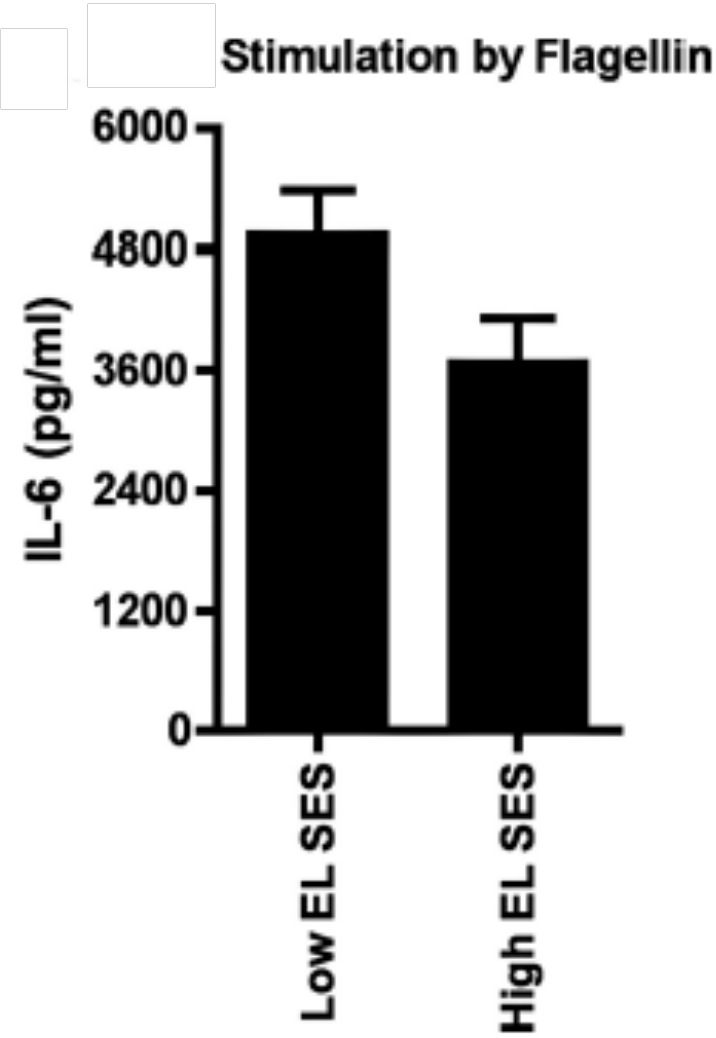
# Glucocorticoid Sensitivity



# SES & Inflammatory Phenotypes

- Healthy adult sample
- Either low in early life SES (Low EL SES) or high in early life SES (High EL SES)
- Peripheral blood mononuclear cell production of IL-6 following stimulation with flagellin

# SES & Microbial Responses




F=3.97, p<.05

(Miller, Chen, et al., PNAS, 2009)

# SES & Asthma Immune Processes

- Children ages 9-17 physician-diagnosed with asthma
- Family SES interview with parent
- Asthma immune processes

  Th-2 cytokines following PMA/INO stimulation

  Glucocorticoid sensitivity: Th-2 cytokine responses to PMA/INO + cortisol

# SES Linked to Stimulated Cytokine Responses + Sensitivity to Cortisol

| | Th-2 cytokine responses | |
|---|---|---|
| | PMA/INO | PMA/INO + Cortisol |
| Age | .02 | -.06 |
| Gender | -.10 | .03 |
| Ethnicity | -.16 | -.09 |
| Beta agonist use | .03 | -.01 |
| Inhaled corticosteroid use | .00 | .06 |
| Family SES | -.19* | -.20* |

(Chen,…Miller., Psychosom Med, 2016)

# Biological Mechanisms

Low SES associated with:

- More aggressive inflammatory responses
- Less sensitivity to cortisol's anti-inflammatory signals

both in healthy individuals and in those with a chronic illness

# Health-Related Resilience

# Health-Related Resilience

What psychosocial factors protect low SES youth from poor health outcomes?

# Buffering Factors

- Individual level:  Shift-and-persist
- Family level:  Nurturant parenting

# Shift-and-Persist

Shifting

- Accepting a situation
- Adjusting the self

Persisting

- Finding meaning
- Maintaining optimism
- New ways to get to goals

(Chen & Miller, Persp Psych Sci, 2012)

# Shift-and-Persist

Combination important for physical health resilience in low SES

- Reduces physiological responses acutely
- Slows down longer-term pathogenic processes

(Chen & Miller, Persp Psych Sci, 2012)

# SAP & Healthy Adolescents

- Healthy teenagers ages 14-18
- Family SES interview with parent
- Shift-and-persist questionnaire

