Neurobehavioral & Psychological

Effects of Poverty

Daniel C. Marston, PhD, ABPP

Marston Psychological Services, LLC

12320 Route 30 #2, North Huntingdon, PA 15642

412-380-2695 724-433-5467

drdanmarston@comcast.net

Daniel C. Marston, PhD

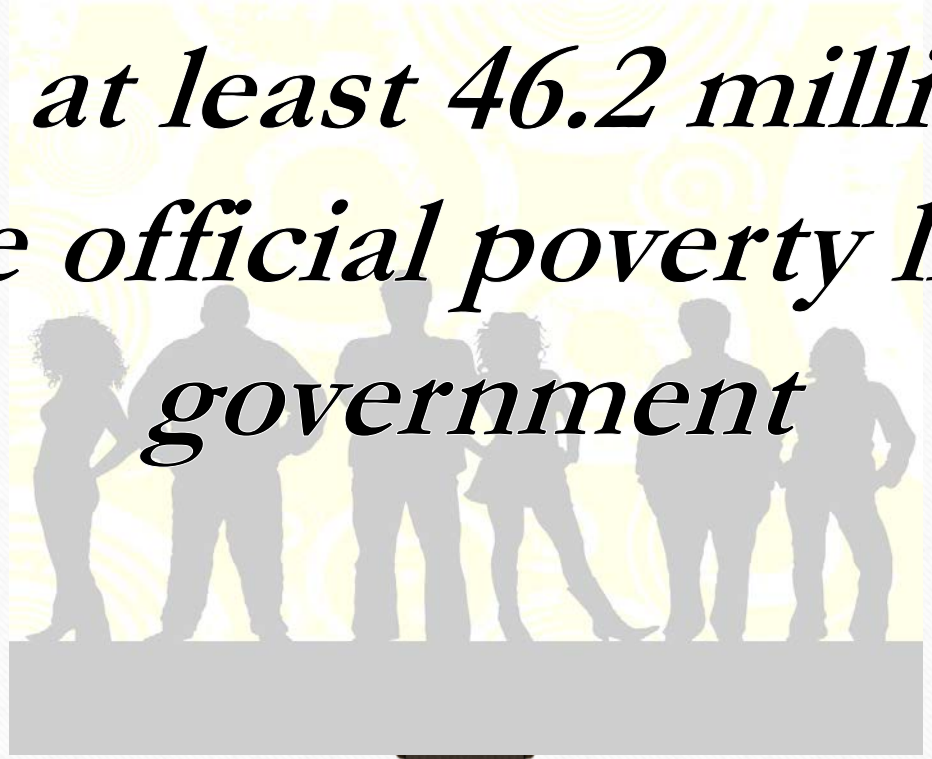
- Board Certified in Cognitive & Behavioral Psychology (ABPP)
- Owner, Marston Psychological Services, LLC—provides services in low-income areas throughout Southwestern PA
- Licensed Psychologist—specializing in assessment & treatment of neurobehavioral disorders
- Member, APA Division 6 – Behavioral Neuroscience & Comparative Psychology
- Division 6 Monitor to APA's Committee on Socioeconomic Status

This Presentation

- Statistics related to poverty & neurobehavioral & psychological disorders (NPD)
- Factors associated with poverty & NPD
- Neurological issues associated with poverty and their impact on behaviors
- Ways psychologists can help address issues related to poverty & NPD

U.S. Census Bureau

In 2011, at least 46.2 million lived below the official poverty line set by government



National Center for Children in Poverty 2014 statistics

- 20% of children live in poverty
- More than 16 million children live in poverty
- Another 25% live in "near poor" families
- "near poor" = (100%-200% of poverty level)

www.nccp.org/topics/childpoverty.html

Significantly higher prevalence of neurobehavioral disorders for individuals who suffer in poverty. Bergen (2008)

