

Improving the health and development of children: A public health perspective

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Questions for today

- How does poverty affect the health and development of children, both short term and long term?
- How can we implement effective interventions to improve outcomes for children at risk?

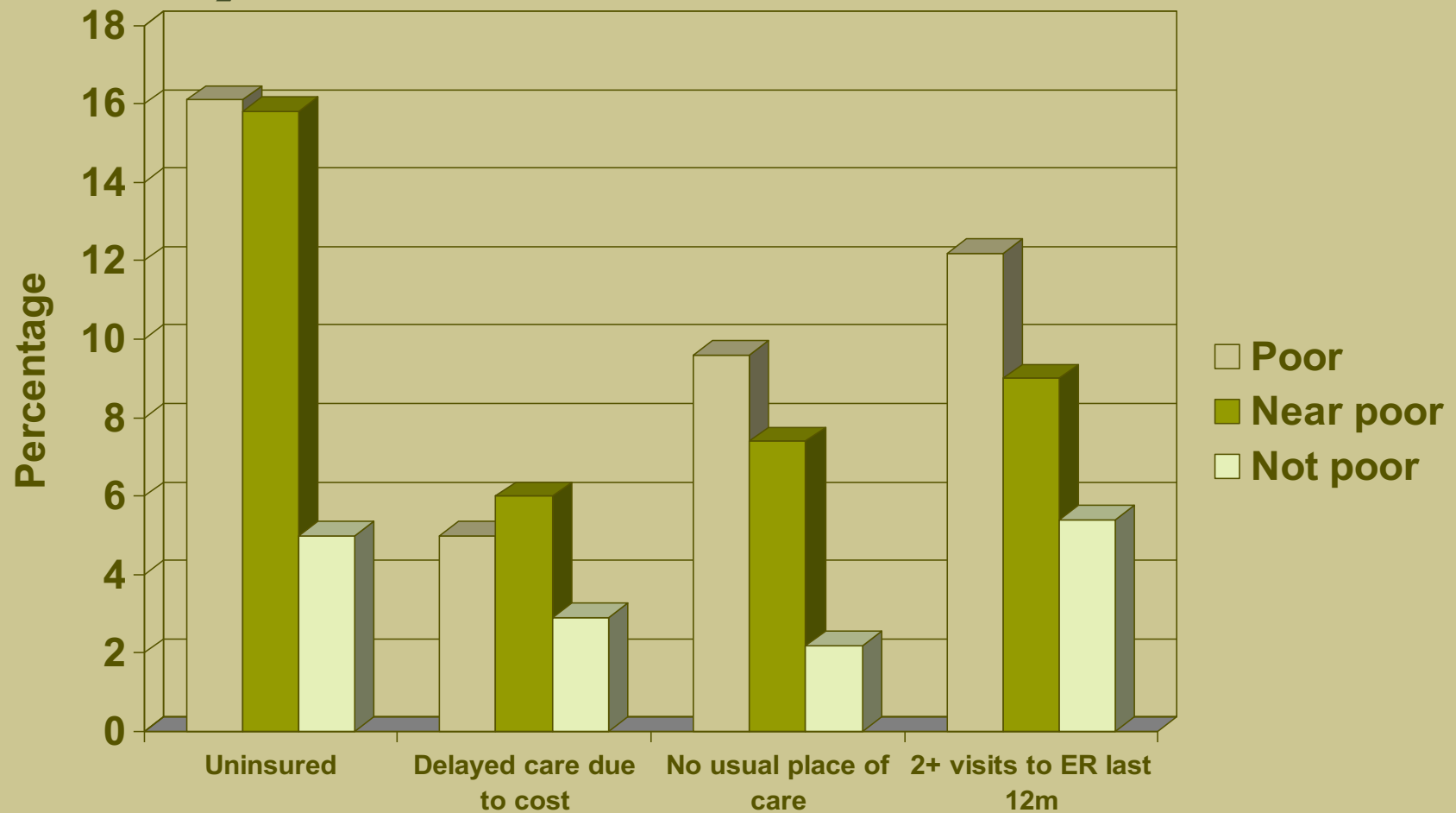


Risks associated with child poverty





Health Care Access and Childhood Poverty





The health and well-being of Texas children ranked 35th

- **Demographic indicators:**

- Children in poverty: 26%
- Uninsured children: 17%

- **Health indicators:**

- Preterm birth rate: 13%
- Child overweight/obesity: 33%
- Repeat teen pregnancies: 22%
- Fair/poor oral health: 38%

- **Education indicators:**

- Below proficient in science in 8th grade: 71%
- Below proficient in math in 8th grade: 60%
- Below proficient in reading in 8th grade: 73%
- On time graduation: 75%



Poverty and poor health/development more likely to affect minority children

- Compared to White children, **Black** children are:
 - >3x as likely to live in poverty (39.1% vs. 12.4%)
 - >2x as likely to die before their first birthday
 - >1.5x as likely to be obese
 - Less likely to graduate from high school (64% vs. 82%)
- Compared to White children, **Hispanic** children are:
 - Almost 3x as likely to live in poverty (35% vs. 12.4%)
 - >1.5x to be uninsured
 - >1.5x as likely to be obese
 - Less likely to graduate from high school (66% vs. 82%)



The maternal and child health (MCH) life course perspective

- Today's experiences and exposures determine tomorrow's health
- Health trajectories are particularly affected during critical or sensitive periods
- The broader environment strongly affects the capacity to be healthy
- Inequality in health reflects more than genetics and personal choice

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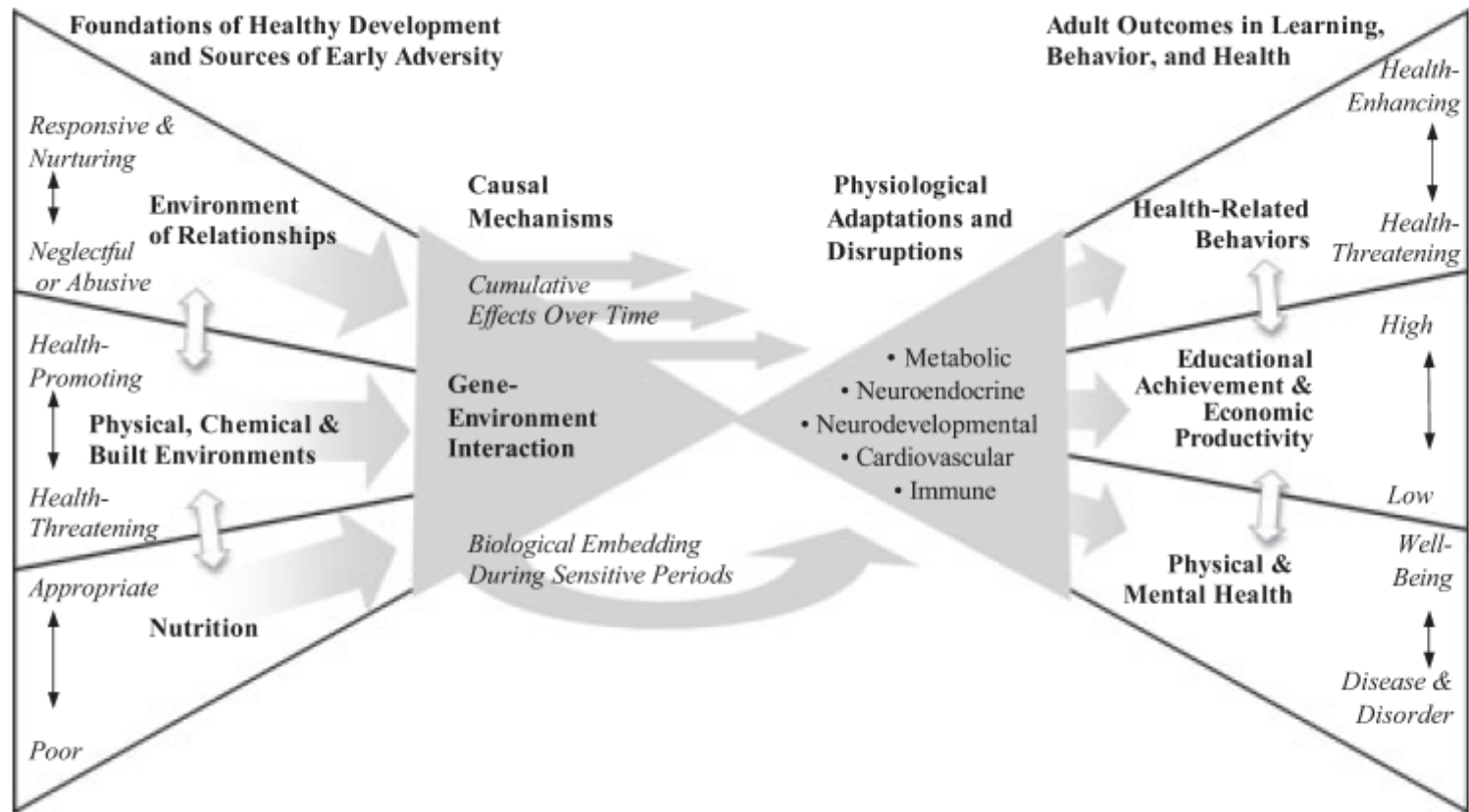


Figure 1. A biodevelopmental framework for understanding the origins of disparities in learning, behavior, and health.

