

Online Resource – Supplementary Figure and Tables

Anxiety is related to indices of cortical maturation in typically developing children and adolescents

Brain Structure and Function

Erik Newman^{1,2}, Wesley K. Thompson^{2,3}, Hauke Bartsch⁴, Donald J. Hagler, Jr.^{4,5}, Chi-Hua Chen^{2,4}, Timothy T. Brown^{4,6}, Joshua M. Kuperman^{4,5}, Connor McCabe^{1,7}, Yoonho Chung^{1,4,8}, Ondrej Libiger⁹, Natacha Akshoomoff^{1,2}, Cinnamon S. Bloss⁹, B. J. Casey¹⁰, Linda Chang¹¹, Thomas M. Ernst¹¹, Jean A. Frazier¹², Jeffrey R. Gruen¹³, David N. Kennedy¹², Sarah S. Murray¹⁴, Elizabeth R. Sowell¹⁵, Nicholas Schork⁹, Tal Kenet¹⁶, Walter E. Kaufmann¹⁷, Stewart Mostofsky¹⁸, David G. Amaral¹⁹, Anders M. Dale^{4,5,6,20}, and Terry L. Jernigan^{1,2,5,20} for the Pediatric Imaging, Neurocognition, and Genetics Study

¹Center for Human Development, University of California, San Diego, La Jolla, CA

²Department of Psychiatry, University of California, San Diego, La Jolla, CA

³Stein Institute for Research on Aging, University of California, San Diego, La Jolla, CA

⁴Multimodal Imaging Laboratory, University of California, San Diego, La Jolla, CA

⁵Department of Radiology, University of California, San Diego, La Jolla, CA

⁶Department of Neurosciences, University of California, San Diego, La Jolla, CA

⁷Department of Psychology, University of Washington, Seattle, WA

⁸Department of Psychology, Yale University, New Haven CT

⁹Scripps Genomic Medicine, Scripps Translational Science Institute and Scripps Health, La Jolla, CA

¹⁰Sackler Institute for Developmental Psychobiology, Weil Cornell Medical College, New York, NY

¹¹Department of Medicine, University of Hawaii and Queen's Medical Center, Honolulu, HI

¹²Department of Psychiatry, University of Massachusetts Medical School, Boston, MA

¹³Departments of Pediatrics and Genetics, Yale University School of Medicine, New Haven, CT

¹⁴Department of Pathology, University of California, San Diego, La Jolla, CA

¹⁵Department of Pediatrics, University of Southern California, Los Angeles, CA and Children's Hospital,
Los Angeles, CA

¹⁶Department of Neurology and Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts
General Hospital, Charlestown, MA

¹⁷Boston Children's Hospital and Harvard Medical School, Boston, MA

¹⁸Kennedy Krieger Institute and Johns Hopkins University School of Medicine, Baltimore MD

¹⁹Department of Psychiatry and Behavioral Sciences, University of California – Davis, Davis, CA

²⁰Department of Cognitive Science, University of California, San Diego, La Jolla, CA

Corresponding Author:

Erik Newman

Email: enewman@ucsd.edu

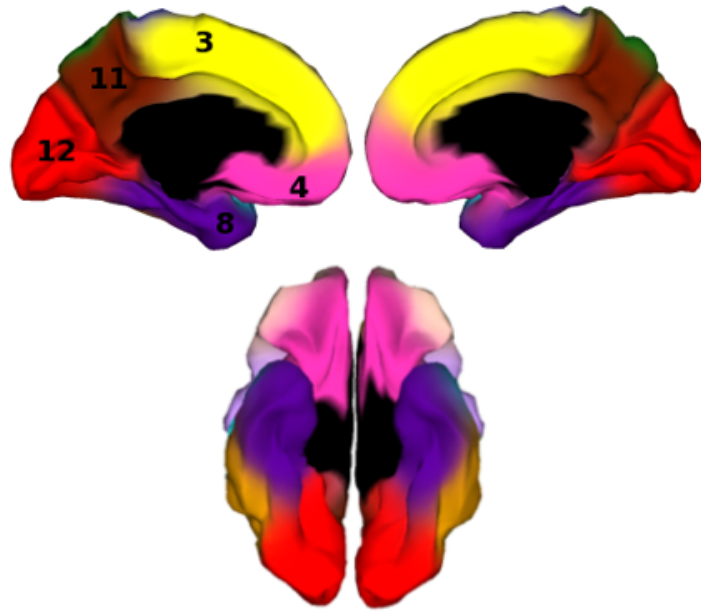


Figure S1. Adapted from Chen et al. 2012, defining genetically-informed cortical parcels. Medial and inferior views highlight the position of the ventromedial prefrontal cortex in pink (labeled “4”; originally labeled as orbitofrontal cortex in Chen et al, 2012). Other parcels annotated on the medial surface are 3, dorsomedial frontal cortex; 8, anteromedial temporal cortex; 11, precuneus; and 12, occipital cortex.

