Attachment, Regulation, and Executive Functioning in Maltreated Children—4 Major Research Projects

University of Oregon/Oregon Social Learning Center have ongoing studies that help form evidenced-based practices for foster children. These findings reflect the integration of information about attachment, neural systems, executive functioning, and the types of supports that best help children in all of these areas.

Their conclusions: Adverse events stimulate a stress response that shape neural systems, contributing to children’s at-risk status. Early adversity, particularly neglect, younger age at first foster placement, and increased number of placements are associated with altered HPA (hypothalmic-pituitary-adrenal) axis function. Interventions have produced evidence that it is possible to impact many areas negatively affected by early stress, including HPA activity, behavior, and attachment. HPA axis functioning co-occurs with improved behavioral functioning. “Effects of Therapeutic Interventions for Foster Children on Behavioral Problems, Caregiver Attachment, and Stress Regulatory Neural Systems,” Philip Fisher, Megan Gunnar, Mary Dozier, Jacqueline Bruce, and Katherine Pears, Ann. N.Y. Acad. Sci (2006).

The have used a multi-dimensional treatment foster care model that includes:
- 12 hours of specialized instruction for foster parents (sensitivity to children, discipline, home structure)
- 24-hour phone access for foster parents,
- weekly parenting group meetings,
- daily telephone contacts,
- weekly skills groups for school readiness,
- transition help to a permanent home that is prepared to use the structure, sensitivity, and skills that the children have learned,
- individualized treatment with a child therapist to “facilitate the acquisition of prosocial skills and improve functioning in preschool/daycare and home settings.” Sleep Disruption in Young Foster Children,” Jennifer Tinienko, Philip Fisher, Jacqueline Bruce and Katherine Pears, Child Psychiatry Hum Dev. 2010 August; 42(4): 409-424.

Some of the major findings from the series of scholarly papers include:

Children develop a higher rate of secure attachments in the MTFC homes. The secure attachments better regulate the HPA axis. The damage to executive function is curtailed. Children show the evidence of actual repair. They sleep longer and have better restorative sleep. Overlapping this, they have improvements in verbal memory, attention, cognitive functioning, emotion regulation, and behavioral regulation.

MTRC curtails the risk of further disruptions, even in children who have had 5 or more placements, Multiple placements are bi-directional, with children with difficult behavior being placed more often and children with more placements becoming more behaviorally difficult.
With children with 5 or more placements, it is imperative to move help within the home.

**MTFC prioritizes attachment and home structure.** Regular foster care treatment (RFC) in Oregon includes children’s therapy on trauma and monthly caseworker visits. MTRC is focused on attachment, supporting the foster parents emotionally, and helping them to use structure in the home. They use the foster parent to help the children’s neuroendocrine system to stabilize.

**When children are moved away from a primary caregiver, there are disruptions in their neuroendocrine balance.** Children moved between the ages of 2 year and 4 years have a higher rate of attentional problems. Moving children must be done carefully and seldom. “Mitigating HPA axis dysregulation associated with placement changes in foster care,” Philip A. Fisher, Mark J. Van Ryzin, Megan R. Gunnar, Psychoneuroendocrinology (2010). Dot: 10.1016/): psyneuen.2010.08.007. www/elsevier.com/locate/psyneuren

The executive functions of children can improve once their HPA axis is better regulated through sensitive parenting, structure, restorative sleep, and stable placement. Sleep is an “active state that is integral to such brain functions as memory consolidation, learning, mood and hormonal regulation, and brain development.” (Associations Between Sleep and Inattentive/Hyperactive Problem Behavior Among Foster and Community Children,” Jennifer Tinienko, Philip Fisher, Jacqueline Bruce and Katherine Pears, J Dev Behav Pediatr, 2010 October; 31(8): 668-674.

- Most developmental sleep literature uses subjects who are upper middle class children. Jennifer Tinienko, Philip Fisher, Jacqueline Bruce and Katherine Pears looked at sample groups of 3-7 y.o children, lower-income group, upper income group, foster care, and multi-dimensional treatment foster care. They found that using MTFC actually changed sleep patterns. That, in turn, both reflected the improved neural functioning, and increase in executive functioning, and a decrease in behavioral problems. Sleep Disruption in Young Foster Children,” Jennifer Tinienko, Philip Fisher, Jacqueline Bruce and Katherine Pears, Child Psychiatry Hum Dev. 2010 August; 42(4): 409-424.

University of Delaware, Some Major Findings:

“Foster children with externalizing behavior early in placement were more likely to experience multiple placements than those children without externalizing behavior problems. For a group of children who did not have behavior problems early in placement, multiple placement led to increases in externalizing behaviors, internalizing behaviors, and overall problems behaviors.” Caregiver Commitment to Foster Children, Oliver Lindhiem and Mary Dozier, Child Abuse Negl, 2007 April; 31(4).