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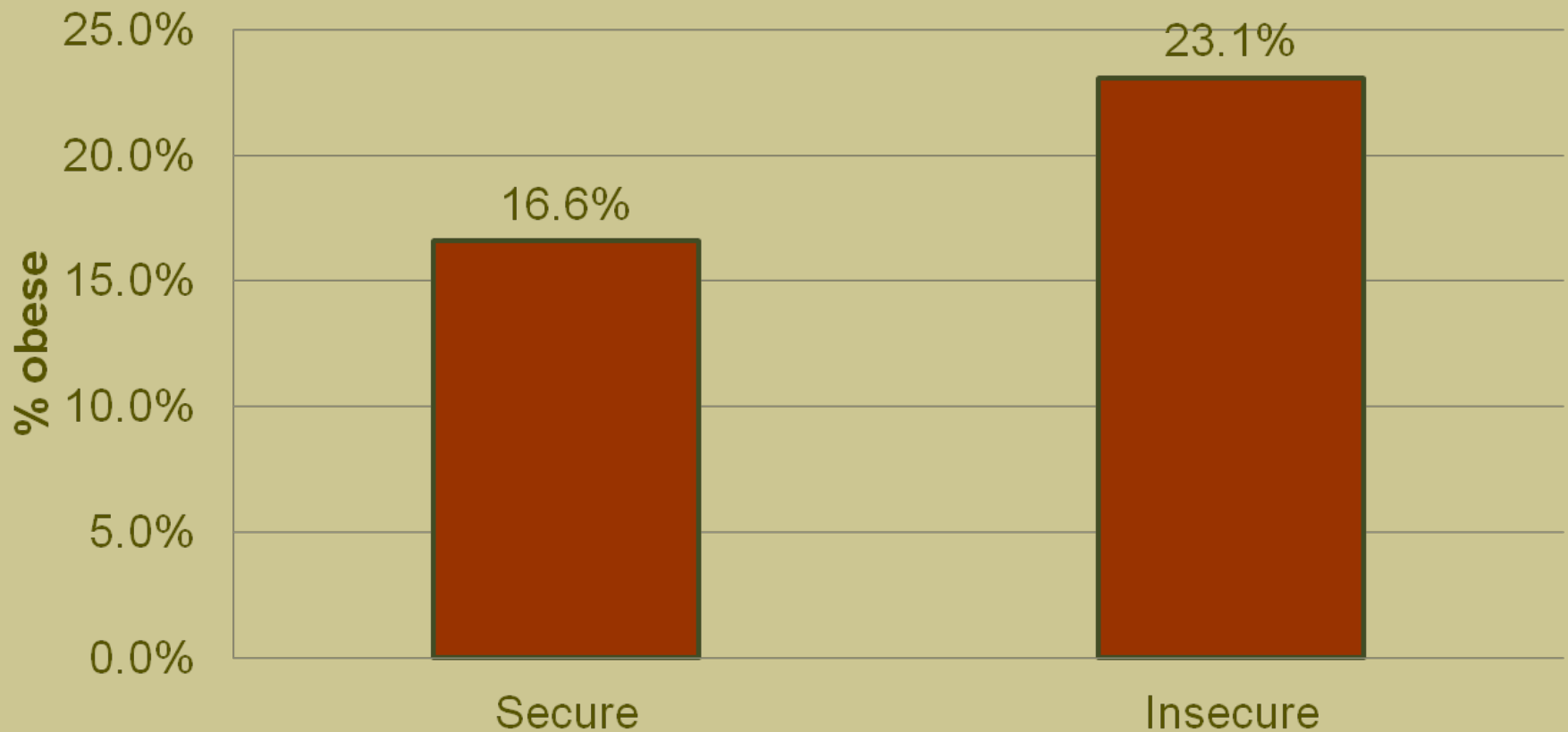


Relationships are the foundation of healthy development

- Babies come “wired” for interaction
 - Child forms attachment to primary caregiver between 9 and 12 months of age
- Sensitive, responsive caregiving associated with:
 - Greater security of attachment
 - Better developed self regulation skills
 - Fewer behavior problems
 - Better cognitive outcomes



Security of attachment and risk of obesity



Adjusted odds = 1.30 (95% CI: 1.05-1.62)

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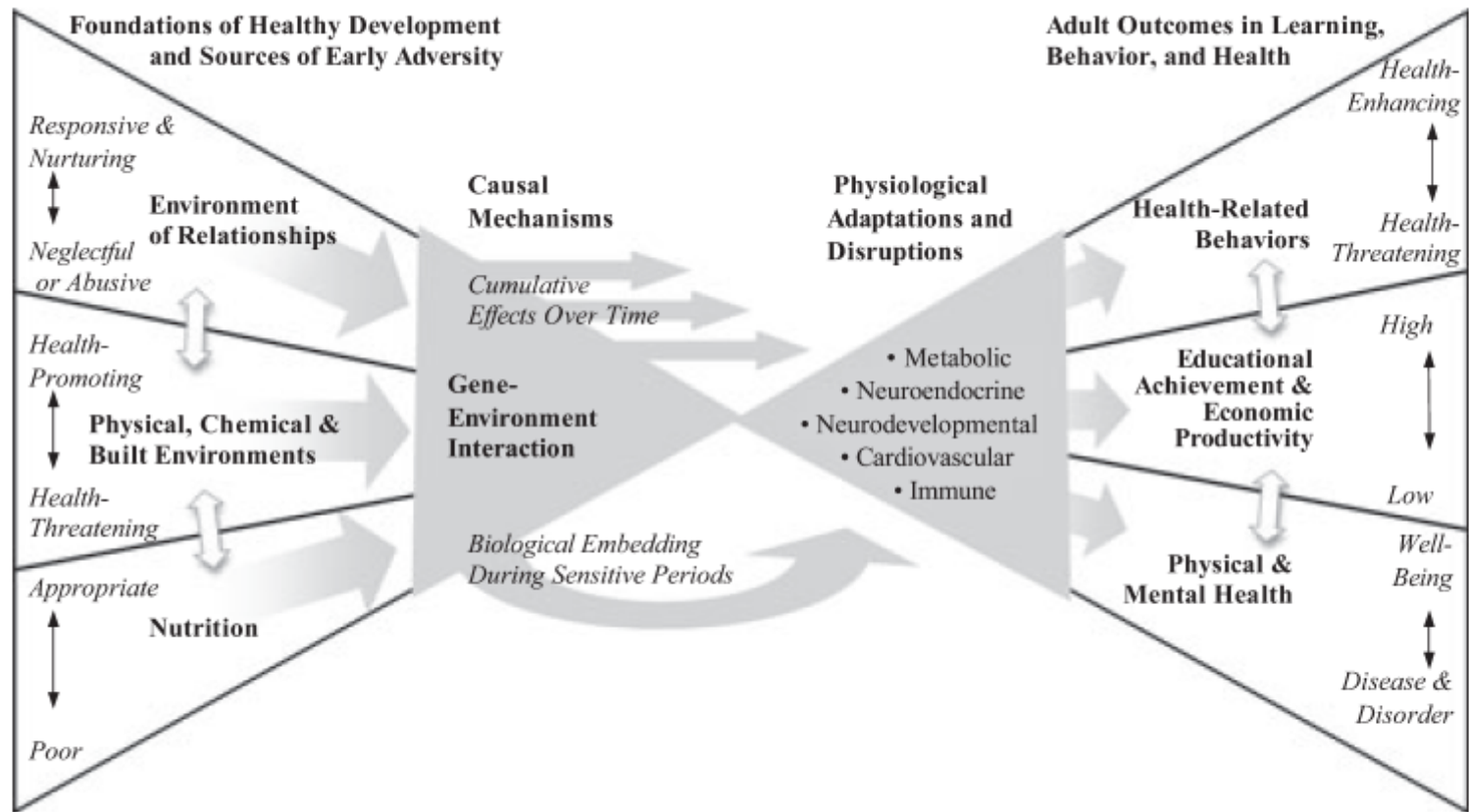


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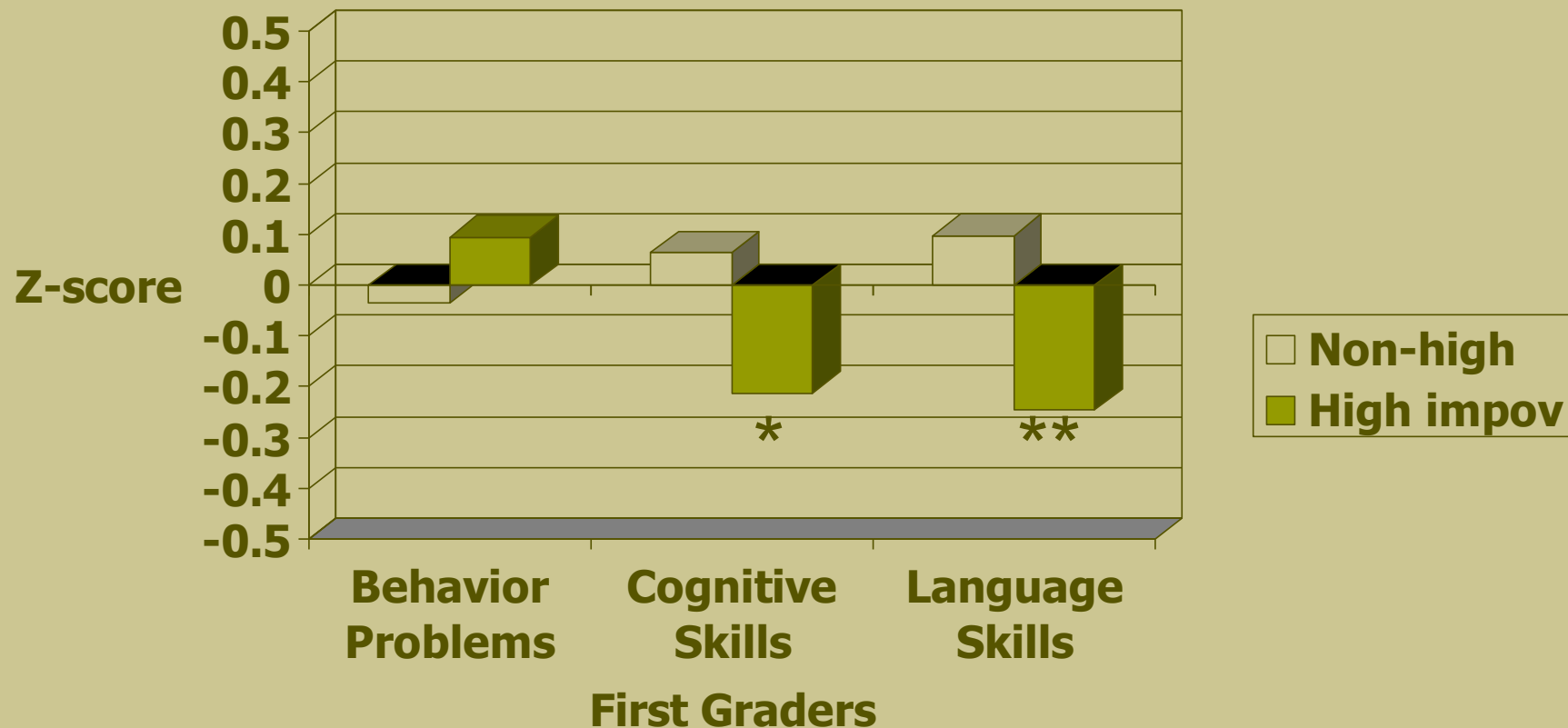


Neighborhoods as a source of risk and resilience

- Neighborhood poverty is an independent source of developmental risk, over and above risk factors at the family level



Neighborhood economic impoverishment and child cognitive and behavioral competence





Neighborhoods and health: What's the evidence?

- Perinatal health (LBW/PTB, etc.)
- Physical health
 - Obesity/diet/physical activity
 - Cardiovascular health
 - All cause mortality
- Mental health
 - Depression
 - Substance abuse
- Youth/child outcomes
 - Risky behavior
 - Behavior problems
 - Academic achievement

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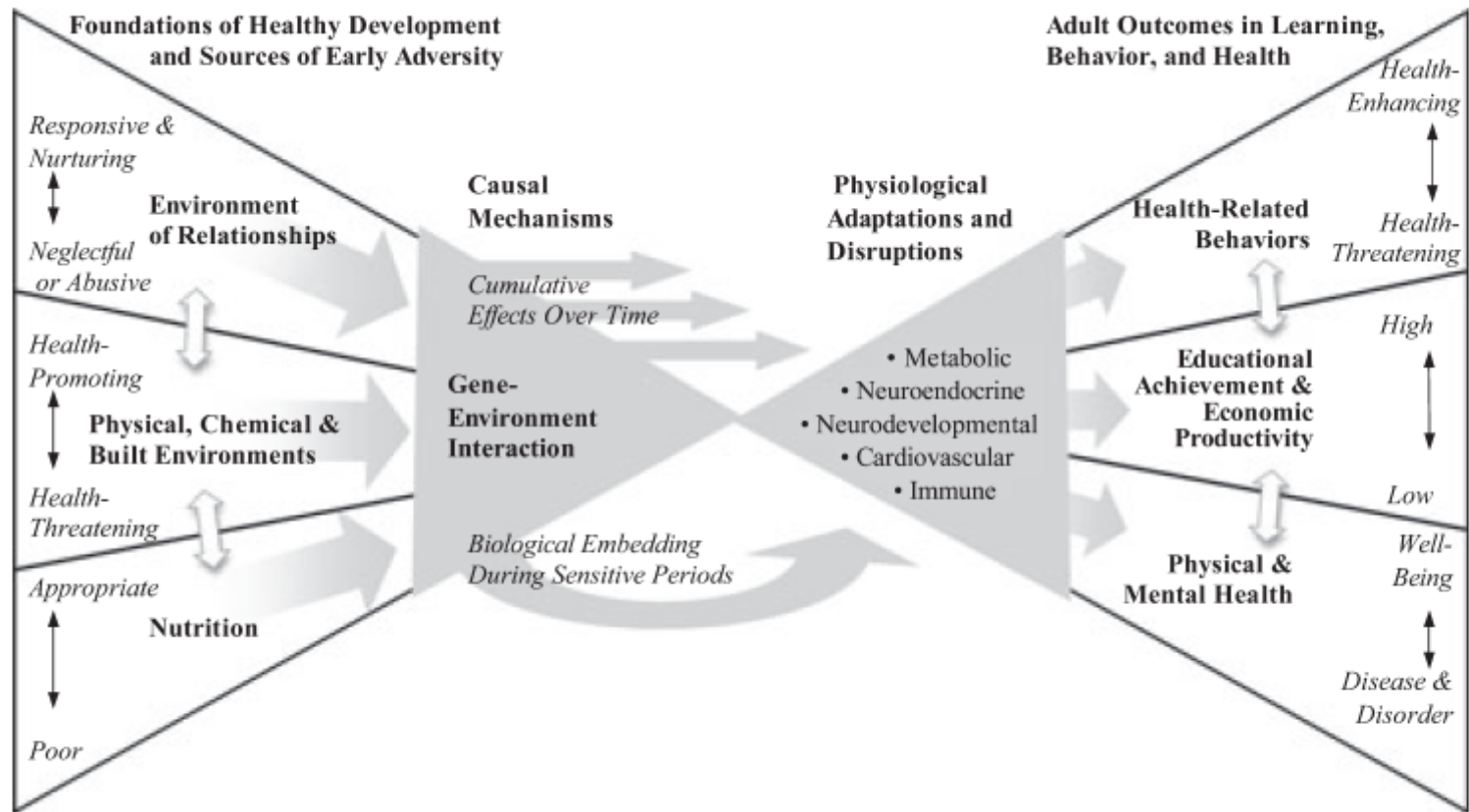


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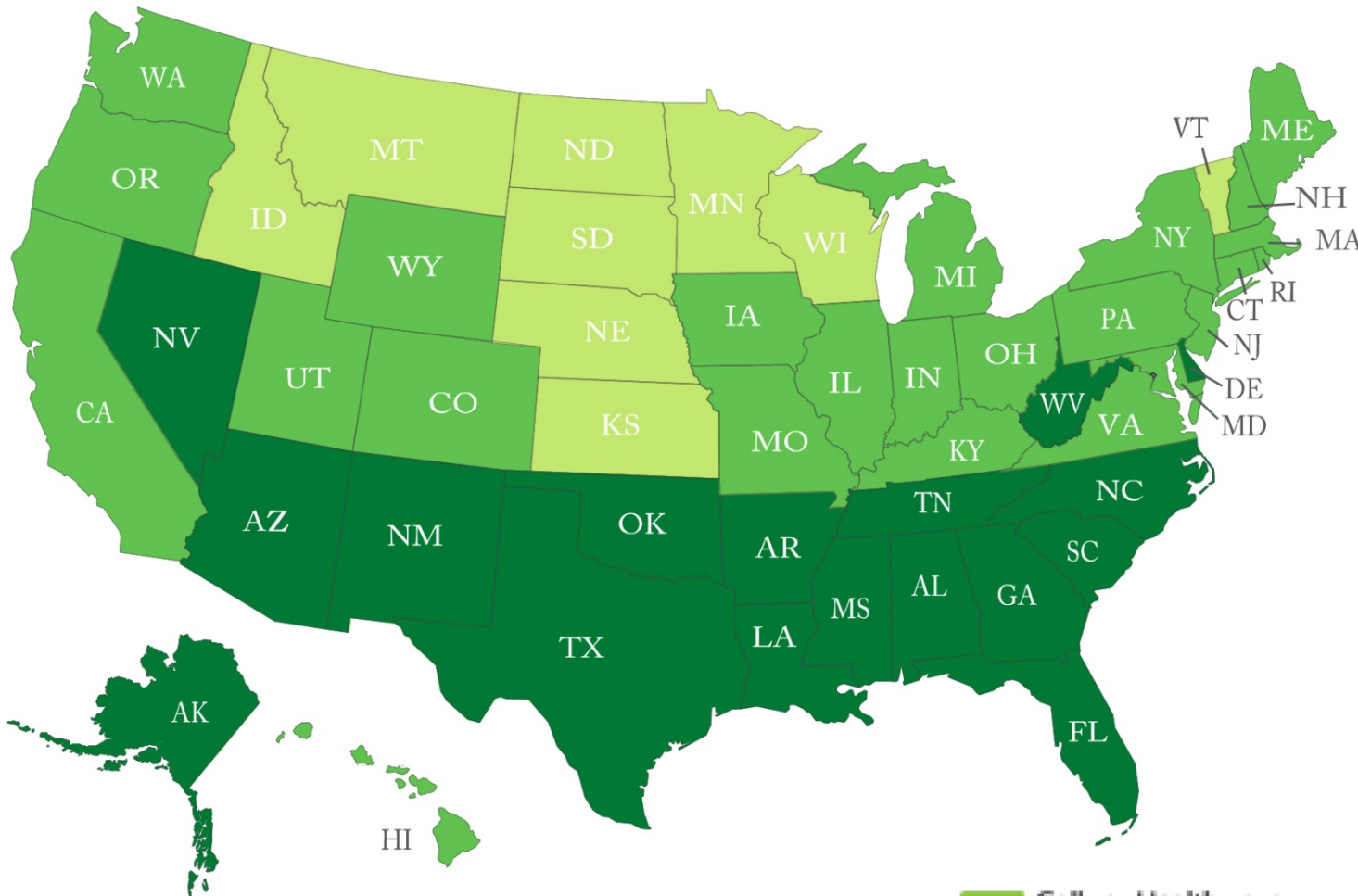
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Lacked Money for Food, January-June 2012

■ Higher range ■ Midrange ■ Lower range



*Texas: ranked 15th;
20% had experienced
food insecurity*

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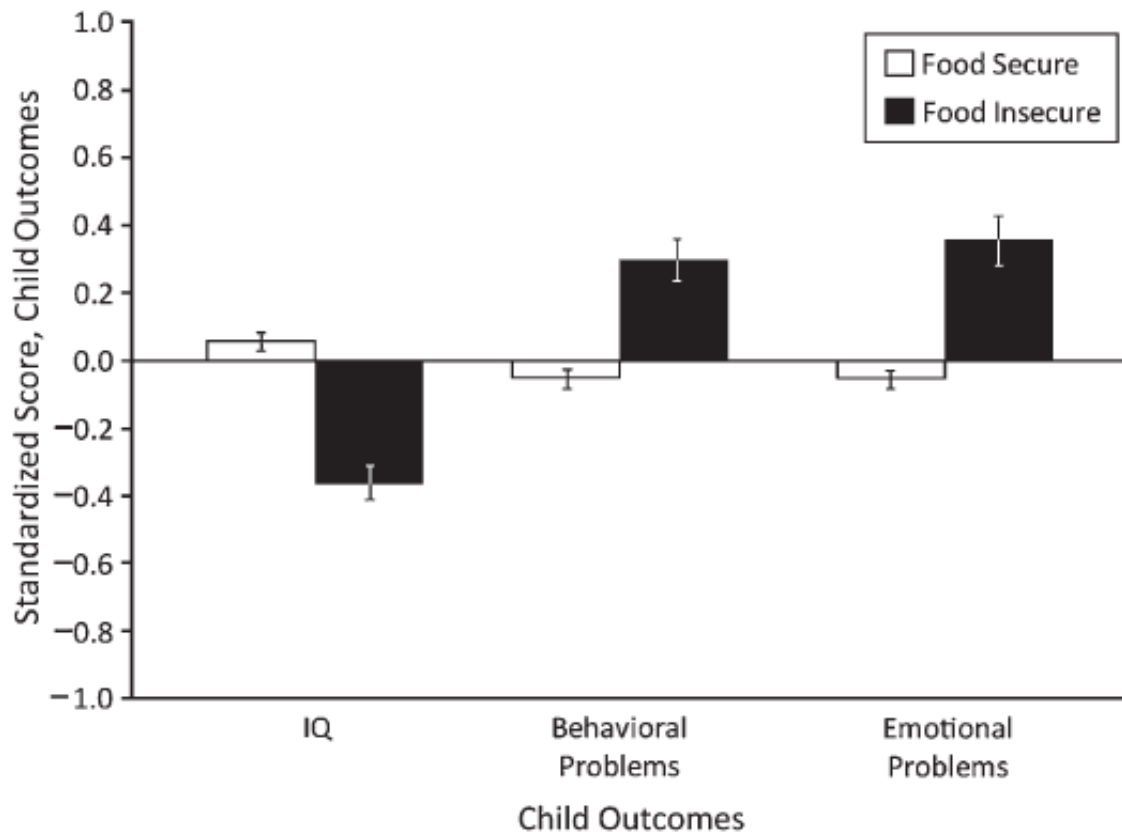


Figure 1. Mental health, at age 12 years, of United Kingdom children always food secure and ever food insecure during ages 7–10 years, Environmental Risk Longitudinal Twin Study, 1999–2000. Food insecurity refers to material hardship related to food, including hunger. Error bars indicate ± 1 standard error; $P < 0.001$ for all comparisons.

Belsky, D. W., Moffitt, T. E., Arseneault, L., Melchior, M., & Caspi, A. (2010). Context and sequelae of food insecurity in children's development. *American Journal of Epidemiology*, 172, 809-818.

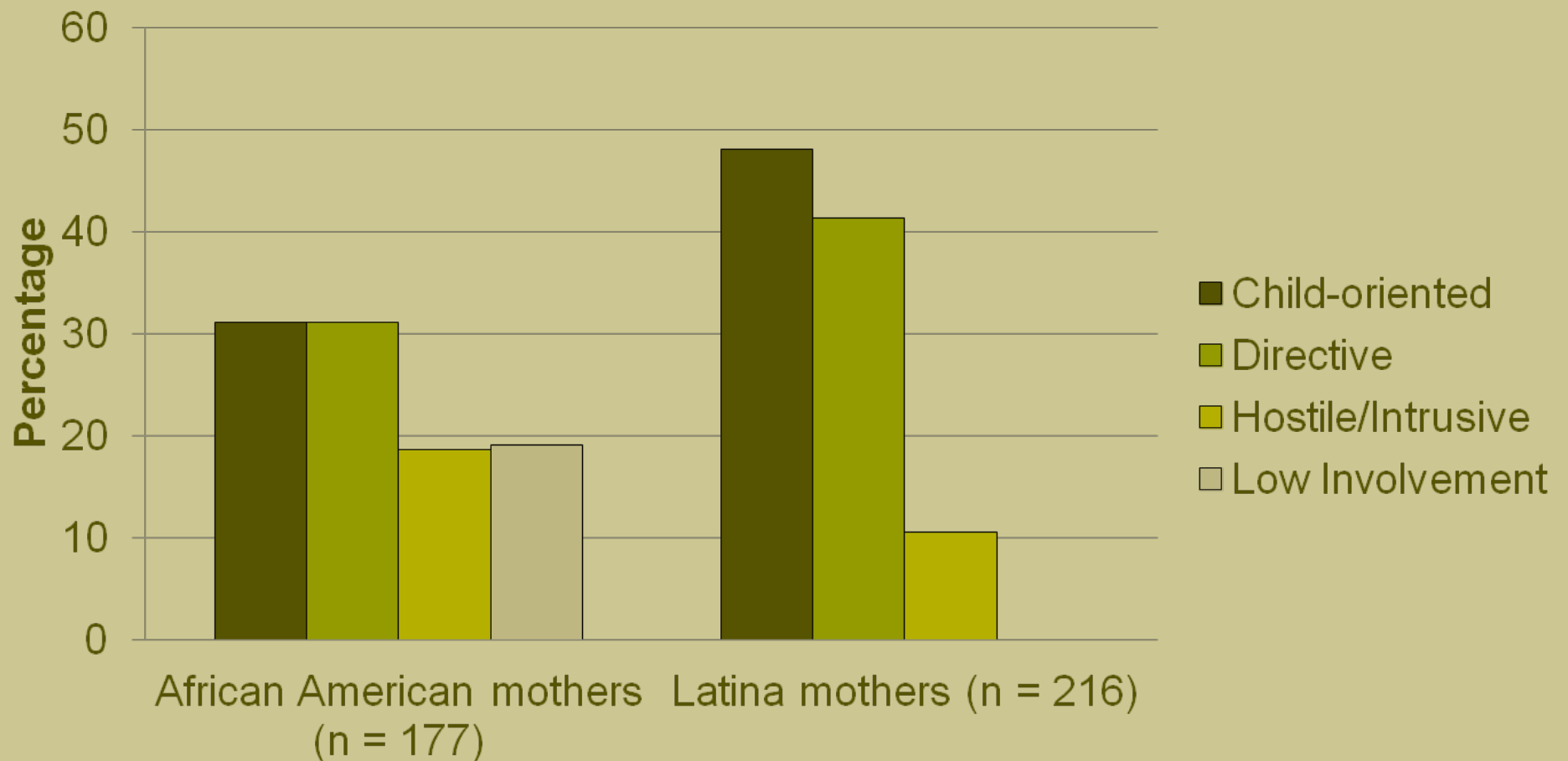


Developmental resilience in the face of adversity

Individual	<ul style="list-style-type: none">• Good intellectual functioning• Easy disposition• Self esteem• Talents• Faith
Family	<ul style="list-style-type: none">• Close relationship with caring adult• Authoritative parenting• Socioeconomic advantages• Extended family support
Extra-familial	<ul style="list-style-type: none">• Bonds to prosocial adults outside family• Connections to prosocial organizations• Attending effective schools

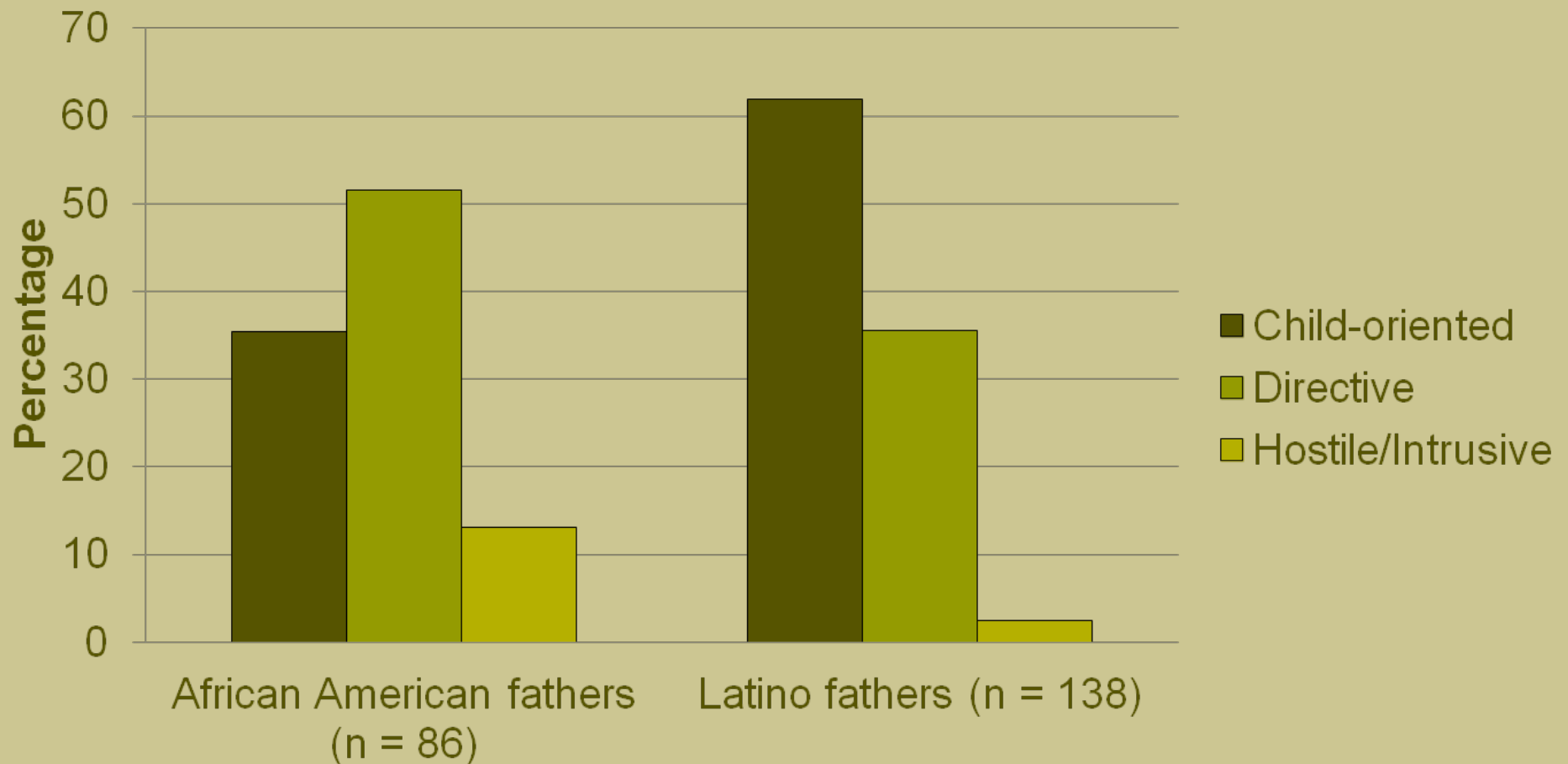


A significant proportion of low income parents engage in positive parenting





A significant proportion of low income parents engage in positive parenting





How does the stress of poverty "get under your skin"?

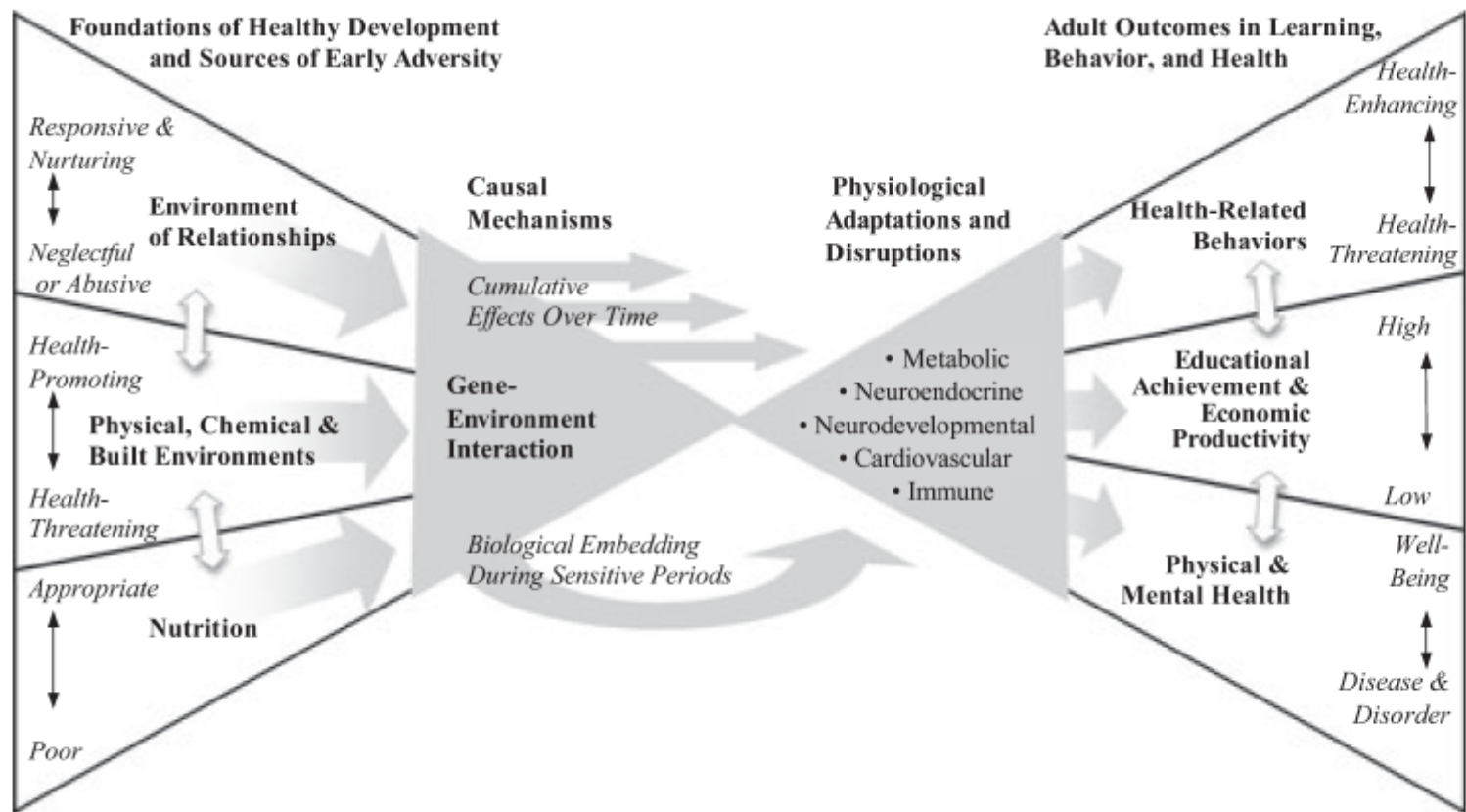
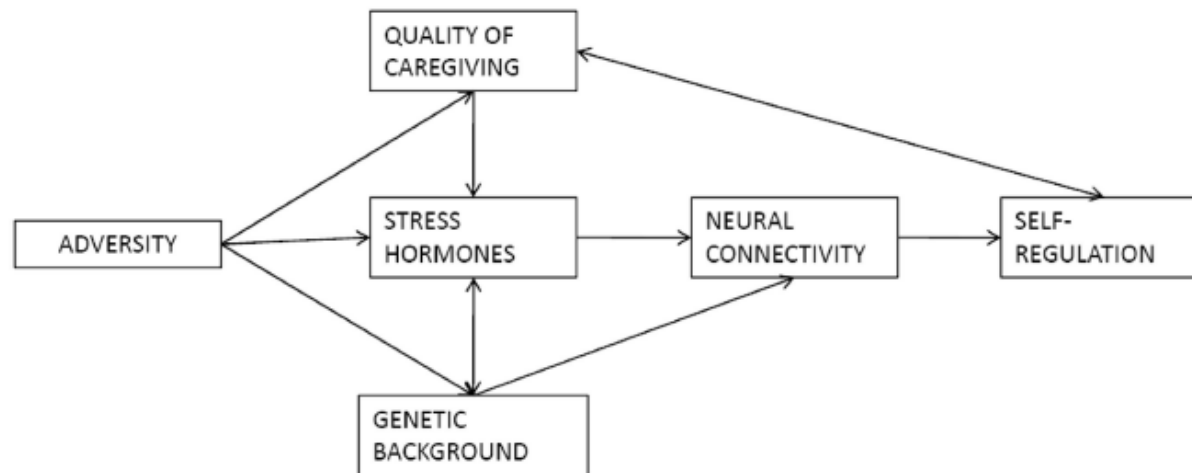


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Figure 1
Model of the Experiential Canalization of Self-Regulation Development



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



What is self regulation?

- “.. the cognitive, motivational, affective, social and physiological processes that modulate attention, emotion and behavior to a given situation/stimulus, for the purpose of pursuing a goal.”

Bassett, H. H., Denham, S., Wyatt, T. M., & Warren-Khot, H. K. (2012). Refining the Preschool Self-regulation Assessment for use in preschool classrooms. *Infant and Child Development*, online first, n/a-n/a. doi: 10.1002/icd.1763

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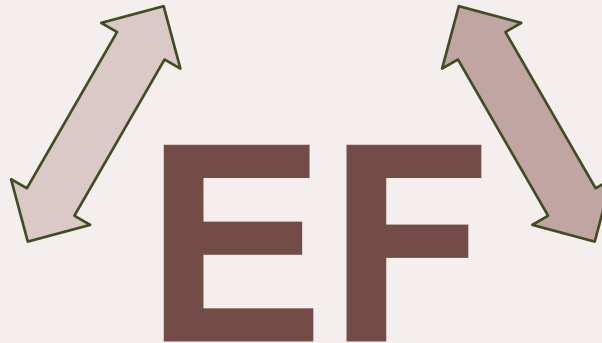


Inhibitory Control

The ability to ignore distraction and stay focused, and to resist making one response and instead make another

