



Cortical thickness can differentiate conduct disorder subtypes

By Dr Jessica K. Edwards

A study by Graeme Fairchild and colleagues has used a neuroimaging approach to compare the structural organization (or “covariance”) of brain regions between youths with different subtypes of conduct disorder (CD) and healthy controls (HC).

The researchers focused on inter-regional correlations in cortical thickness as a measure of coordinated brain structure development to investigate how different brain regions develop in CD and whether this measure can differentiate between childhood-onset (CO) and adolescence-onset (AO) CD subtypes. They enrolled male youths (aged 13-21 years) from two independent sites, totalling 56 with CO-CD (onset <10 years-of-age), 39 with AO-CD (onset >10 years-of-age) and 32 HC. Each participant underwent structural magnetic resonance imaging, and the reconstructed cortical surface images were analyzed for correlations in cortical thickness across the entire cortex.

The researchers found that participants from both sites with CO-CD showed a higher number of significant inter-regional correlations in cortical thickness than HCs and those with AO-CD. By contrast, participants with AO-CD showed fewer significant inter-regional correlations in cortical thickness than HCs. They also found that both CD subgroups showed marked differences in the overall number and strength of inter-regional correlations in cortical thickness, across the frontal, temporal, parietal and occipital regions compared to HCs.

The researchers propose that such structural covariance methods might help researchers diagnose CD, classify CD subtypes and characterize the neurodevelopmental basis of CD.

Referring to:

Fairchild, G., Toschi, N., Sully, K., Sonuga-Barke, E.J.S., Hagan, C.C., Diciotti, S., Goodyer, I.M., Calder, A.J. and Passamonti, L. (2016), Mapping The structural organization of the brain in conduct disorder: replication of findings in two independent samples. *J. Child Psychol. Psychiatr.* 57: 1018-1026. doi: 10.1111/jcpp.12581.

Glossary:

Conduct disorder (CD): CD is characterized by behaviour that violates either the rights of others or major societal norms. To be diagnosed with conduct disorder, symptoms must cause significant impairment in social, academic or occupational functioning. The disorder is typically diagnosed prior to adulthood.

Magnetic resonance imaging: a non-invasive technique that uses a strong, static magnetic field and radio waves to measure brain activity.