Neurons, Genes, and Policies: How Science Can Contribute to Trauma-Informed Policies

Susan Giaimo

Marquette University, susan.giaimo@marquette.edu

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Neurons, Genes, and Policies: How Science Can Contribute to Trauma-Informed Policies

Susan Giaimo, Ph.D.
Departments of Political Science and Biomedical Sciences
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susan.giaimo@marquette.edu
How science can inform public policy

• Science changes our views of the causes of poverty:
  – No longer moral failure/bad choices of individuals
  – Socioeconomic forces fundamentally shape our biology, but at level of genes and neurons
  – Hopefully this can change the discussion around poverty

  – Science can give us new tools to develop more effective policies addressing poverty
3 levels of policy interventions

**Macrolevel:**
local, state, and national public policies

**Mesolevel:**
community impact model targeting neighborhood

**Microlevel:**
health policies targeted to individuals and families health policies (behavioral health)
What the science is telling us about poverty and toxic stress

Poverty can be a stressful environment for both parents and children
Economic insecurity can pile on environmental stresses and trauma in children.
and create stressful environment for adults

Maternal Depression Affects Children in Low-Income Families Disproportionately

Percent of mothers with a 9-month-old infant who are moderately or severely depressed

Source: Calculations based on analyses of the Early Childhood Longitudinal Study, Birth Cohort 9-month restricted-use data (NCES 2006-044) by Danielle Crosby, PhD, University of North Carolina Greensboro. Maternal Depression is measured by the 12-item version of the Center for Epidemiological Studies’ Depression Scale (CES-D). Elevated symptoms of moderate to severe depression are identified by scores of 10 points or higher on a scale that ranges from 0-36. Analytic weights (WIRO) were applied to ensure data were nationally representative of mothers with 9-month-old infants born in 2001. Poor refers to family income less than or equal to 100% Federal Poverty Threshold (FPT). Near poor refers to family income greater than 100% of FPT but less than 200% of FPT. Not poor refers to income greater than 200% of FPT.
Exposure to Maternal Depression in Infancy Causes Stress Hormone Levels to Become More Extreme in Adolescence

Percentage of Adolescents with Extremely High Cortisol Levels
(Above 90th percentile for gender) on 1 or more days out of 10 measured

The effects of neglect

– Parent with chronic depression may be hostile or disengaged/withdrawn, and less likely to respond to children’s cues or to engage with them in positive interactions.

– This interruption in “serve and return” can disrupt brain architecture in the child and their stress responses systems, leading to behavioral, learning, and health problems in later life.

What are the implications of science for microlevel policies?

1. Children in impoverished households are at high risk of experiencing multiple traumatic experiences.

2. Early intervention (birth to 3) has big pay-offs in reducing effects of toxic stress due to critical time of brain development.

3. However, it is not too late to intervene after early childhood. Neuroplasticity.

4. We also need a 2 generation approach:
   – to address the trauma experienced by the adults as well as the children
   – To build healthy brain architecture in the children
   – to break the cycle of intergenerational trauma
Human Brain Development
Synapse Formation Dependent on Early Experiences

Conception  Birth  (Months)  (Years)  Age

Sensory Pathways
(Vision, Hearing)

Language

Higher Cognitive Function

Executive Function Skills Build Throughout Childhood and Adolescence

A range of tests measuring different forms of executive function skills indicates that they begin to develop shortly after birth, with ages 3 to 5 providing a window of opportunity for dramatic growth in these skills. Growth continues throughout adolescence and early adulthood; proficiency begins to decline in later life.

Examples of trauma informed policies at microlevel: Head Start Trauma Smart

Early childhood program
Head Start Trauma Smart Program: Addressing toxic stress in children and caregivers

1. Multigenerational:
   – Teaching at-risk children and adult caregivers how to reduce stress from traumatic events.

2. Center-based care.

Head Start Trauma Smart: trauma-informed care for children and their caregivers (from parents to teachers to bus drivers)

- Teach children with trauma how to calm themselves, so that they are ready to learn in school settings.
- Teach all adult caregivers how to help children manage their emotions.
- Give adults strategies to address their own stress.

Trauma informed policies at mesolevel: community impact model in Amani neighborhood
Building a healthy community at the neighborhood level: community impact model

- **Community impact model** targets a neighborhood with coordinated cluster of services.
  - Example of Amani neighborhood in Milwaukee.