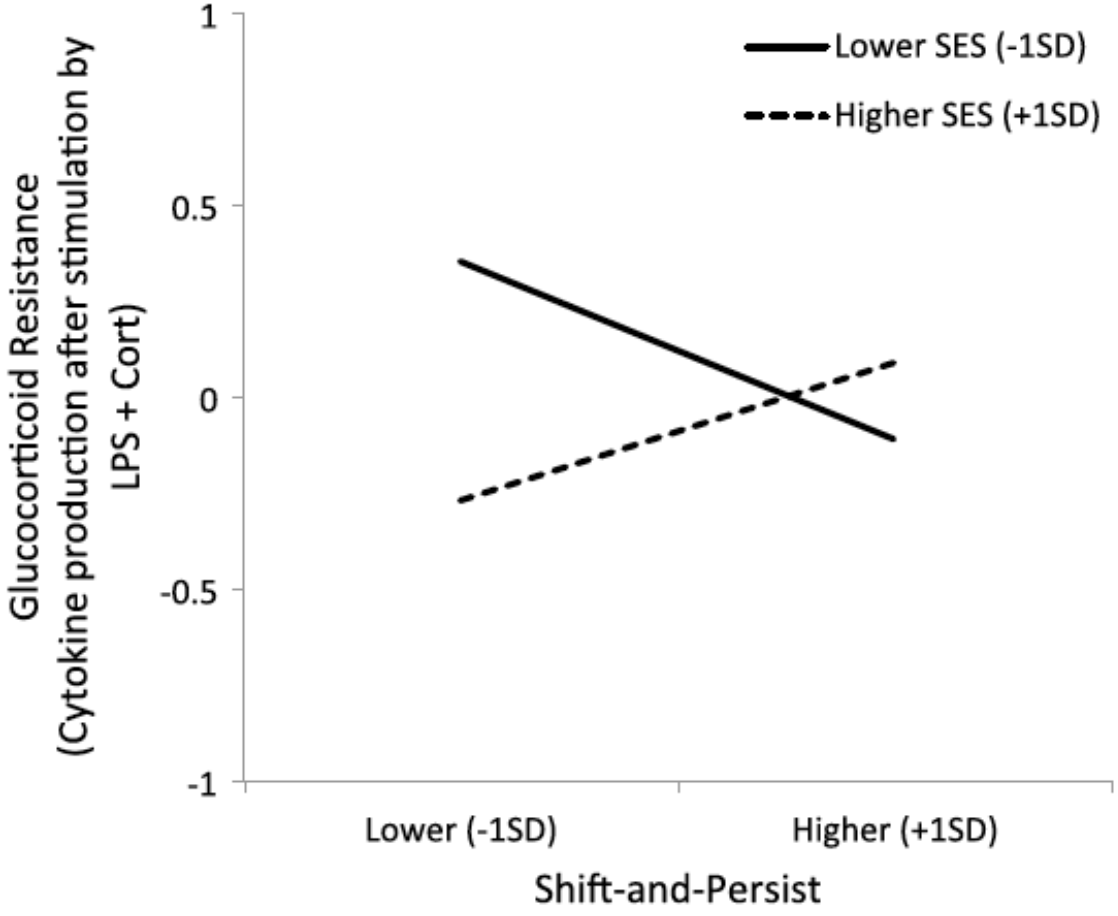
  Shift (e.g., "I think about the positives that can come from stressful situations")

  Persist (e.g., "I believe there is a larger reason for my life")
- Pro-Inflammatory Phenotype

  Glucocorticoid sensitivity (LPS + cortisol)

  Low-grade inflammation

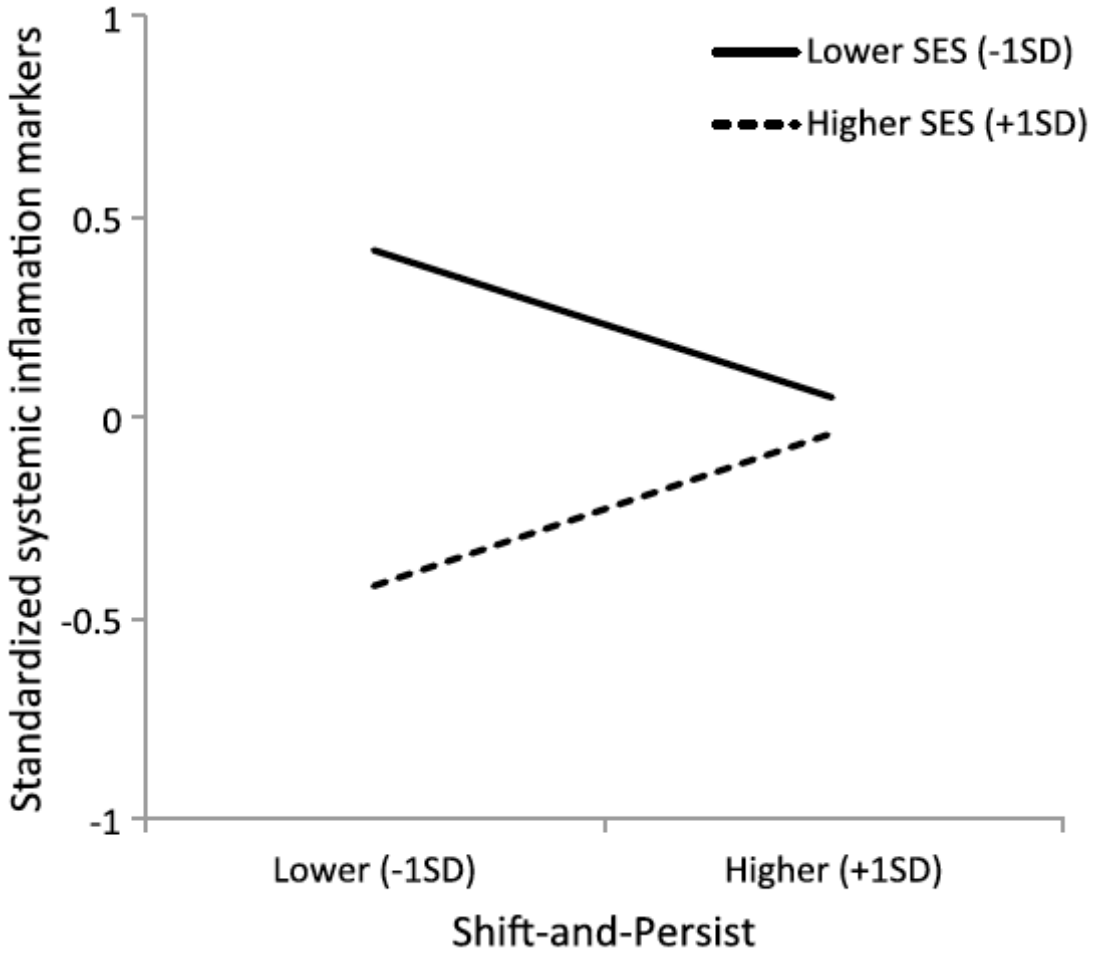
# Better Sensitivity to Cortisol with Shift and Persist in Low SES Youth




