Childhood maltreatment is associated with alteration in global network fiber-tract architecture independent of history of depression and anxiety

Kyoko Ohashi, Carl M. Anderson, Elizabeth A. Bolger, Alaptagin Khan, Cynthia E. McGreenery, Martin H. Teicher

PII: S1053-8119(17)30148-9
DOI: http://dx.doi.org/10.1016/j.neuroimage.2017.02.037
Reference: YNIMG13822

To appear in: NeuroImage

Received date: 8 September 2016
Revised date: 31 December 2016
Accepted date: 13 February 2017

Cite this article as: Kyoko Ohashi, Carl M. Anderson, Elizabeth A. Bolger, Alaptagin Khan, Cynthia E. McGreenery and Martin H. Teicher, Childhood maltreatment is associated with alteration in global network fiber-tract architecture independent of history of depression and anxiety, NeuroImage, http://dx.doi.org/10.1016/j.neuroimage.2017.02.037

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.
Childhood maltreatment is associated with alteration in global network fiber-tract architecture independent of history of depression and anxiety*

Kyoko Ohashi a,b,*, Carl M. Anderson a,b,c,d, Elizabeth A. Bolger a, Alaptagin Khan a,b, Cynthia E. McGreenery a, Martin H. Teicher a,b

a Developmental Biopsychiatry Research Program, McLean Hospital, 115 Mill St., Belmont, Massachusetts 02478, USA
b Department of Psychiatry, Harvard Medical School, 401 Park Drive, Boston, Massachusetts 02215, USA
c Brain Imaging Center, McLean Hospital, 115 Mill St., Belmont, Massachusetts 02478, USA
d CooperRiis Healing Community, 101 Healing Farm Lane, Mill Spring, NC 28756, USA

KO: kohashi@mclean.harvard.edu
MHT: martin_teicher@hms.harvard.edu

*Corresponding author, Kyoko Ohashi, Ph.D. Department of Psychiatry, Harvard Medical School, Boston, Massachusetts, USA Telephone: (617) 855-2971, Fax: (617) 855-3712

Abstract
Childhood maltreatment is a major risk factor for psychopathology. It is also associated with alterations in the network architecture of the brain, which we hypothesized may play a significant role in the development of psychopathology. In this study, we analyzed the global network architecture of physically healthy unmedicated 18-25 year old subjects (n=262) using diffusion tensor imaging (DTI) MRI and tractography. Anatomical networks were constructed from fiber streams interconnecting 90 cortical or subcortical regions for subjects with no-to-low (n=122) versus moderate-to-high (n=140) exposure to maltreatment. Graph theory analysis revealed lower degree, strength, global efficiency, and maximum Laplacian spectra, higher pathlength, small-worldness and Laplacian skewness, and less deviation from artificial networks in subjects with moderate-to-high exposure to maltreatment. On balance, local clustering was similar in both groups, but the different clusters were more strongly interconnected in the no-to-low exposure group. History of major depression, anxiety and attention deficit hyperactivity disorder did not have a significant impact on global network measures over and above the effect of maltreatment. Maltreatment is an important factor that needs to be taken into account in studies examining the relationship between network differences and psychopathology.

* Postal Address: McLean Hospital, 115 Mill Street, Developmental Biopsychiatry Research Program, MailStop 327, Belmont, MA 02478-9106.
دریافت فوری متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات