

Institutionalization

and its effects on childhood brain development and social skills

- 🏠 **22,000** infants and children adopted into the U.S. each year.
- 🏠 **8 million** children, 0-8 years old, in orphanages, most in Eastern Europe and Asia.
- 🏠 Institutionalization can be considered an **Adverse Childhood Experience**.
- 🏠 Studies show that institutionalization affects brain development.
- 🏠 **Dose-response** relationship: longer stays in orphanages put children at higher risks for behavioral disorders.
- 🏠 Effects: **social, behavioral, cognitive, neuro-physiological**

Institutionalized Rearing

versus Maternal Care

- Maternal care in **first year of life** sets the model for behavior and stress management for the rest of life.
- Conditions may range from poor to very harmful.

Inconsistent peer groups
Lack of play time

Inadequate food and clothing

1:20 caregiver to child ratio

Few interactions with caregivers

60-100 different caregivers within first 2 years

Low emotional tones

Lack of sensitive nurturing

Lack of emotional stimulation

Constant detachment

Inattention to individual needs

Brain Development

Right Brain⁵

Processing emotional information in social situations

Forming attachment relationships

Regulating emotions and moods

Survival functions

Handling of stress

Maturation of right brain depends on experience.

Inter-hemispheric connectivity⁶

CC's most important growth period is 6 months to 3 years.

Smaller CC volume has been found in adolescents abused and/or neglected in childhood.

white matter

Conductor for nerve signals traveling between gray matter.

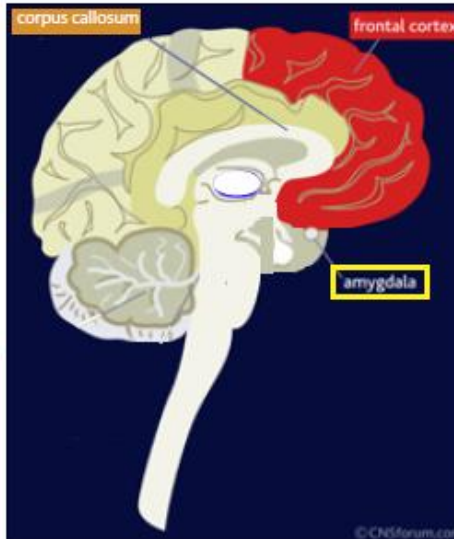
Continues to develop until peaking in middle age.

White matter is indicative of brain development.⁹

Grey 15% less in PI than NI
White 18% less in PI than NI

PI: Previously institutionalized children

NI: Never institutionalized children



Decision making

PI show more **uninhibited and inappropriate behavior** in social situations.⁷

Memory (e.g. emotional memory)

Regulation of behavior in response to emotional stimuli (e.g. threats)

Overall emotional reactivity

Sensitive to adverse childhood experiences (first 3 years after birth): maltreatment, neglect, abandonment, stress¹⁰

PI have **33.5% larger amygdala volumes** compared to NI.¹¹

brain volume

Smaller brain volume⁹

PI: 882 +/- 78 ml

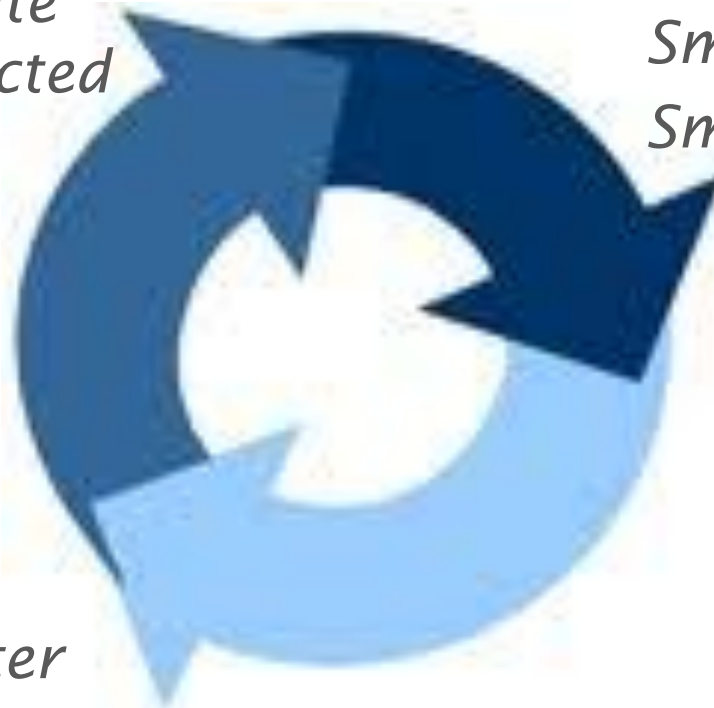
NI: 1051 +/- 83 ml

General decreased physical size of body

ACE Cycle

*Absent, inadequate
or incorrect expected
environment
conditions*

*More ACE's
More stress*



*Greater
emotional reactivity*

Larger amygdala

Damaged frontal cortex

Smaller brain volume

Smaller corpus callosum

Possible Development

- 🏠 Delayed psychomotor and speech development
- 🏠 Quasi-autistic
- 🏠 **Attention-Deficit/Hyperactivity Disorder (ADHD)**
 - 20.7% of PI to 3.4% of NI
- 🏠 Lower IQ
- 🏠 Impulsivity
- 🏠 Poor emotional expression and recognition
- 🏠 Difficulty being empathetic and sympathetic
- 🏠 **Indiscriminate/Disinhibited Reactive Attachment Disorder**
 - Lack of social model for behavior
 - Indiscriminate sociability
 - Attachment to unfamiliar adults
 - Willingness to leave with unfamiliar adults

Adolescent Behaviors

Attention-seeking mechanisms may be triggered as survival mechanisms for orphans accustomed to neglect.

- 🏠 Difficulty in recognizing affection or care from adoptive parents
- 🏠 Hesitancy to trust and to ask for help
- 🏠 Insecurity about being abandoned again
- 🏠 Not coming home
- 🏠 Not going to school
- 🏠 Alcohol and substance abuse
- 🏠 Indiscriminate socialization, especially with others who are bad influences
- 🏠 Difficulty handling stress
- 🏠 Heightened perception of threats and negative emotions

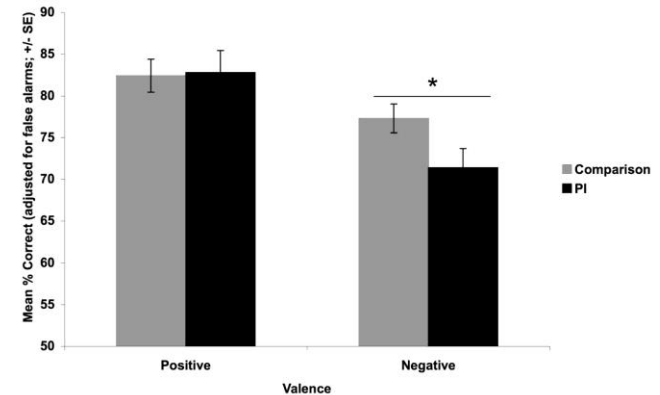
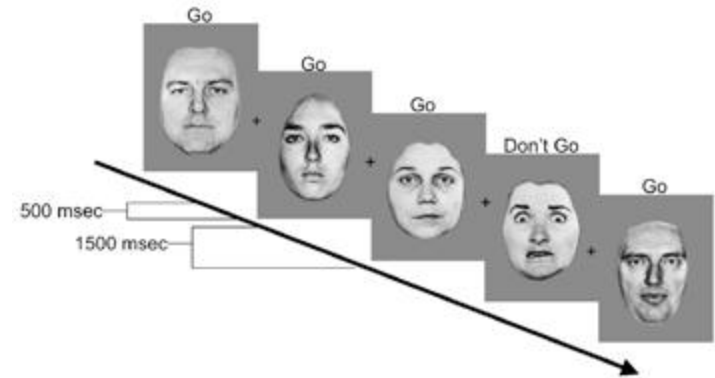
Research

How institutionalized children perceive negativity

🏠 Emotional Go-No Go Paradigm

Compared to NI, PI children institutionalized for longer (more than 15 months) made more errors identifying neutral faces when distracted by negative faces.

Institutionalized children are more reactive to negative emotions.



Research

Studies

Author of Paper <i>Study Referenced</i>	Children	Age at Testing	Time in Institution	Orphanage Location	Adoption Location
Felicia Iftene (2004)	34 PI	13-16 yrs	6-36 mo	Romania (1980s)	Canada Romania
Mitul Mehta (2009) <i>The English and Romanian Adoptees Study</i>	14 PI 11 NI (England)	\bar{y} =16.2 yrs \bar{y} =16.0 yrs	\bar{y} =24.7 mo	Romania (1980s)	England
Margaret Sheridan (2010) <i>Bucharest Early Intervention Project</i>	136 PI 72 NI (Romania)	6-30 mo Age-matched	6 mo-8 yrs	Romania	Foster Care in Romania
Nim Tottenham (2010)	38 PI 40 NI (U.S.)	\bar{y} =101 mo Age-matched	9-28 mo	E. Europe, Asia	U.S.

Neuroplasticity

Earlier adoption linearly associated with better development.

PI adopted before 6 months old repaired their cognitive development faster than PI adopted after 6 months old.

PI adopted before 15 months old more likely to reach the same development rate as NI.

PI relocated to foster care before 24 months old had greater development catch-up than PI relocated after 24 months old.

By 6 years old, PI adopted before 6 months old had same IQ's as NI while PI adopted after 6 months old still had the lowest scores.