Interaction:
$\beta$=.21, $p<.05$

(Chen, McLean, & Miller, Psychosom Med, 2015)

# Lower Inflammation with Shift and Persist in Low SES Youth




Interaction:
$\beta$=.18, $p<.05$

(Chen, McLean, & Miller, Psychosom Med, 2015)

# SAP & Children with Asthma

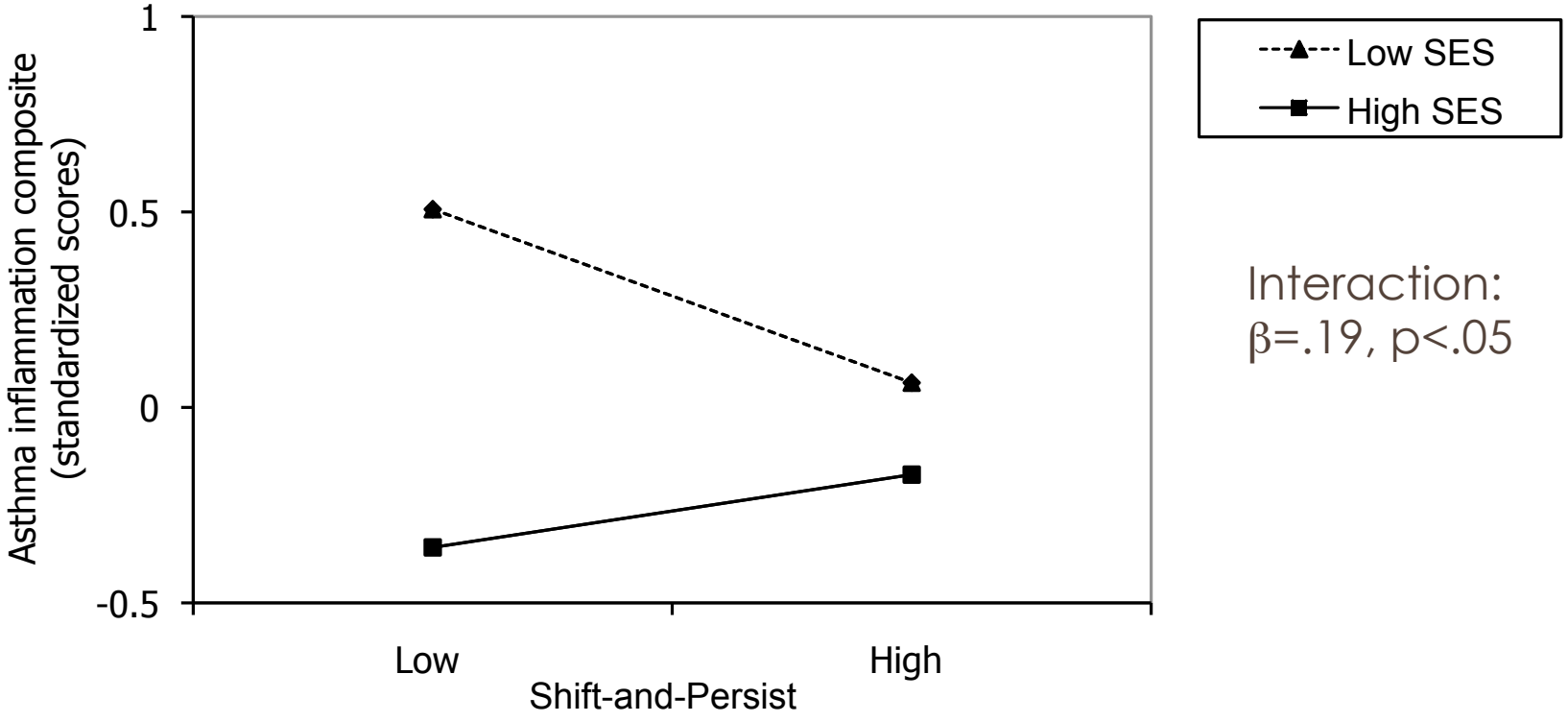
- Children ages 9-18 physician diagnosed with asthma
- Family SES interview with parent
- Shift-and-persist questionnaire
- Asthma immune processes

  Th-2 cytokine responses to PMA/INO
- Asthma clinical outcomes

  Rescue inhaler use (over 6 month period)

  School absences (over 6 month period)

# Lower Inflammation with Shift and Persist in Low SES Youth

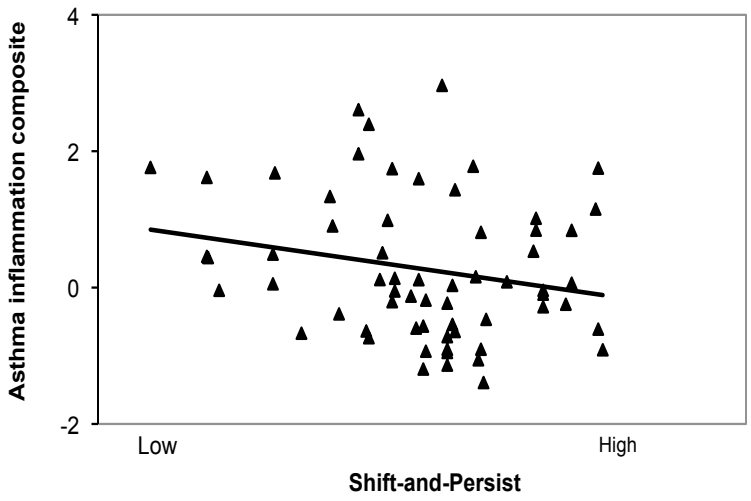



Interaction:
$\beta$=.19, $p<.05$

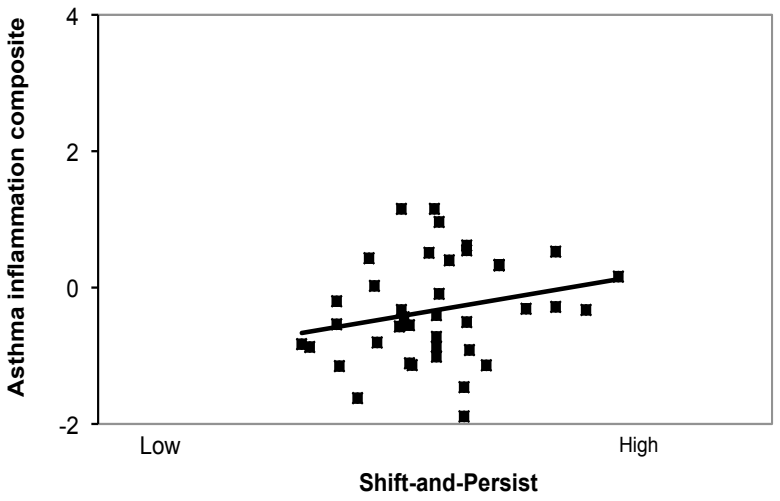
(Chen,…Miller, J Allergy & Clin Immunol, 2011)

# Lower Inflammation with Shift and Persist in Low SES Youth

## Low SES

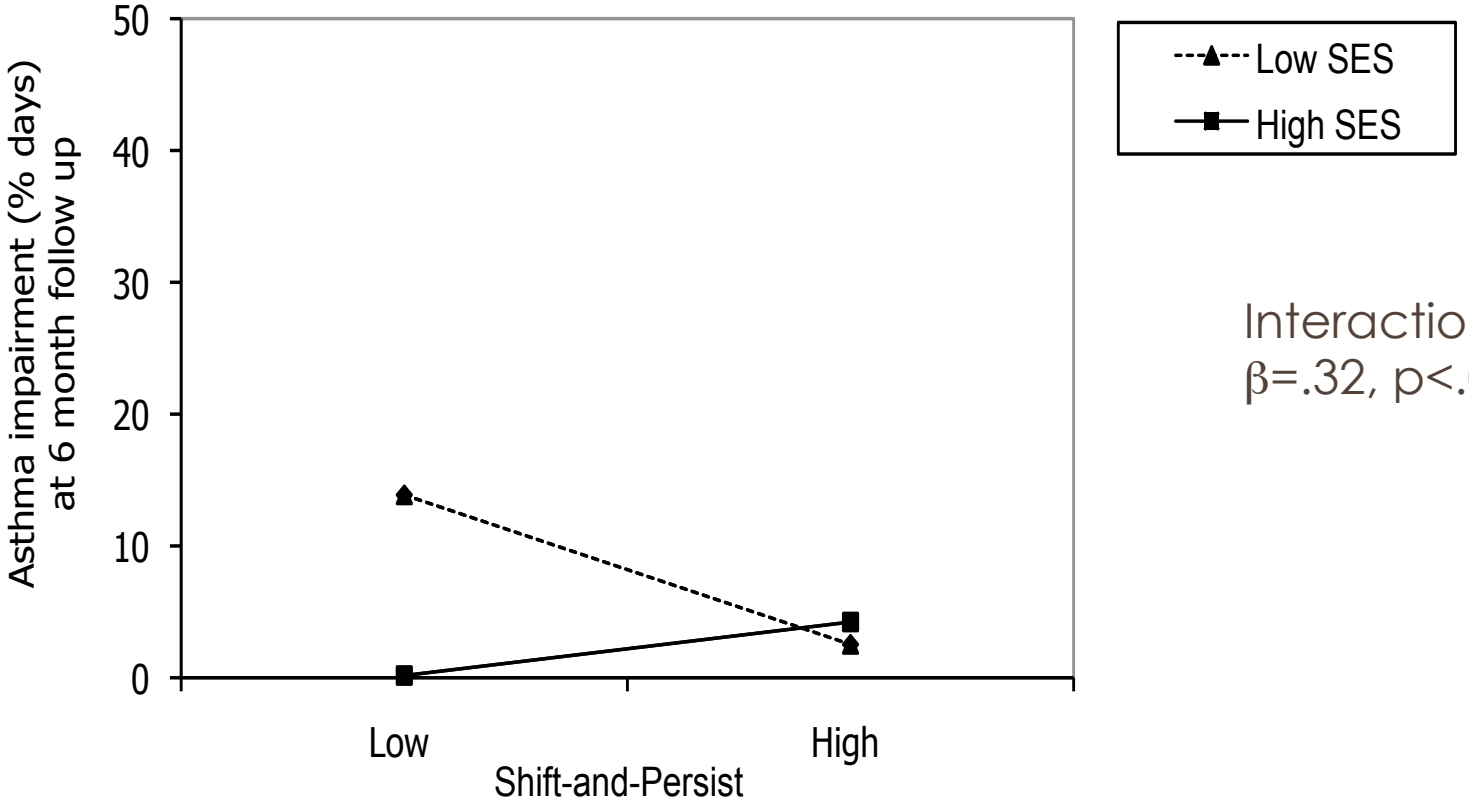



## High SES




(Chen,…Miller, J Allergy & Clin Immunol, 2011)