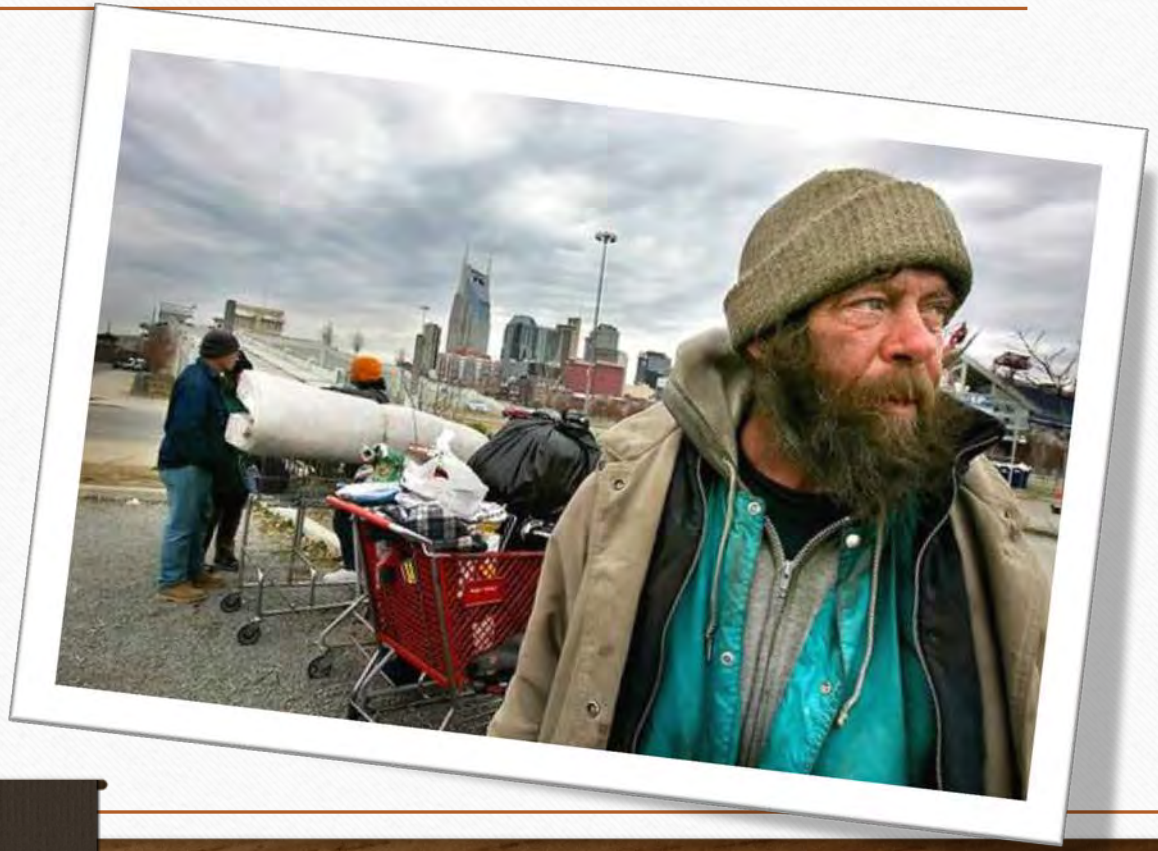
- Studied prevalence of intellectual disabilities
- Called Mental Retardation at the time of the study
- Occurs in 3-5 per 1,000 individuals--high-income countries
- Occurs in as much as 22 out of 1,000 individuals--developing countries
- *Neurology*, *7(6),* 447-451

Consistent with review of research in Hetzner, Johnson & Brook-Gunn (2010):

- Children from poor families more likely to experience developmental delays than middle class peers
- In S. Jarverla's book *Social & Emotional Aspects of Learning*

1997-2008 National Health Interview Surveys (Boyle et al, 2011)
Family incomes below federal poverty level associated with higher levels of:

- Developmental disabilities
- Learning disabilities
- Intellectual disabilities
- *Pediatrics*, *127*(6), 1034-1042



Also studied children on Medical Assistance:



- Compared to children covered by private insurance
- Statistically higher amounts of: ADHD, learning disabilities, intellectual disabilities and developmental disabilities (e.g. autism)

Visser, Lesesne & Perou, 2007: Higher prevalence of ADHD among children below the poverty level

(*Pediatrics*, *123*, 5099-5106)

As we will see in this presentation, there are neurological and psychological factors associated with poverty that relate directly to the higher prevalence of these disorders.