Other major findings are that children from international adoption and foster care have significant problems with Theory of Mind. That is, developing an understanding of how the other person is likely to think and feel. This makes it difficult for them to attune to others and to develop social relationships that are satisfying. Please see her video at: http://psych.umass.edu/ruddchair/videos/conference2011/mary_dozier_-_attachment___biobehavioral_catch-up/

Other major findings, children coming into foster placements have about an 82% rate of disorganized attachments. To the degree that caregivers can be warned about children’s contradictory and avoidant responses, as well as supported in sensitive, contingent parenting, they are able to teach children the “dance steps” to a secure attachment. Otherwise, children “lead the dance” and the caregiver shows negative response pattern.

Also using the ABC model, The group followed 115 children with a history of CPS involvement in infancy. Participation was voluntary, assignment to ABC or control was random. All infants were under 2 years of age. The goals were 3-fold: increasing nurturing during times of distress, decrease frightening parental behavior, increase synchronous interactions. Session 1-2 focused on nurturance, 3-4 on “following the lead,” 5-6 on reducing intrusive and frightening behavior, 7-10 on parents’ histories of care and how that influenced their care. There was live coaching and videos. They conclude that “this in the moment feedback has emerged as a key component of intervention effectiveness.”

The control intervention was DEF or Developmental Education for Families, a home-visitation program focusing on parent education about children’s motor, cognitive, and language development. They followed up in preschool, when children were between 46 and 67 months. They found that the children in the ABC group showed ”a movement toward typical cortisol production, with higher morning levels and a steep decline across the day, whereas children in the control condition exhibited blunted morning levels and flattened diurnal cortisol slopes that are typical in pediatric samples experiencing neglect and more generally in groups experiencing ongoing stress. The results suggest that the intervention was successful in having persistent, long-term effects on the functioning of the HPA stress system. This may have beneficial implications for preventing child psychological and physical health problems, given previous reports linking cortisol disruption to those deleterious child outcomes.” *Intervention Effects on Diurnal Cortisol Rhythms of CPS-Referred Infants Persist into Early Childhood: Preschool Follow-up Results of a Randomized Clinical Trial*, Kristin Bernard, Camelia Hostinar, and Mary Dozier, 2014, On Press with JAMA. Corresponding author: kristin.bernard@stonybrook.edu

**Aces Study**


The ACE study population included 9,367 women and 7,940 men. Average age: 56 years old. 75% were white, 39% were college graduates, 7% had not graduated from high school.

The 10 ACES

Childhood abuse:  
- Physical  
- Emotional  
- Sexual  

Neglect  
- Emotional  
- Physical  

Growing up in a seriously dysfunction household as evidenced by:
Witnessing domestic violence
Alcohol or other substance abuse in the home
Mentally ill or suicidal household members
Parental marital discord (divorce or separation)
Crime in family (family member incarcerated)

ACEs are interrelated. If people had one, they were more likely to have others. Women tended to have more ACEs than men.

**Prevalence in Sample:**
Childhood abuse: Physical, 28%
    Emotional, 11%
    Sexual, 21%
Neglect: Emotional, 15%,
    Physical, 10%
Growing up in a seriously dysfunction household as evidenced by:
    Witnessing domestic violence, 13%
    Alcohol or other substance abuse in the home, 27%
    Mentally ill or suicidal household members, 17%
    Parental marital discord (divorce or separation) 23%
    Crime in family (family member incarcerated) 6%

**Suicide/Depression**
With 4 or more ACEs, the history of suicide attempts jumps to over 20% versus people with 0-1 ACE is about 1-2%. The depression rate is over 50% with 4 or more ACEs, and less than 20% in the 0-1 ACEs group.

**Sexually transmitted Diseases (including HIV/AIDS)**
The rate of STDs is about 18% with 4 or more ACEs, and about 6% with 0 ACEs.

**Alcohol Use and Marriage to Alcoholic**
The rate of Marriage to an alcoholic is about 33% for people with 4 or more ACEs, about 12% with 0 ACEs. Having problems with alcohol: 22% for people with 4 or more ACEs, about 5% for 0 ACEs.

**IV drug Use**
The rate of IV drug use is about 1% with 0 ACEs, over 4% with 4 or more ACEs.

**Job and Financial Problems**
Serious financial problems: 10% for people with 0 ACEs, about 22% for people with 4 or more ACEs. Serious Job Problems rate 7% for people with 0 ACEs, about 18% for people with 4 or more ACEs.

Bessel van der Kolk, 2013) states that an abused child will have a 4,600% greater chance of becoming an addict as a non-abused child. (This is not a typo).

We see a higher rate of executive functioning problems after ACE’s. We need to accommodate to their learning issues.

**Casey/Harvard Northwest Foster Care Alumni Study.** Study interviewed 479 adults who were
formerly in foster care in the state child welfare agencies or Casey Family between 1988 and 1998.

Demographics: 60% were women and 54% were people of color. Average age at interview was 24 years old.

**Mental health findings:** PTSD 25% (double the rate of Vietnam vets).
  - Major depression: 20%
  - Social phobia: 17%.

**Education:** experienced 7 or more school changes: 65%
  - Obtained GED: 28%
  - Completed a bachelor’s degree 1.8% (25 years and older: 2.7%)

**Employment/Income:**
  - Employed full-time or part-time among those eligible to work: 80%
  - Currently receiving public assistance: 16.8%
  - Household income below poverty level: 33%
  - No health insurance: 33%
  - Homeless for a day or more after age 18: 22%