PRESS RELEASE

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Brain Development in Schizophrenia Strays from the Normal Path

Reports new study in Biological Psychiatry

Philadelphia, PA, September 15, 2014 – Schizophrenia is generally considered to be a disorder of brain development and it shares many risk factors, both genetic and environmental, with other neurodevelopmental disorders such as autism and intellectual disability.

The normal path for brain development is determined by the combined effects of a complex network of genes and a wide range of environmental factors.

However, longitudinal brain imaging studies in both healthy and patient populations are required in order to map the disturbances in brain structures as they emerge, i.e., the disturbed trajectories of brain development.

A new study by an international, collaborative group of researchers has measured neurodevelopment in schizophrenia, by studying brain development during childhood and adolescence in people with and without this disorder. With access to new statistical approaches and long-term follow-up with participants, in some cases over more than a decade, the researchers were able to describe brain development patterns associated with schizophrenia.

“Specifically, this paper shows that parts of the brain’s cortex develop differently in people with schizophrenia,” said first author Dr. Aaron F. Alexander-Bloch, from the National Institute of Mental Health.

“The mapping of the path that the brain follows in deviating from normal development provides important clues to the underlying causes of the disorder,” said Dr. John Krystal, Editor of *Biological Psychiatry*.

The findings were derived by investigating the trajectory of cortical thickness growth curves in 106 patients with childhood-onset schizophrenia and a comparison group of 102 healthy volunteers.

Each participant, ranging from 7–32 years of age, had repeated imaging scans over the course of several years. Then, using over 80,000 vertices across the cortex, the researchers modeled the effect of schizophrenia on the growth curve of cortical thickness.

This revealed differences that occur within a specific group of highly-connected brain regions that mature in synchrony during typical development, but follow altered trajectories of growth in schizophrenia.

“These findings show a relationship between the hypothesis that schizophrenia is a neurodevelopmental disorder and the longstanding hypothesis – first articulated by the German anatomist Karl Wernicke in the late 19th century – that it is a disease of altered connectivity between regions of the brain,” added Alexander-Bloch.

This theoretical consistency is important, as it allows researchers to better focus future studies of brain connectivity in schizophrenia, by targeting the brain regions known to be affected.

The article is “Abnormal Cortical Growth in Schizophrenia Targets Normative Modules of Synchronized Development” by Aaron F. Alexander-Bloch, Philip T. Reiss, Judith Rapoport, Harry McAdams, Jay N. Giedd, Ed T. Bullmore, and Nitin Gogtay (doi: 10.1016/j.biopsych.2014.02.010). The article appears in *Biological Psychiatry*, Volume 76, Issue 6 (September 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. Aaron F. Alexander-Bloch or aalexanderbloch@gmail.com.

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

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The journal publishes novel results of original research which represent an important new lead or significant impact on the field, particularly those addressing genetic and environmental risk factors, neural circuitry and neurochemistry, and important new therapeutic approaches. Reviews and commentaries that focus on topics of current research and interest are also encouraged.

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