The ability to hold information in mind and manipulate it

||



The ability to flexibly switch perspectives or focus of attention

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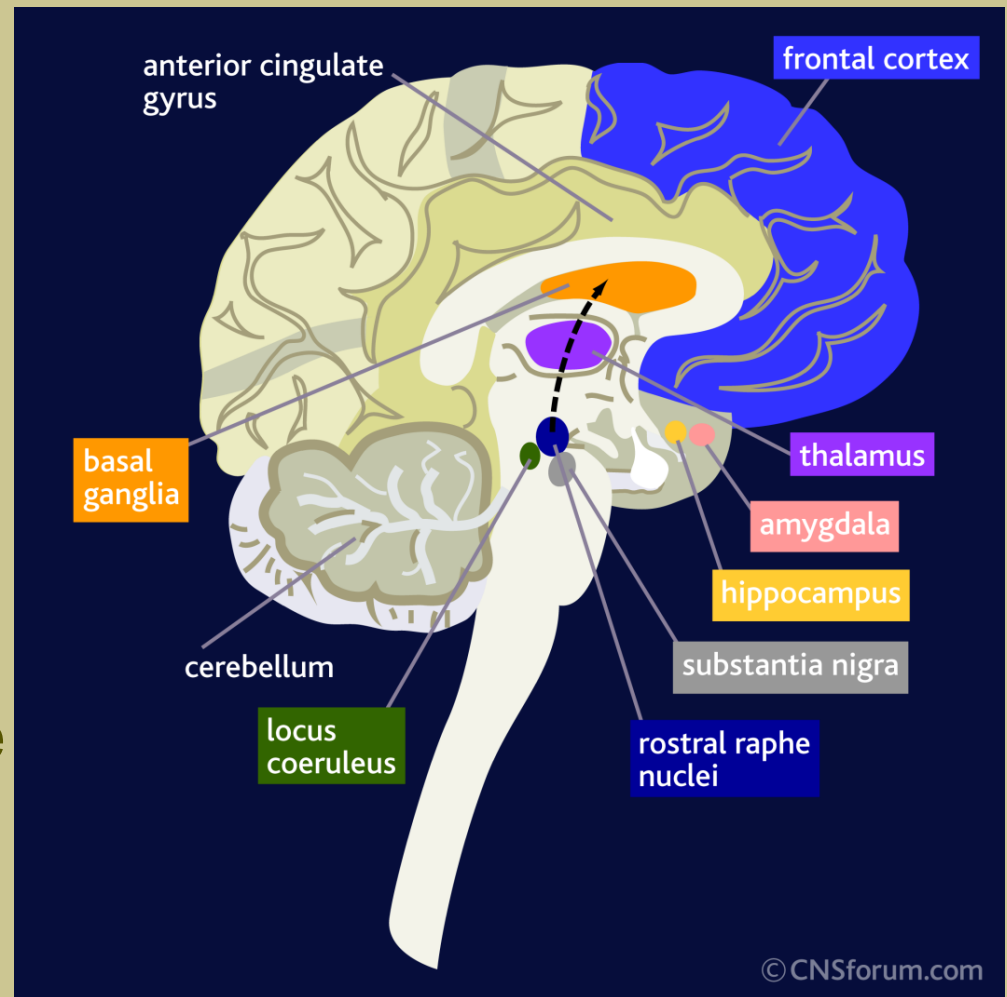
Working memory

Cognitive flexibility



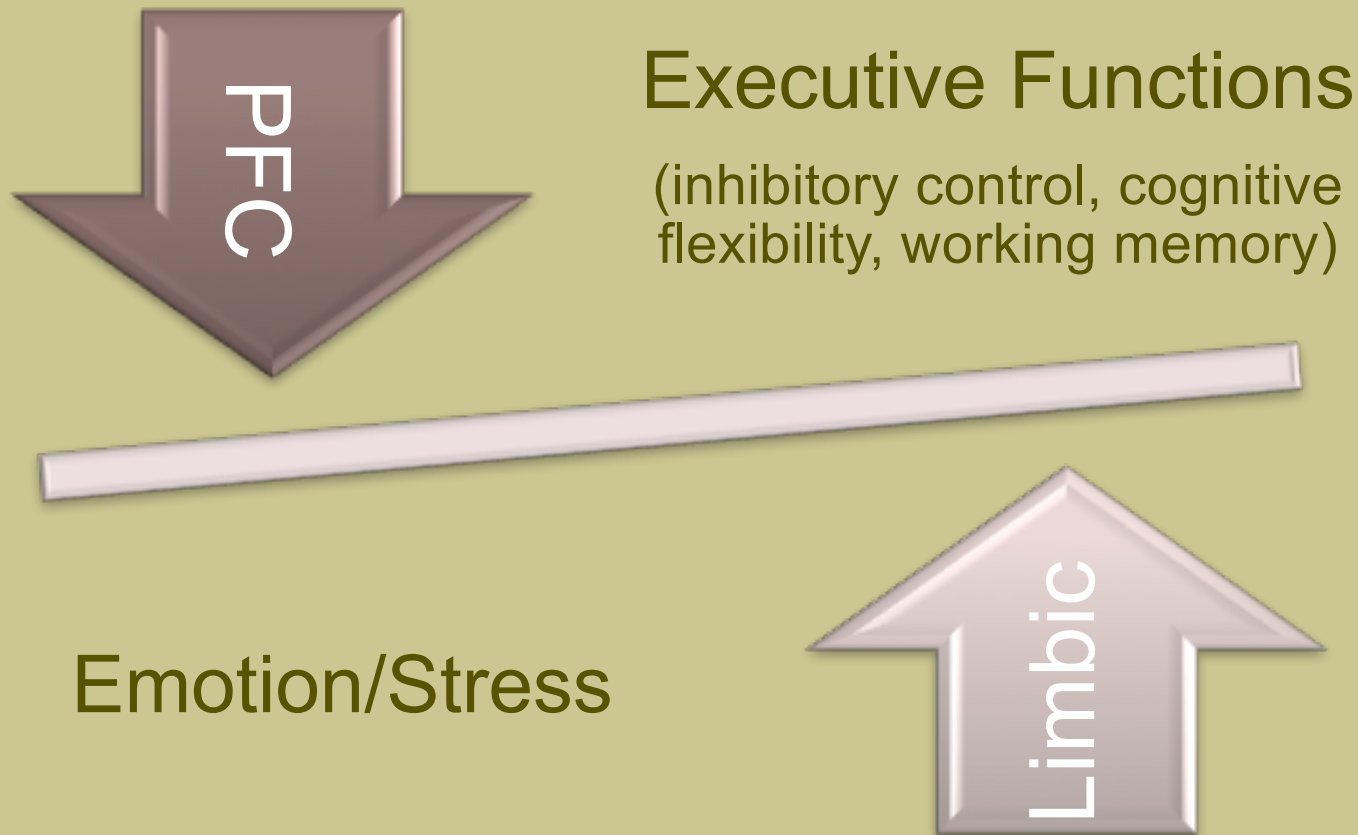
Neural basis of self regulation

- PFC – controls higher order processes including planning, monitoring and goal setting; effortful
- ACC – connects PFC with limbic areas
- Limbic areas (amygdala, hypothalamus) responsive to emotion/stress; more automatic





Neural basis of self regulation



Blair, C., & Ursache, A. (2011). A bidirectional model of executive functions and self regulation. In K. D. Vohns & R. F. Baumeister (Eds.). *Handbook of self regulation: Research, theory, and applications*. New York: The Guilford Press. (pp. 300-320).



Deficits in self regulation implicated in:

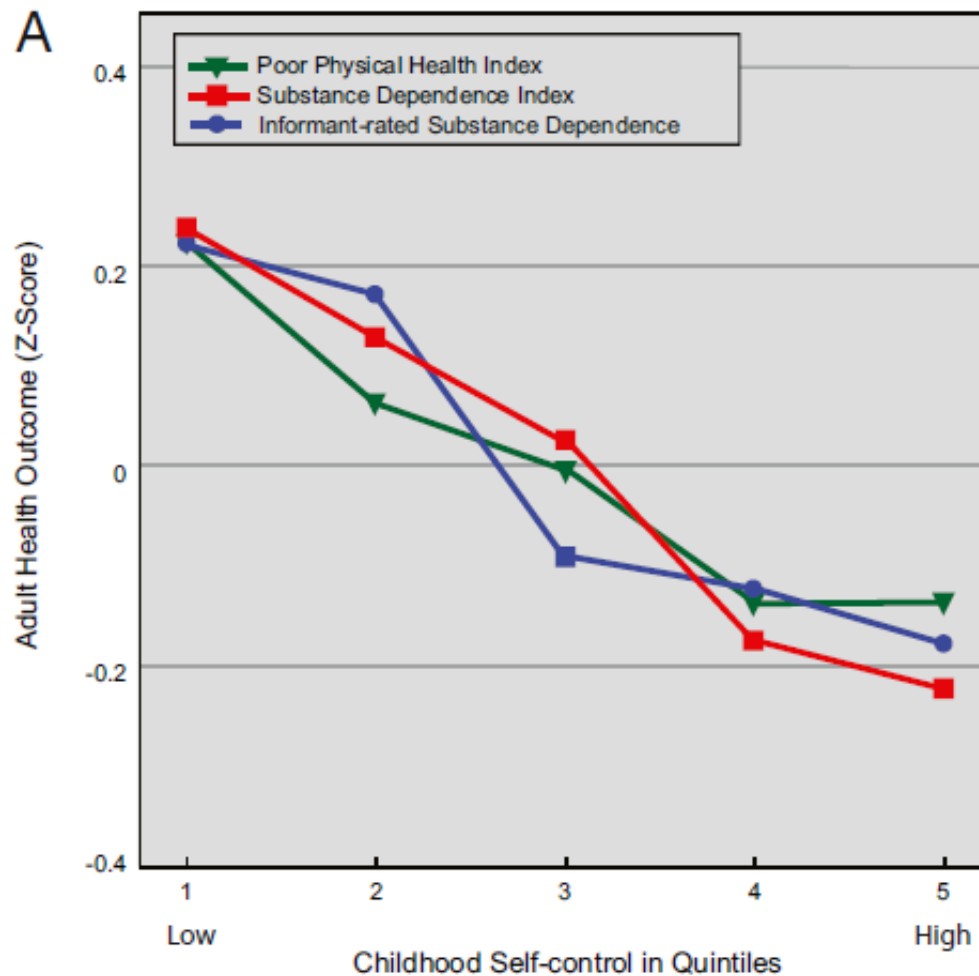
- Early academic failure
- Higher rates of child overweight/obesity
- Substance use/sexual risk taking in adolescence
- Poor health in adulthood



- After controlling for gender, SES, ethnicity and age, executive control associated with:
 - Substance use (↓)
 - Snack food intake (↓)
 - Fruit and vegetable intake (↑)
 - Out of school physical activity (↑)
 - Sedentary behavior (↓)

Riggs, N. R., Spruijt-Metz, D., Chou, C.-P., & Pentz, M. A. (2012). Relationships between executive cognitive function and lifetime substance use and obesity-related behaviors in fourth grade youth. *Child Neuropsychology*, 18, 1-11.