# Less Asthma Impairment with Shift and Persist in Low SES Youth

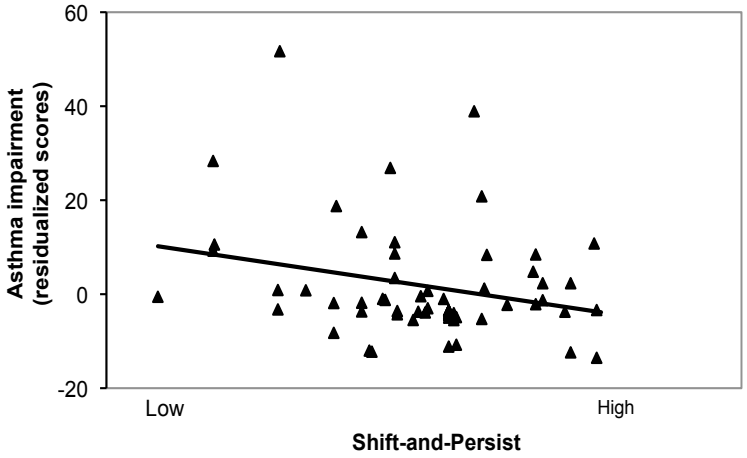



Interaction:
$\beta$=.32, p<.01

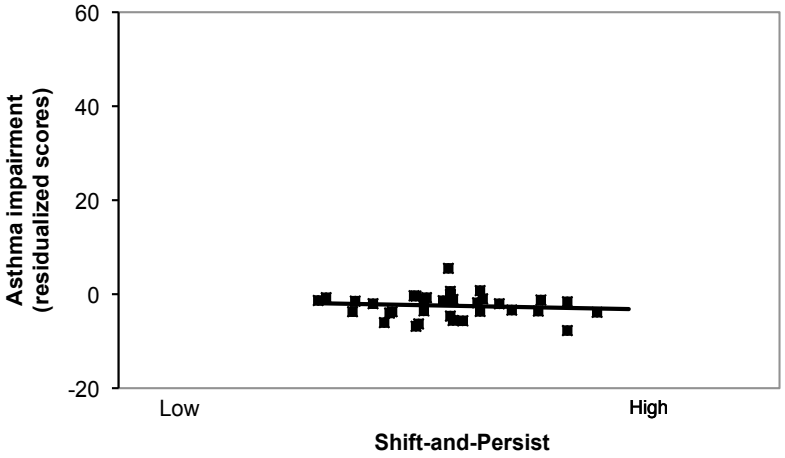
(Chen,…Miller, J Allergy & Clin Immunol, 2011)

# Less Asthma Impairment with Shift and Persist in Low SES Youth

## Low SES




## High SES



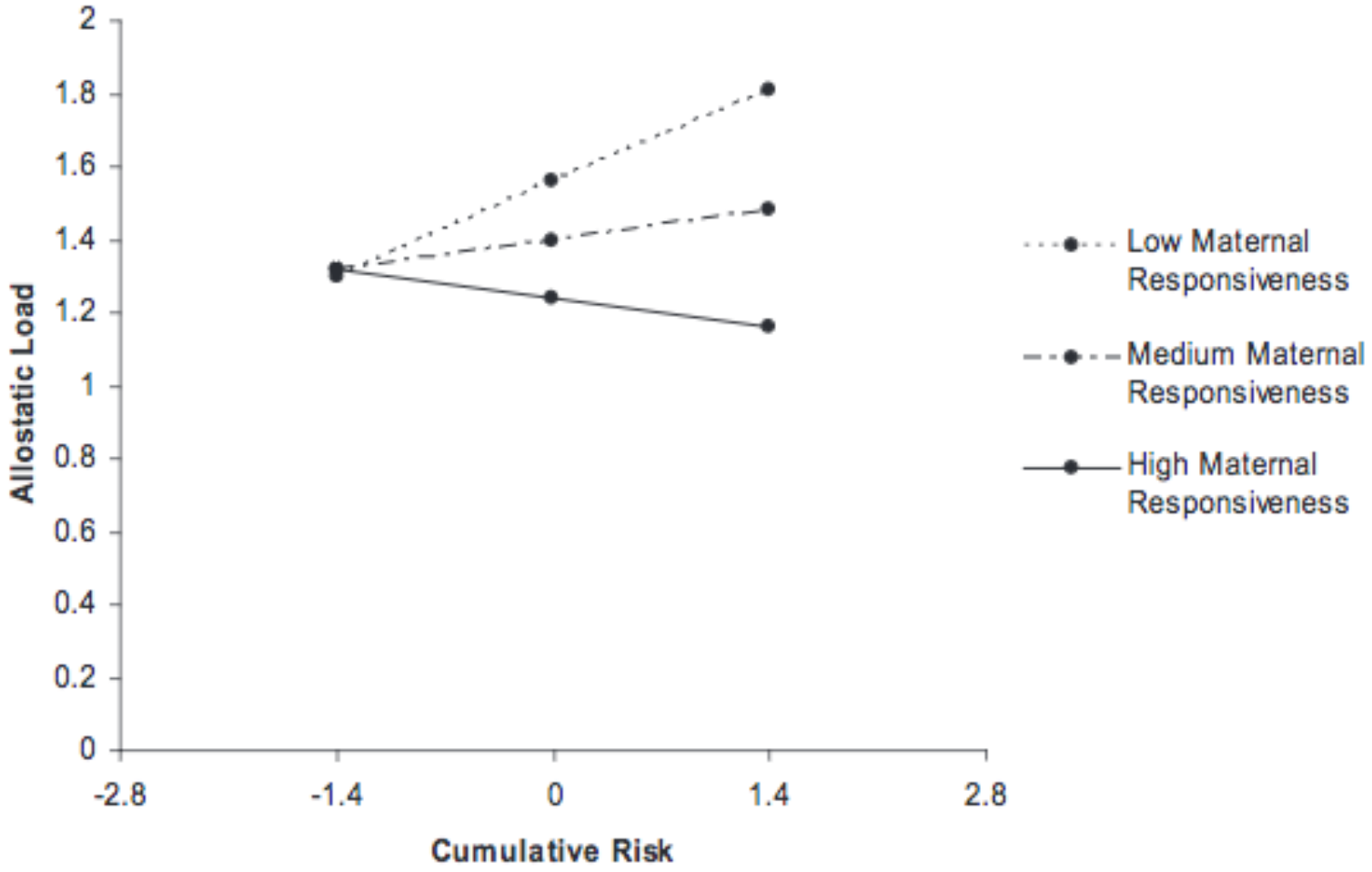

(Chen,…Miller, J Allergy & Clin Immunol, 2011)