Poverty-critical risk factor for many mental, emotional & behaviors disorders in children

- Yoshikawa, Lawrence & Beardlee, 2012
- *American Psychologist*, *67(4)*, 272



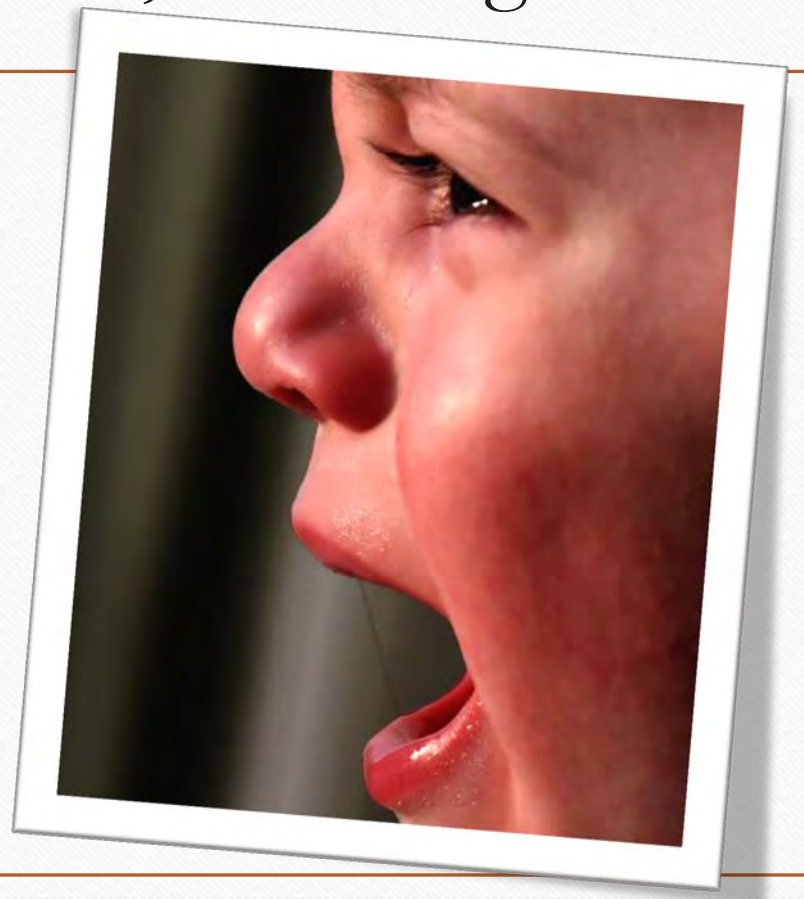
Causal effect between family poverty and the mental, emotional and behavioral health of children independent of:



- Parental education
- Race/Ethnicity
- Neighborhood conditions

Persistent poverty--associated with wide range of psychological problems, including:

- Anxiety
- Depression
- Attention Problems
- Disciplinary Problems

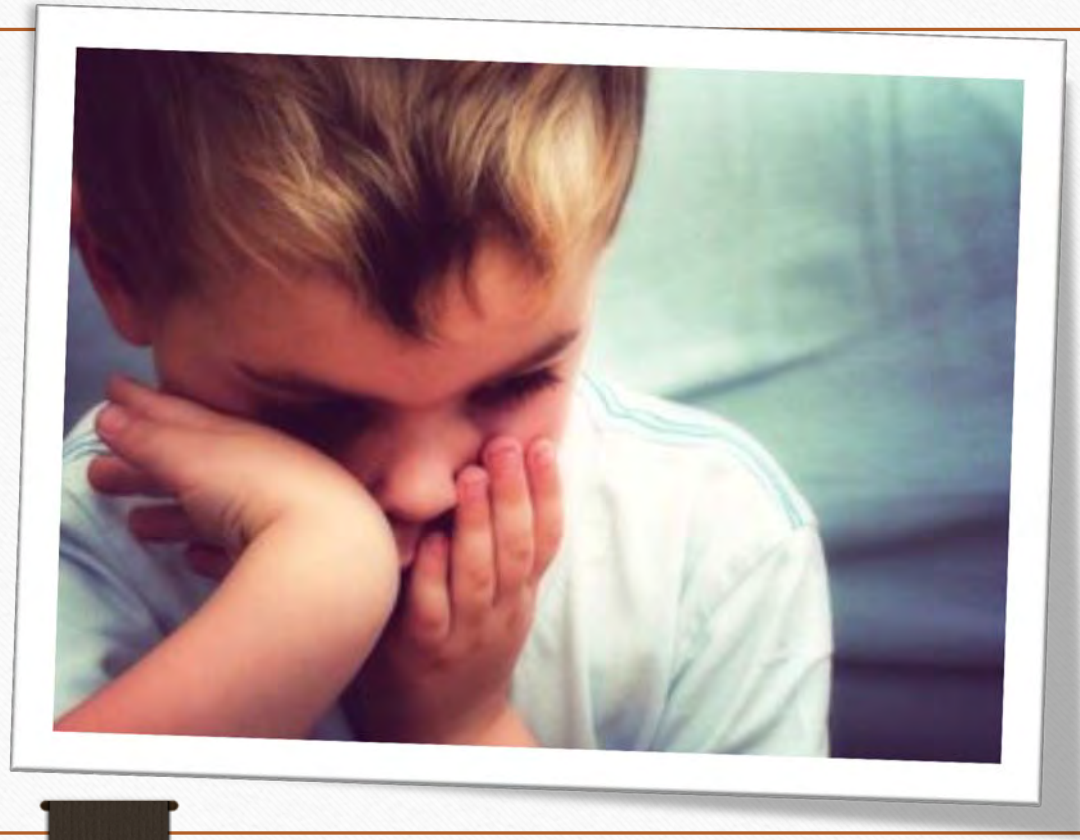


Santiago, Wadsworth & Stump (2002)--adults in poverty show higher level of:

- Withdrawal Symptoms
- Somatic Complaints
- Thought Problems (i.e. pervasive negative thinking)
- *Journal of Economic Psychology*, *32(2)*, 218-230

Children in poverty--show higher levels of:

- Social Problems
- Attention Problems
- Anxiety & Depression



One difference proposed by the authors was:



- Adults—impacted by worry & anxiety about what to do
- Children – impacted by feelings of helplessness & lack of control

In our practice

(providing services to low-income families),

we see this quite often:

Adults—Trying to figure out how to handle problems

Children—Trying to figure out how to help

Causes of increased neurobehavioral & psychological disorders related to poverty identified in research:

- Malnutrition
- Environmental factors
- Stress
- Lack of Resources



Bergen (2008)—possible explanatory factors:

- protein-energy malnutrition
- dietary micronutrient deficiencies
- environmental toxins
- lack of early sensory stimulation (or ability to profit from it)
- *Neurology*, *7(6)*,, 447-451

Morris (2008)—

maternal malnutrition during pregnancy:

- significantly impacts development of communication and social abilities
- contributes significantly to higher level of developmental disabilities
- *Lancet Neurology*, *7*(8), 676-677



Possible physiological factors involved

- Noble, Houston, Kan & Sowell (2012)
  - Lower brain volume in the hippocampus and amygdala
  - *Developmental Science*, *15*(4), 516-527

Possible physiological factors involved:

- Evans & Schamberg (2009) –
  - problems with working memory in lower-income individuals
  - consistent with impairments in the hippocampus and amygdala
  - *Proceedings of the National Academy of Sciences in the United States of America, 106(16), 6545-6549*

Possible physiological factors involved:

- Wilber et al (2011):
  - Studied chronic stress associated with poverty
  - significantly impacts development

    of prefrontal cortex
  - *Neuroscience*, *174*, 115-131



Possible physiological factors involved:

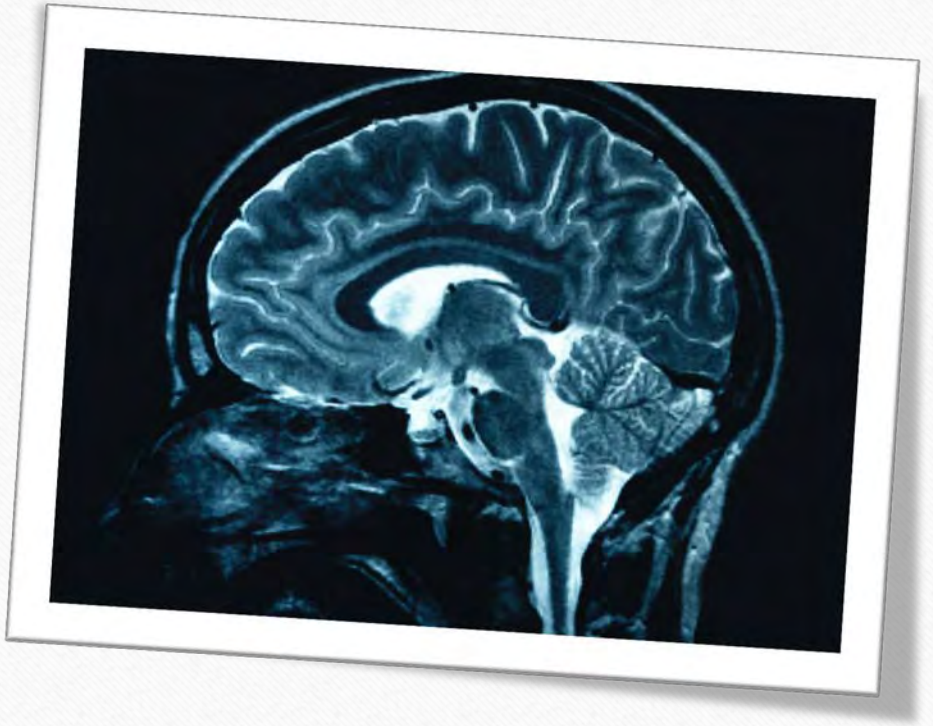
- Rinaldi, Peroddin & Markram (2008)– prefrontal cortex associated with deficits in:
  - executive functioning
  - cognition,
  - language,
  - sociability
  - emotion
  - *Frontiers in neural circuitry*, *2*, 4
  - Also Price (2006): In S. O. Moldin"s book *Understanding Autism: From Basic Neuroscience to Treatment*
  - Higher rates of neurobehavioral disorders associated with the prefrontal cortex, including autism and ADHD

Possible physiological factors involved:

- Farah et al (2006):
  - prefrontal cortex—one primary neurological system impacted by poverty
  - *Brain Research*, *110*(1), 166-174
  - Also Noble et al (2005): *Developmental Science*, *8*(1), 74-87

Possible physiological factors involved:

- Lipina et al, 2005 & Messacappa, 2004 –
  - significant difference in executive functioning,
  - primarily found in the prefrontal cortex
  - between children from higher and lower income households



Poverty is associated with increased levels of stress physiology indicators in children (Blair, Granger, Willoughby et al, 2011):

- Children in poverty--higher levels of stress hormones
- 7, 15 and 24 months.
- This higher level of stress hormones is associated with problems in executive functioning.
- Associated with the impact stress hormone levels have on the prefrontal cortex
- *Child Development*, *82(6)*, 1970-1984
- Chronic stress-also has a significant impact on hippocampus
- Lipina & Posner, 2012: *Frontiers in Human Neuroscience*, *6*, 238

Often results in significant difficulties with:

- processing information in new situations
- making decisions about how to cope with new challenges

Evans (2012):

- Studied cumulative effect of chronic stress in poverty
- Studied *allostatic load*: prominent physiological marker of chronic stress
- Conclusion: Greater the duration of early life spent in poverty, greater the exposure to cumulative risks
- *Psychological Science, 23(9), 979-983*

“Chronic Effects”: include:

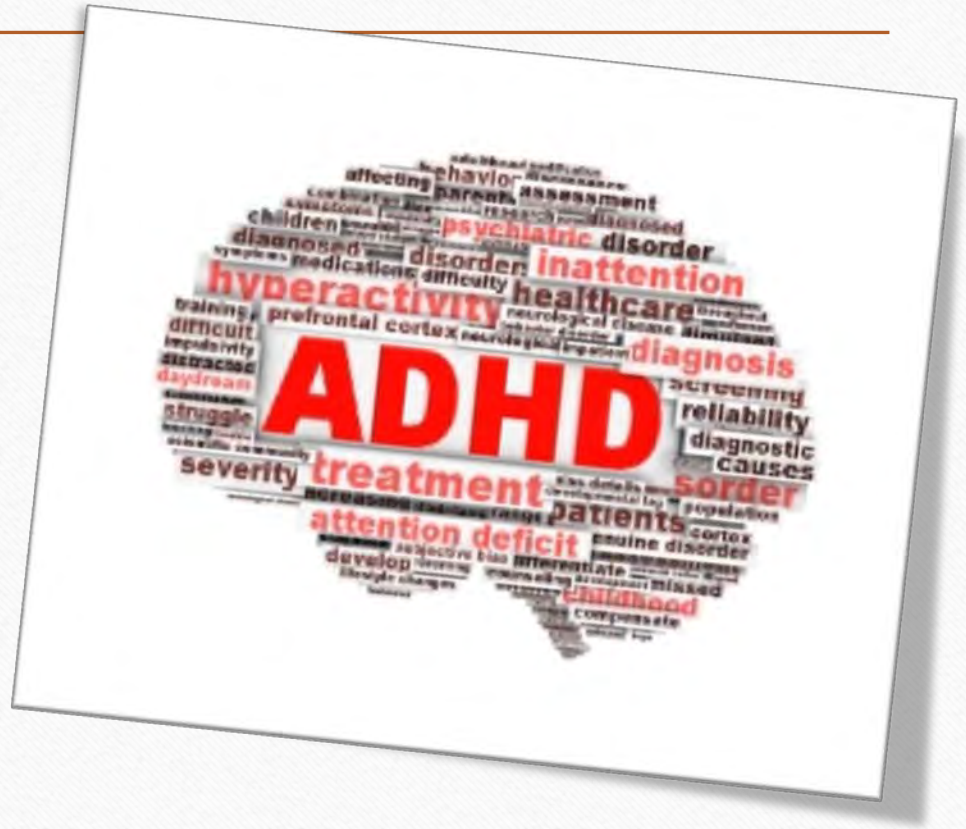
- Maternal deprivation during pregnancy
- Nutritional deprivation during childhood development
- Noise, crowding, housing problems (called “risk exposure” in study)
- Diminished cognitive enrichment

Conclusion regarding neurological factors:

- Poverty related to impairments in
  - Hippocampus
  - Amygdala
  - Prefrontal cortex
- These impairments contribute to significant problems with:
  - executive functioning
  - working memory
  - social comprehension
  - emotion regulation

Conclusion regarding neurological factors:

- Compared to higher-income households, lower-income households have higher levels of:
  - Autism
  - learning disabilities
  - ADHD
  - intellectual disabilities



Additional Factor:

- Fuller et al (2012)
- 13% of effect, poverty on chronic stress--perceived social-class discrimination
- *Psychological Science, 23(7), 734-739*
- Perceived discrimination—direct impact on psychological health & physical health
- People in poverty see themselves as treated differently because they are poor
- Often because they are actually treated differently because they are poor

Lack of access to appropriate care—traditionally identified as one main reason why people in poverty do not receive services to help address neurobehavioral problems.



Porterfield & McBride (2007):

- Problem may be--lack of recognizing need for behavioral health services
- *American Journal of Public Health*, *97*(2), 323-329
- Analyzed responses from 38,866 subjects with regards to their need for services.
- Lower-income parents -- less likely to say children needed specialized services.
- Children from poorer families--less likely to have access to specialized services parents did not recognize the need for those services.
- Even if their children had been evaluated by a general practitioner
- Less likely to see their children needed any sort of specialized care
- Led to More limited use of any type of specialized behavioral health care
- Psychologists likely to fall under this category of "specialized care"

Sinha, D. (2014): Research on poverty has been very limited in helping understand what types of approaches are most efficient for elevating impact of poverty

Psychological Development & Social Policy in India (pages 211-221).

Some ways likely to be helpful:

- Programs like Head Start
  - Help address developmental and behavioral problems early
- Offer different ways of delivering services that are more convenient for families.
  - Providing services in individuals' homes whenever possible
  - Having offices on public transportation routes
- Comprehensive assessment strategy that is cost-effective and time-limited

Some ways likely to be helpful:

- Help with coping skills.
  - Children--cope with feelings of helplessness.
  - Adults –obtaining needed resources & stress management
- Offer multiple types of assistance during sessions with clients who are suffering poverty. Individuals suffering poverty also often need help in navigating the complex web of social & support services
- Help address nutritional deficits—help identify choices that are available
- Show recognition that there are complex issues involved
- Non-judgmental attitude—people suffering poverty often feel judged, criticized and "looked down upon"