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Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R. J., Harrington, H. (2011). A gradient of childhood self-control predicts health, wealth, and public safety. *Proceedings of the National Academy of Sciences*, 108, 2693-2698.

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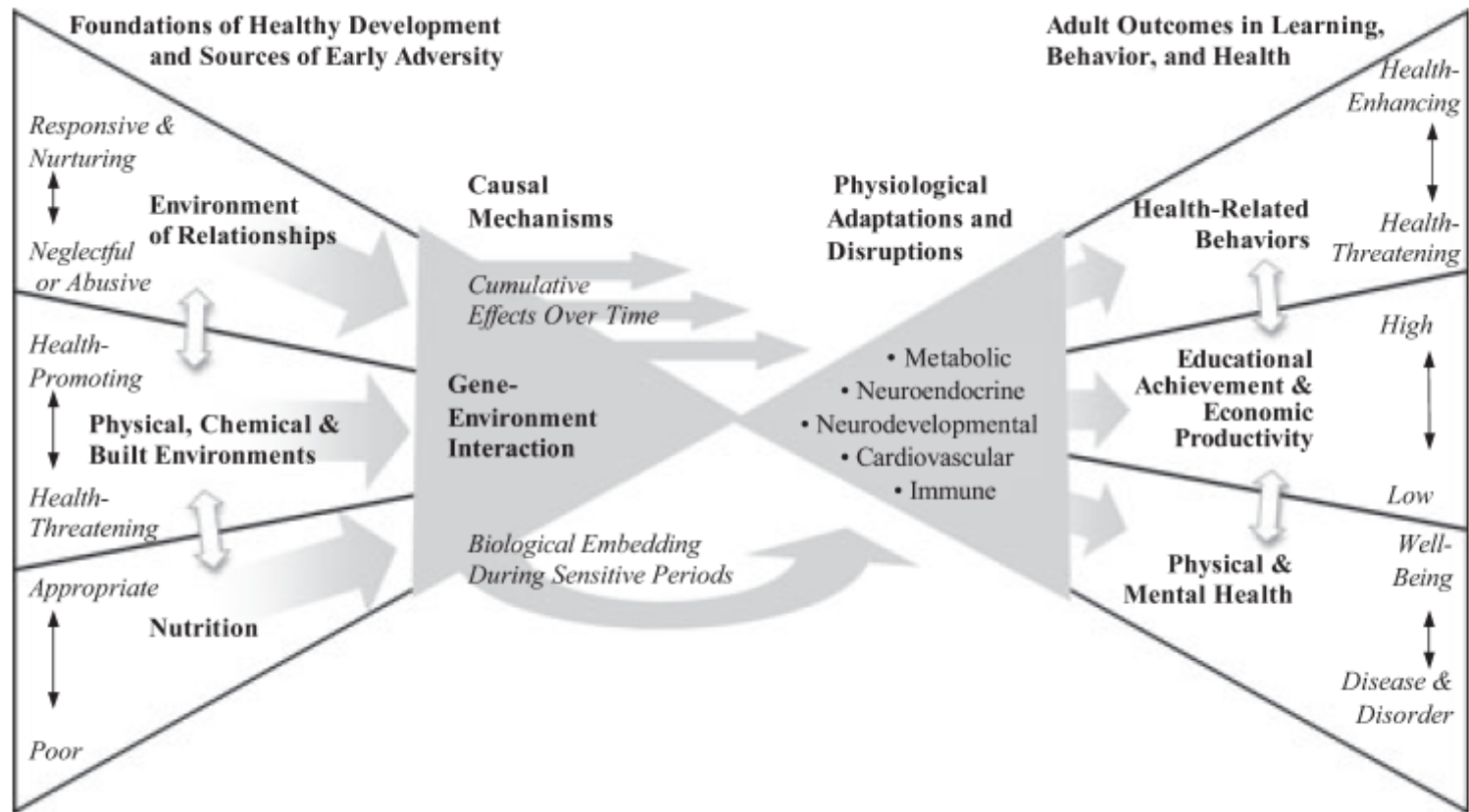


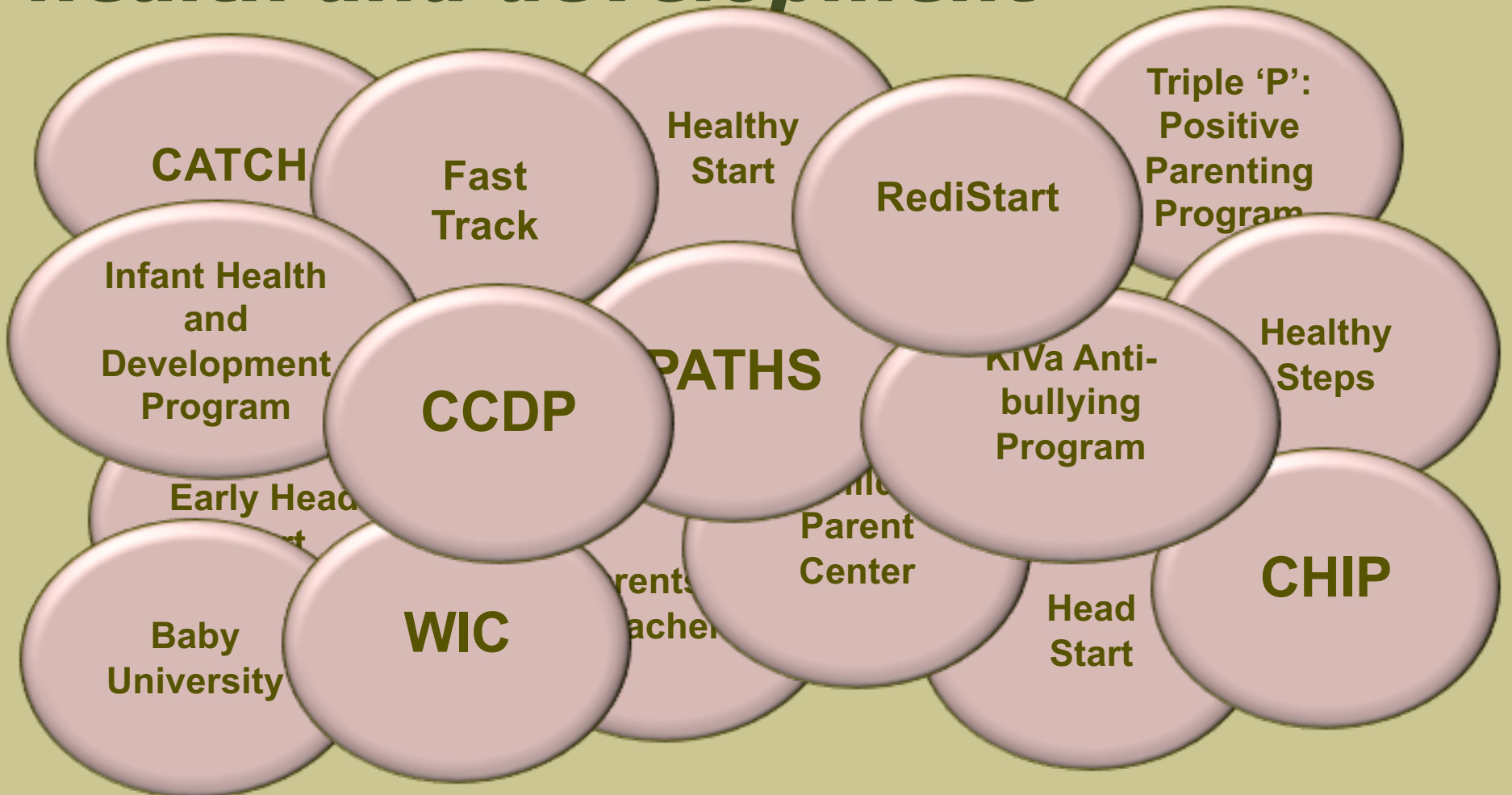
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Interventions to improve child health and development