# Shift-and-persist buffers lower SES children from detrimental inflammation and asthma outcomes

# Nurturant Parenting

- Associated with better psychological adjustment, social competence, and fewer behavioral problems (Yates, 2003; Klein & Forehand, 2000)
- Animal research shows that high maternal licking/grooming buffers rats from elevated physiological responses to stressors as adults (Liu, 1997; Frances, 1999)

# Nurturant Parenting




(Evans et al., Dev Psych, 2007)

# Parenting Intervention

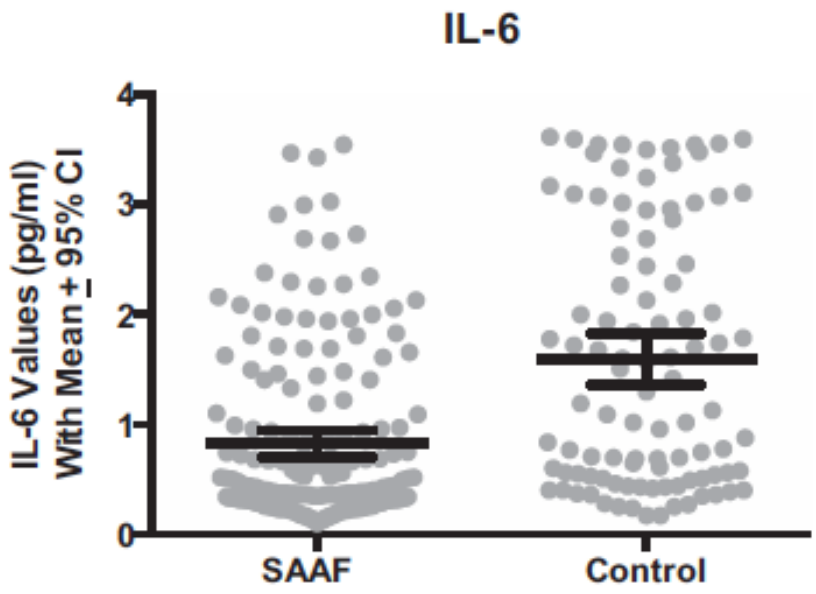
- Low SES African American mothers + 11 year old child
- Random assignment to SAAF or control group

  SAAF: Strong African American Families parenting intervention

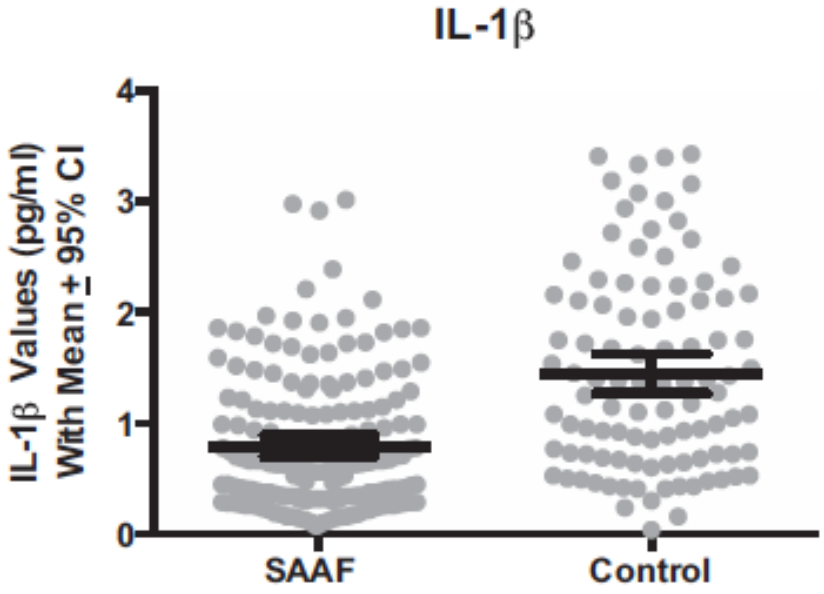
  Control: 3 flyers on child development
- Outcomes

