



Date: October 14, 2014
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Institutional Rearing May Increase Risk for Attention-Deficit Disorder by Altering Cortical Development

Reports new study in Biological Psychiatry

Philadelphia, PA, October 14, 2014 – Over the past decades, we have seen numerous tragic examples where the failure of institutions to meet the needs of infants for social contact and stimulation has led to the failure of these infants to thrive.

Infancy and childhood are critical life periods that shape the development of the cortex. A generation of research suggests that enriched environments, full of interesting stimuli to explore, promote cortical development and cognitive function. In contrast, deprivation and stress may compromise cortical development and attenuate some cognitive functions.

Young children who are raised in environments of psychosocial neglect, such as those who grow up in institutions for orphaned or abandoned children, are at markedly elevated risk for developing a wide range of mental health problems, including attention-deficit/hyperactivity disorder (ADHD).

Now, new data from the Bucharest Early Intervention Project (BEIP), published in the current issue of *Biological Psychiatry*, suggests that this type of deprived early environment is associated with drastic changes in brain development in children.

BEIP is a longitudinal study that has followed a sample of children raised from early infancy in institutions in Romania. The authors of the current report used data from 58 of those children and compared it with 22 typically-reared children from the same community. All children underwent a structural imaging scan and were assessed for symptoms of ADHD.

The researchers discovered that children raised in institutional settings exhibited widespread reductions in cortical thickness in multiple brain regions including the prefrontal, parietal, and temporal cortices relative to children raised in families in the community.

The data also revealed that the reduced cortical thickness in several of those same brain regions was associated with greater ADHD symptoms of inattention and impulsivity.

This is consistent with previous research that has implicated those brain regions in regulating attention, memory, and other vital cognitive processes.

“Perhaps most importantly, the new findings indicate that the high rates of ADHD among children raised in these deprived environments are explained, in part, by these atypical patterns of brain development,” explained first author Dr. Katie McLaughlin, Assistant Professor at the University of Washington.

“These disturbing data provide a mechanism that links institutional rearing to compromised cortical development,” said Dr. John Krystal, Editor of *Biological Psychiatry*. “They suggest that society may have to choose between investing in enriching institutional environments and enhancing the capacity of these institutions to offer mental health support on the one hand and bearing the cost of ADHD and its impact on social and vocational productivity on the other.”

McLaughlin agrees and added, “The early caregiving environment has lasting effects on brain development in children. Identifying strategies for mitigating these effects is critical for improving mental health and educational outcomes among children raised in deprived environments.”

The article is “Widespread Reductions in Cortical Thickness Following Severe Early-Life Deprivation: A Neurodevelopmental Pathway to Attention-Deficit/Hyperactivity Disorder” by Katie A. McLaughlin,

Margaret A. Sheridan, Warren Winter, Nathan A. Fox, Charles H. Zeanah, and Charles A. Nelson (doi: 10.1016/j.biopsycho.2013.08.016). The article appears in *Biological Psychiatry*, Volume 76, Issue 8 (October 15, 2014), published by Elsevier.

Notes for editors

Full text of the article is available to credentialed journalists upon request; contact Rhiannon Bugno at +1 214 648 0880 or Biol.Psych@utsouthwestern.edu. Journalists wishing to interview the authors may contact Dr. Katie A. McLaughlin at +1 206 616 7863 or mclaughk@uw.edu.

The authors' affiliations, and disclosures of financial and conflicts of interests are available in the article.

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