- Why this approach:
  - Address the broader environment that causes toxic stress and illness
  - Targeting a specific neighborhood is better use of resources than spread across an entire city
  - Addressing trauma requires multi-faceted community-based solutions; coordination can overcome silos, gaps, and duplication among providers Building connectedness among residents and beyond

- Effectiveness is being assessed, but crime dropped >25% in first year.

Amani: creating connectedness and ending isolation among residents
Macrolevel policy interventions to prevent poverty and trauma in the first place

Using comparative analysis to see what works
**Broader public policies**
at local, state, and national level

- Health care policies.
  - Yet access to care affects only 30% of health outcomes

- Policy domains that we don’t normally think of as health policy, but they have profound health effects.
  - They can mitigate effects of or even prevent poverty, and by extension, trauma that arises from economic insecurity.
  - They can give parents ability to balance work and family and the time they need to develop positive relationships with their kids

- Examples: family policies, income support/wage policies, housing policies, education policies.
US has high rates of poverty among children (>20% in poverty)
and high rates of poverty among single-parent households (>40%)
US is also a low spender on family benefits
Family policies in US and OECD peer nations

• **In OECD peer nations:**
  1. **Parental leave:** 18 weeks on average paid at 50-100% of wages. After that, paid parental leave at flat rate or no payment.

  2. **Child/family cash allowances** (flat rate per child, mostly universal).

  3. **Universal daycare/early childhood** programs that are heavily funded by taxes.

• **US family policy:**
  – 12 weeks of unpaid parental leave in larger firms
  – Child tax credit up to $2,000
  – Daycare is individual responsibility (except for TANF)
What does parental leave have to do with toxic stress and health?

• In the US, 25% of women return to work 4 weeks after birth of a child.
  – (Financial Times 2015)

• Studies of mothers in US who return to work later in the first year following birth of child reported less depression than those who returned to work earlier.

• Studies of US showed that children whose mothers returned to work before 12 weeks following birth had lower immunization rates, shorter period of breastfeeding, and more behavioral problems later in life (at age 4).

• Comparative studies show longer paid parental leave is associated with lower infant mortality rates.

  (Dagher, McGovern and Dowd 2014; Gregg and Waldfogel 2005; Tanaka 2005)
How US and peer nations approach poverty, esp. in families, has implications for the level of stress they experience

- **US**: TANF is time-limited and low benefit, mostly targeted to mothers, little for men

- **Germany and Sweden**:  
  - social assistance has no time limit; set relative to median income  
  - job retraining (esp. in Scandinavia)  
  - work exemption for single mothers with very young children
The US 20+ years after welfare reform

POSITIVES:
• Welfare reform got single mothers into work, and permanently reduced enrollments in TANF.
• EITC and child tax credit have boosted incomes of those in low-wage work.

CONCERNS:
– TANF payments have not kept up with inflation; worth 35% less today. $673 or less/month in WI.

– Surveys show that TANF clients report trouble meeting utility bills, shelter, and food costs.

– Many states put work ahead of training that could lead to better-paying jobs later on.

– Jobs for unskilled are low-paying (min wage is $7.25 nationally). EITC not enough to pull many out of poverty (average EITC for family is ~$3,000/year).

– Lack of affordable housing: 25% of Milwaukee renters spend > 70% of income on rent.

– Welfare reform targeted single mothers but did little for unskilled men.

– Did US welfare reform address stress in poor households?

  http://www.pbs.org/newshour/bb/government_programs-jan-june05-welfare_2-14/
Conclusions

• **Both-and**, not either-or approach is needed:
  – Behavioral health or early childhood programs to treat trauma in kids and parents AND
  – Policies that address structural causes of toxic stress (neighborhoods and nations) that can reduce or prevent poverty, associated stressors, incl. trauma

• **Natural and social sciences together** can help design more effective policies
  – Employment and education policies that do not address trauma will not work
  – But health policy alone cannot address structural causes of trauma

• **Policy learning** from comparative analysis

• **Up-front costs** of family/early childhood programs pay off in the long run
I leave you with 2 quotes

• Paul Farmer:
  – “Thus do fundamentally social forces and processes come to be embodied as biological events.”

• David Williams: “All policies are health policies”
  – education policy, employment policies, income support policies, family policies