  Pro-inflammatory cytokines at age 19

# Reduced Inflammation in Youth Who Received Intervention




F=41.46, p<.001




F=51.04, p<.001

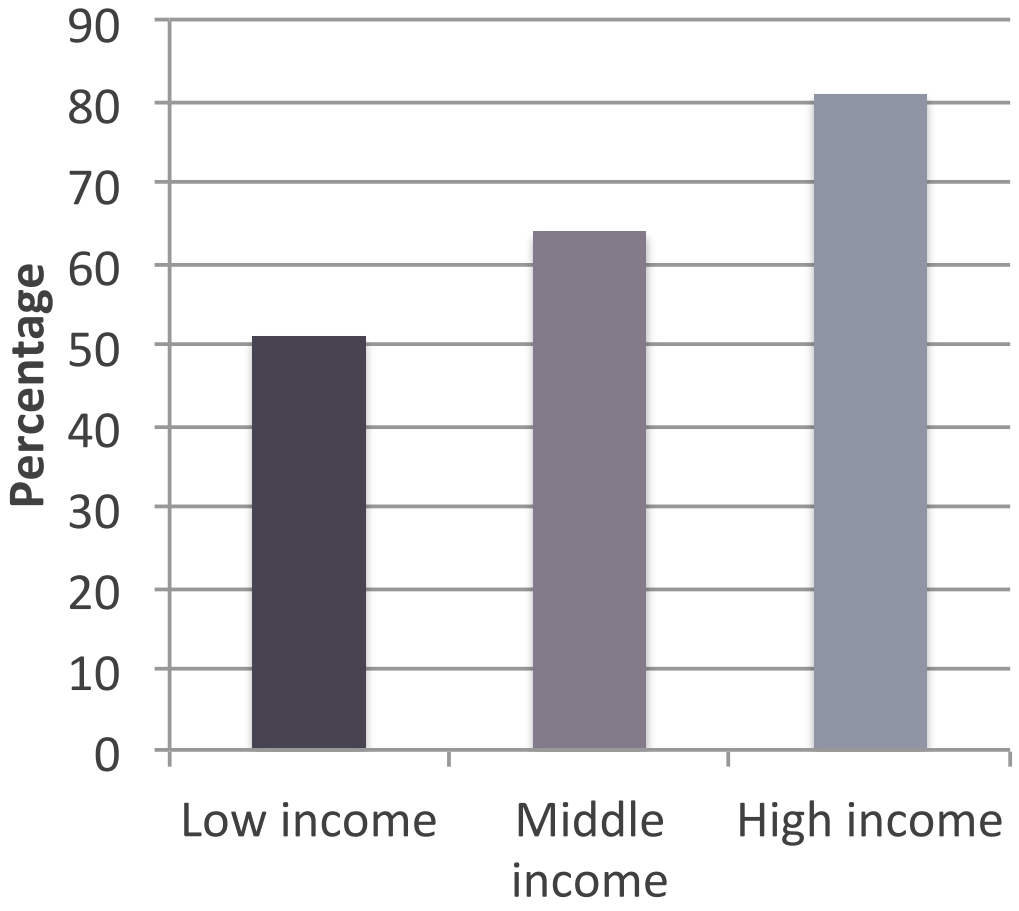
(Miller,…Chen, PNAS, 2014)

# Family Protective Factors

Nurturant parenting buffers low SES African American youth from heightened inflammation

# Resilience in Other Domains

# Resilience: % of High School Grads Who Go On to College




(Natl Center for Education Stats, 2012)

What are the physical health consequences of resilience?

# Cost to Resilience?

- To succeed in the face of adversity, youth need high levels of self-regulation (Brody et al., 2012; Masten, 2007)
- Sustained efforts at self-regulation may take a physiological toll over time (Evans, 2013)

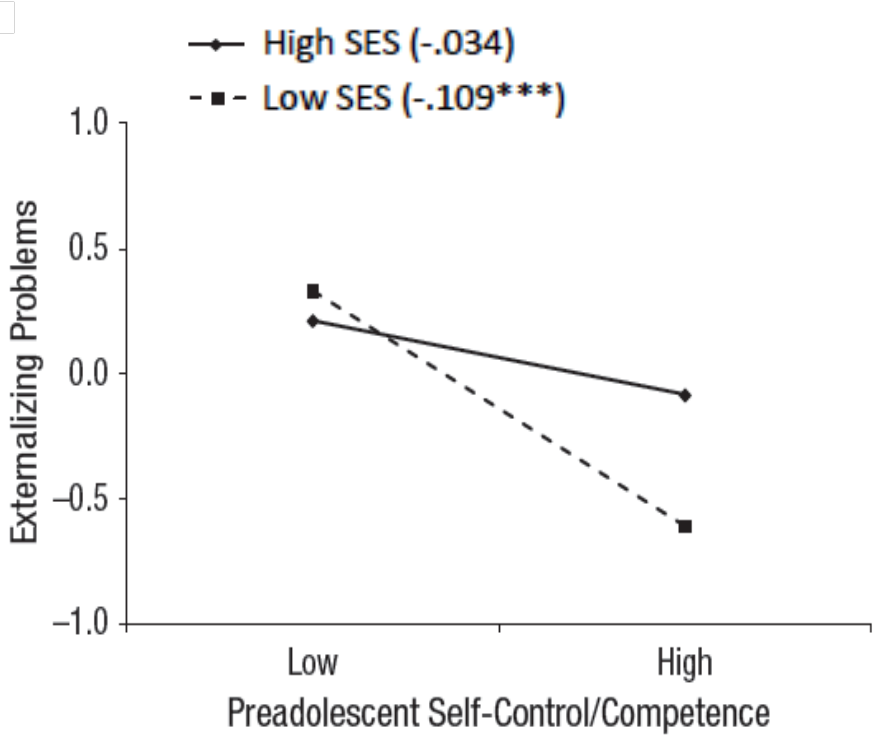
# Costs of High Self-Control?

- Sample of African American adolescents
- Family poverty measures
- Teacher ratings of child self-control ages 11-13
- Outcomes at age 19