Limitations of interventions

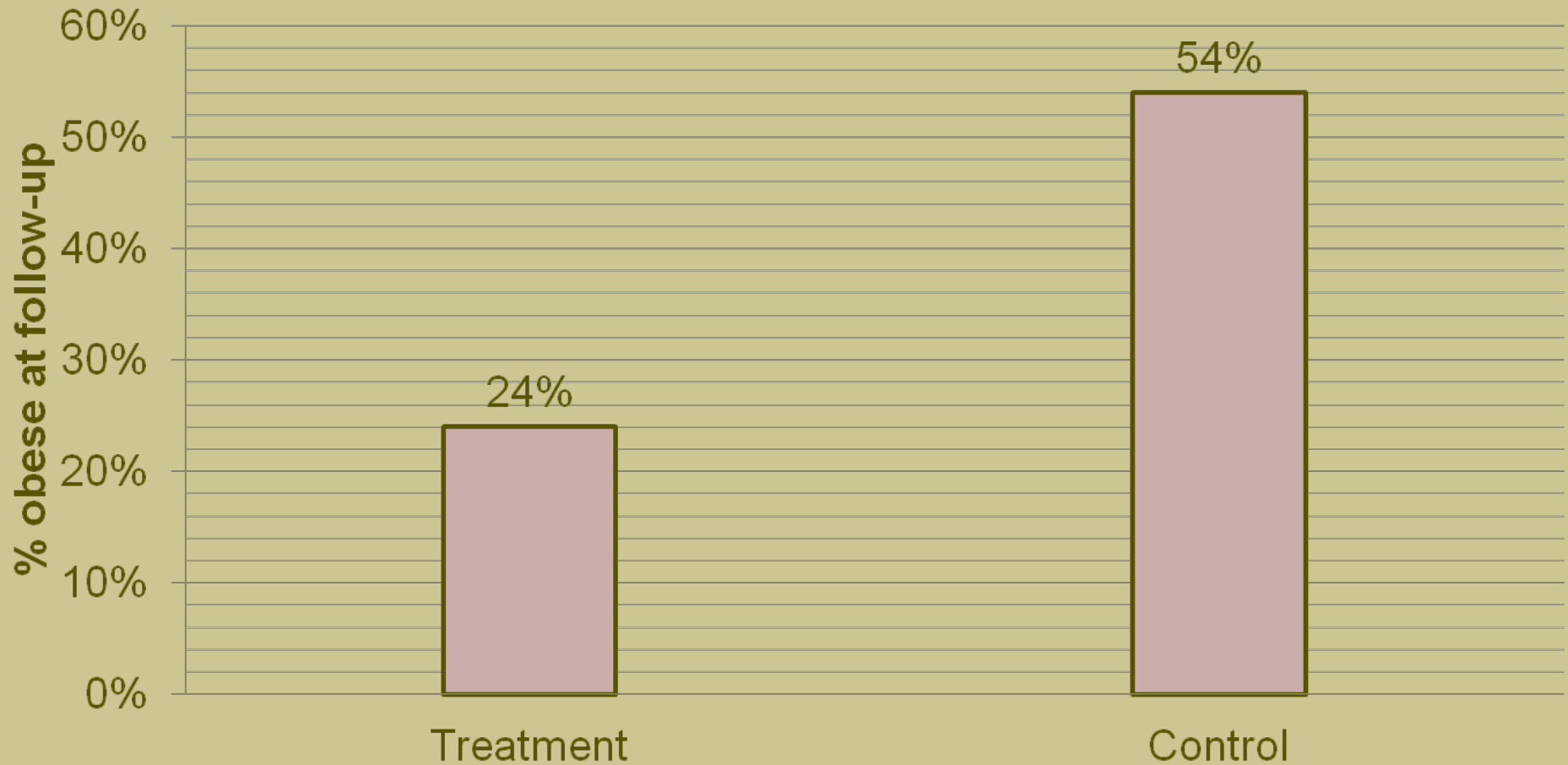
- Most health and development problems have similar root causes
- Virtually no coordination across intervention efforts



Intervention "cross-over"

- RCT of parenting intervention to prevent child behavior problems
 - N = 186
 - Ethnic minority
 - Enrolled at age 4
 - Followed until age 10

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Brotman, L. M., Dawson-McClure, S., Huang, K.-Y., Theise, R., Kamboukos, D., Wang, J. (2012). Early childhood family intervention and long-term obesity prevention among high-risk minority youth. *Pediatrics*, 129, 1-8.



Other examples of intervention "cross-over"

- Using physical activity as a treatment for ADHD; clinical trial at University of Vermont (Betzy Hoza) and Purdue (Alan Smith)
- Translation of PATHS intervention (adolescent substance use and violence prevention) to reduce obesity (Sakuma et al. (2012). *Health Education Research*, 27 (2), 343-358.)



MCH Life Course Initiatives

- “A MCH Life Course Organization is an entity that develops the capacity over time to deliver integrated, continuous and comprehensive health and social services and support to women and their infants from the cradle to the grave.”
- Northern Manhattan Perinatal Partnership (est. 1990)
- <http://www.sisterlink.com/index.htm>

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Northern Manhattan Perinatal Partnership Life Course Continuum of Interventions

Centering Pregnancy	Child abuse prevention	Latch-key program	Managing relationships	Health policy activities	Reproductive social capital	Harlem Weight Watchers
Internatal care	School readiness	Fitness & health activities	Pregnancy prevention	Women's health protocol	Depression group work	Women's health protocol
Perinatal care	Universal Pre-K	Beacon school	College prep	Perinatal care	Reproductive life planning	Specialty care
Harlem Birthing Center	Early Head Start/Head Start	Health/life story telling	Preconception, inter-conceptual care	Chronic disease	Chronic disease management	Chronic disease
Birth	Early childhood	Preteen	Teen	Young Adult	Women >35	Senior Citizens

Axis 1

Drummonds (2008).

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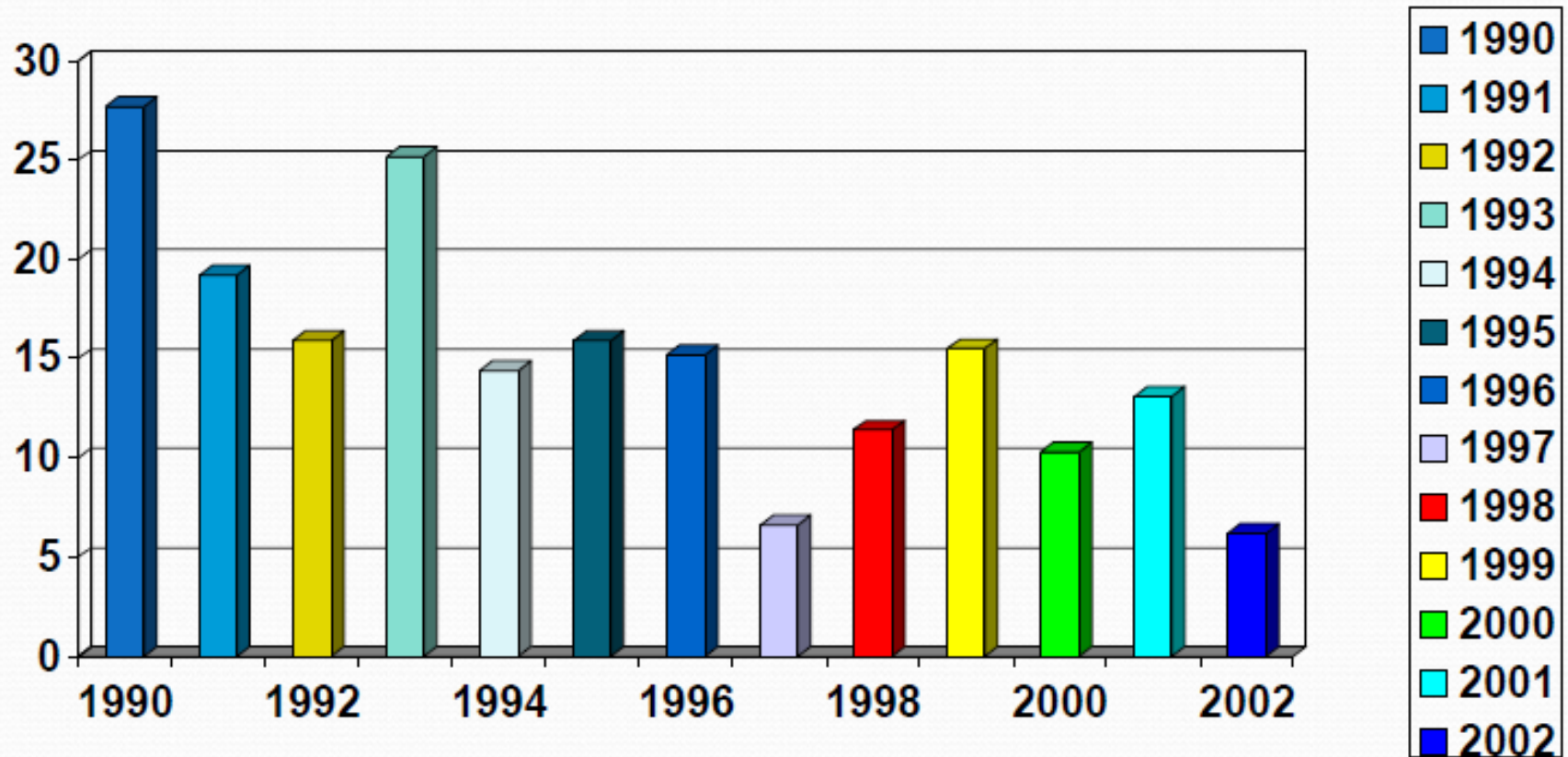
Northern Manhattan Perinatal Partnership Life Course Continuum of Interventions

Axis 2

Public Policy Initiatives	Economic Empowerment Zone	Supermarket Zone Expansion Policy	NYC Affordable Housing Policy
Community Environmental Impact	St. Nick Tenant Organizing	Food & Fitness Coalition	Affording Housing Organization
Organizational Impact	Healthy Start Consortium	Diabetes Prevention Coalition	Harlem Works Job Readiness
Group/ Interpersonal Impact	Centering Pregnancy	Baby Mama's Club	Consumer Involvement Organization
Individual Impact	OB/GYN Medical Homes	Case Management	Depression Screening & Treatment



Central Harlem Infant Mortality Rate



September 13, 2006
Bureau of Vital Statistics
New York City Department of Health and Mental Hygiene

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Can we build a life course approach to improve child health in North Texas?