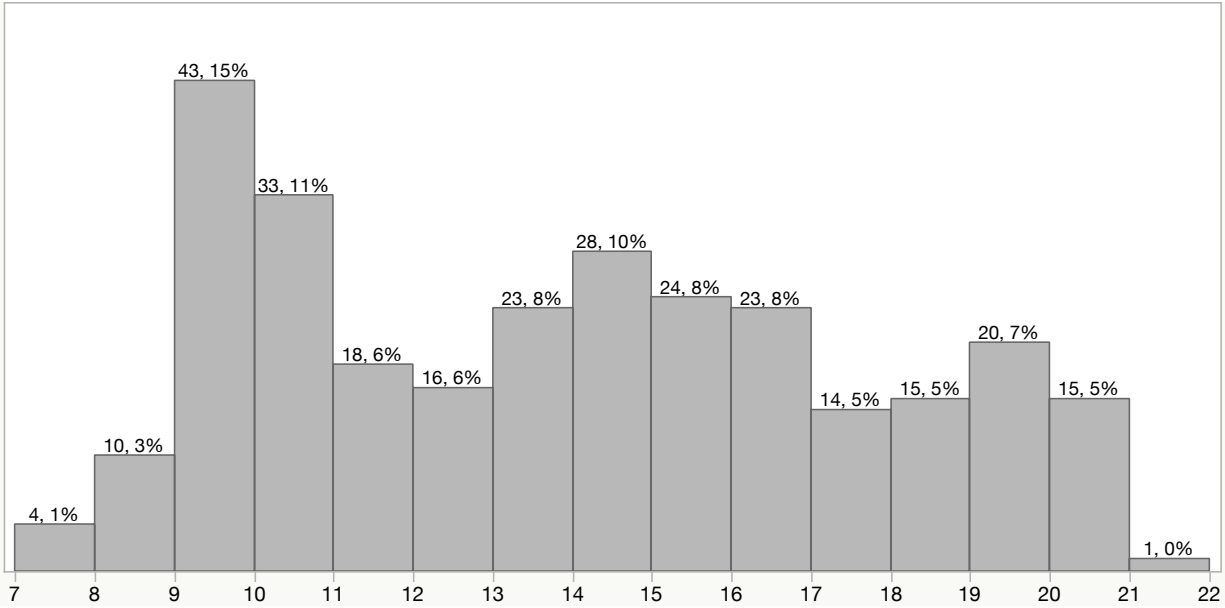


Figure S2. Distribution of age at imaging for the current sample. For each age, the number of subjects is shown along with the percentage of the overall sample.

Table S1. Regression model predicting anxiety from VMPFC thickness

Term	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Age	0.0915	0.0966	0.95	0.3444
<i>Gender</i>	<i>0.9477</i>	<i>0.3137</i>	<i>3.02</i>	<i>0.0028</i>
Age x Gender	0.1295	0.0869	1.49	0.1374
<i>VMPFC Thickness</i>	<i>-7.2819</i>	<i>2.7362</i>	<i>-2.66</i>	<i>0.0083</i>
VMPFC Thickness x Age	0.6261	0.6403	0.98	0.3291
VMPFC Thickness x Gender	2.0232	2.5502	0.79	0.4283
VMPFC Thickness x Age x Gender	0.2861	0.6364	0.45	0.6534

VMPFC, ventromedial prefrontal cortex. Model controlled for scanner and GAFs.

Terms in bold and italics were significant at $p < .01$.

Table S2. Regression models predicting mean thickness and VMPFC expansion from anxiety

Term	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
VMPFC Surface Area				
<i>Age</i>	<i>0.0015</i>	<i>0.0004</i>	<i>3.92</i>	<i>0.0001</i>
Gender	-0.0007	0.0015	-0.43	0.6647
Age x Gender	-5.23e-5	0.0003	-0.15	0.8801
<i>Total Area</i>	<i>2.75e-6</i>	<i>9.04e-8</i>	<i>30.46</i>	<i><.0001</i>
<i>Anxiety</i>	<i>-0.0009</i>	<i>0.0003</i>	<i>-3.08</i>	<i>0.0023</i>
<i>Anxiety x Age</i>	<i>0.0002</i>	<i>7.93e-5</i>	<i>2.50</i>	<i>0.0132</i>
Anxiety x Gender	-0.0002	0.0003	-0.95	0.3429
Anxiety x Age x Gender	4.19e-5	7.83e-5	0.54	0.5928
Mean Thickness				
<i>Age</i>	<i>-0.0244</i>	<i>0.0017</i>	<i>-14.09</i>	<i><.0001</i>
Gender	-9.44e-5	0.0058	-0.02	0.9871
Age x Gender	-0.0004	0.0016	-0.26	0.7976
<i>Anxiety</i>	<i>-0.0052</i>	<i>0.0014</i>	<i>-3.76</i>	<i>0.0002</i>
<i>Anxiety x Age</i>	<i>0.0008</i>	<i>0.0004</i>	<i>2.28</i>	<i>0.0235</i>
Anxiety x Gender	0.0017	0.0014	1.25	0.2110
Anxiety x Age x Gender	9.97e-6	0.0004	0.03	0.9779

VMPFC, ventromedial prefrontal cortex. Both models controlled for scanner and GAFs.

Terms in bold and italics were significant at $p < .01$ and terms in bold only were significant at $p < .05$.