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Symposium 05

New Studies on the Effects of Early Adversity on Brain Development in Humans

Chairs:
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This symposium presents original data from four human studies that further elucidate the effects of childhood adversity on the development of brain structures that are critical for stress and emotional processing as well as effects on the brain's regulatory outflow systems, i.e. the hypothalamic-pituitary-adrenal axis and the immune system. It is well-known that stress or trauma is a major risk factor for the development of a wide range of mental and several medical disorders, particularly when experienced early in life. The overarching theme of this symposium is to further understand the effects early adverse experience in shaping neurobiological phenotypes with risk versus resilience to these disorders. The presentations assembled in this symposium will each address a novel area of investigation in humans. 1) Dr. Lupien will discuss effects of time and nature of adversity on brain development and will present MRI data on volumes of various brain regions in 10 year old children. 2) Dr. Pruessner will present data generated from correlation maps that point to important long-term effects of childhood trauma on cortical thickness in very specific cortical regions that have previously been implicated in depression risk. 3) Dr. Danese will present data obtained from the longitudinal New Zealand Birth Cohort that suggest that early adversity produces an inflammation-like state 30 years later that may be linked to increased risk for depression, but also heart disease and other medical disorders. 4) Dr. Heim will present new data suggesting that a protective haplotype of the corticotropin-releasing hormone (CRH) receptor 1 gene interacts with childhood trauma in determining neuroendocrine reactivity, as measured in the dexamethasone/CRH test. Of note, this data suggests an important sex difference, in which the protective genotype effect is limited to men, but not present in women, perhaps providing insight into the mechanism that protects men from developing depression in relation to stress. Taken together, these 4 presentations provide several important new leads which significantly enhance current knowledge regarding the effects of early adversity on the brain as well as the complex interplay of disposition, environment, and developmental processes across the lifespan, in shaping risk versus resilience for various disorders.