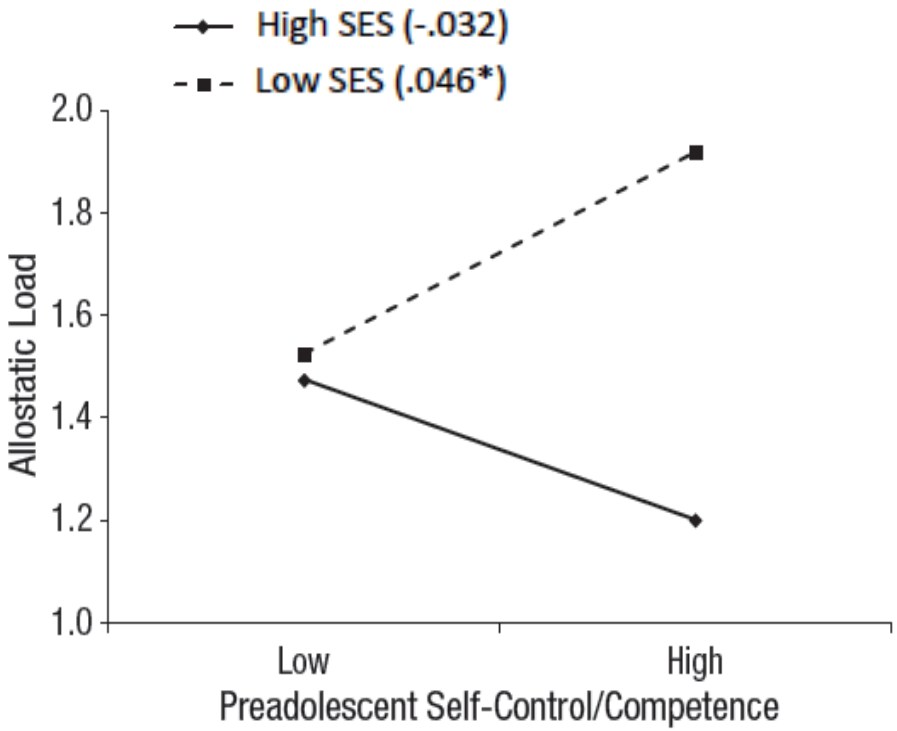
  Externalizing behaviors

  Allostatic load

# Skin-Deep Resilience




Interaction: β=-.09, p<.05



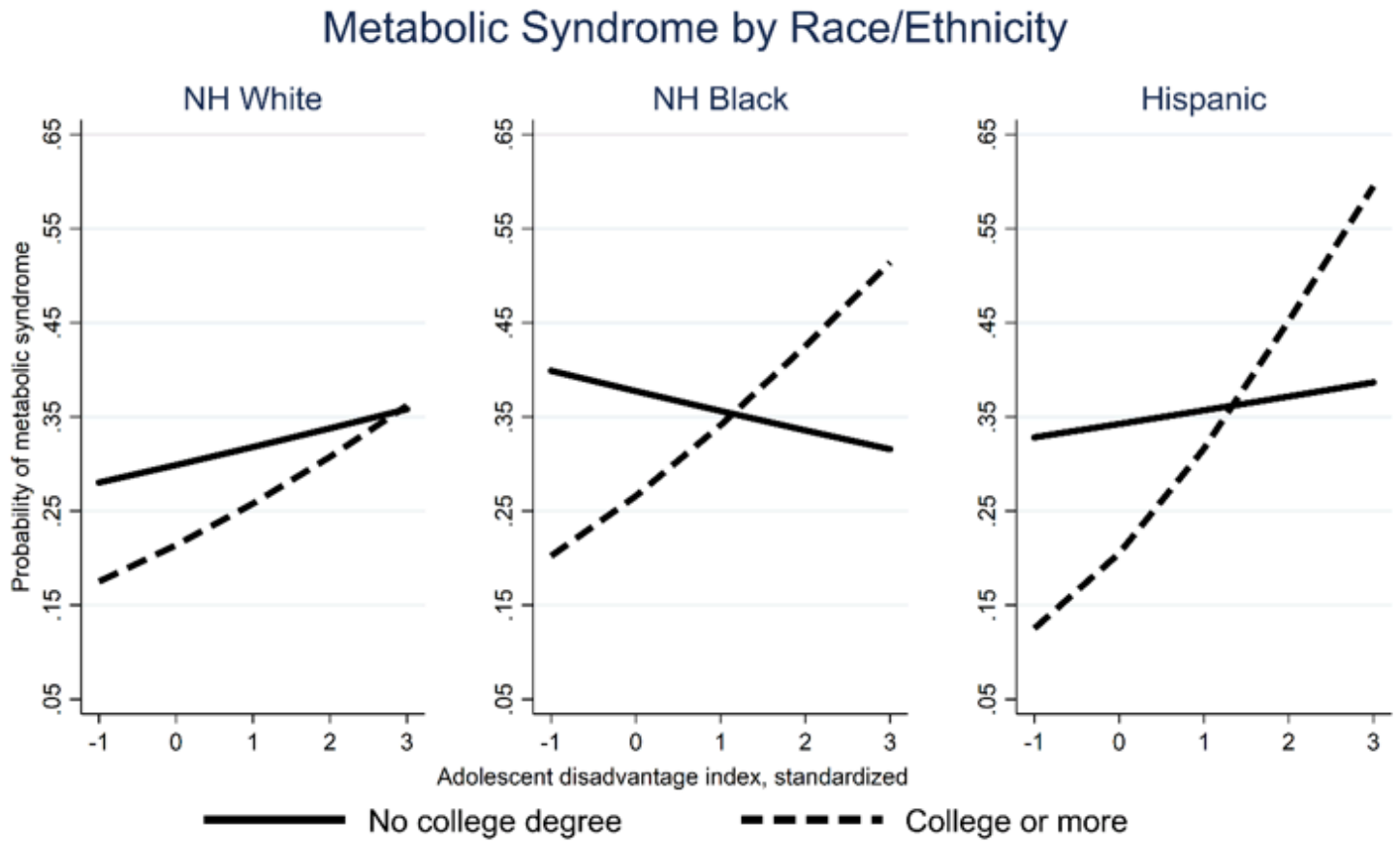

Interaction: β=.12, p<.01

(Brody et al., Psych Sci, 2013)

# SDR with a Clinical Outcome

- Add Health: 14,167 adolescents ages 12-20 (White, Black, Hispanic)
- Family disadvantage
- College attendance (yes/no)
- Depressive symptoms at age 24-32
- Metabolic syndrome at age 24-32

# SDR for Metabolic Syndrome




Interaction ORs:
Whites=1.09, n.s.
Blacks=1.53, p<.01
Hispanics=2.01, p<.01

(Gaydosh et al., PNAS in press)

# Skin-Deep Resilience

Low SES youth of color who exhibit high levels of striving have good mental health outcomes but are at risk for poor physical health

# Summary

- Inflammatory mechanisms help explain SES-health associations
- Shift-and-persist and parental nurturance can buffer low SES youth from poor health outcomes
- Low SES youth of color who strive hard to succeed are at risk for skin-deep resilience

# Thanks to:



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