Studies report early childhood trauma takes visible toll on brain

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Trauma in infancy and childhood shapes the brain, learning, and behavior, and fuels changes that can last a lifetime, according to new human and animal research released today. The studies delve into the effects of early physical abuse, socioeconomic status (SES), and maternal treatment. Documenting the impact of early trauma on brain circuitry and volume, the activation of genes, and working memory, researchers suggest it increases the risk of mental disorders, as well as heart disease and stress-related conditions in adulthood.

The findings were presented at Neuroscience 2012, the annual meeting of the Society for Neuroscience and the world's largest source of emerging news about brain science and health.

Today's findings show:

- Physical abuse in early childhood may realign communication between key "body-control" brain areas, possibly predisposing adults to cardiovascular disease and mental health problems (Layla Banihashemi, PhD, abstract 691.12, see attached summary).
- Rodent studies provide insight into brain changes that allow tolerance of pain within mother-pup attachment (Regina Sullivan, PhD, abstract 399.19, see attached summary).
- Childhood poverty is associated with changes in working memory and attention years later in adults; yet training in

childhood is associated with improved cognitive functions (Eric Pakulak, PhD, abstract 908.04, see attached summary).
- Chronic stress experienced by infant primates leads to fearful and aggressive behaviors; these are associated with changes in stress hormone production and in the development of the amygdala (Mar Sanchez, PhD, abstract 691.10, see attached summary).

Another recent finding discussed shows that:

- Parent education and income is associated with children's brain size, including structures important for memory and emotion (Suzanne Houston, MA, see attached speaker's summary).

"While we are becoming fully aware, in general, of the devastating impact that early life adversity has on the developing brain, today's findings reveal specific changes in targeted brain regions and the long-lasting nature of these alterations," said press conference moderator Bruce McEwen, PhD, from The Rockefeller University, an expert on stress and its effects on early brain development. "In doing so, this research points not only to new directions for the improved detection and treatment of resulting cognitive impairment, mental health disorders, and chronic diseases, but also emphasizes the importance of preventing early life abuse and neglect in the first place."

Provided by Society for Neuroscience