

NEUROANATOMICAL CHANGES ASSOCIATED WITH SUBTHRESHOLD DEPRESSION IN ADOLESCENTS

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Introduction: Although neuroimaging studies suggest brain regional abnormalities in depressive disorders, it remains unclear whether abnormalities are present at illness onset or reflect disease progression.

Objectives: We hypothesized that cerebral variations were present in adolescents with subthreshold depression known to be at high risk for later full-blown depression.

Aims: We examined brain structural and diffusion-weighted magnetic resonance images of adolescents with subthreshold depression.

Methods: The participants were extracted from the European IMAGEN study cohort of healthy adolescents recruited at age 14. Subthreshold depression was defined as a distinct period of abnormally depressed or irritable mood, or loss of interest, plus two or more depressive symptoms but without diagnosis of Major Depressive Episode. Comparisons were performed between adolescents meeting these criteria and control adolescents within the T1-weighted imaging modality (118 and 475 adolescents respectively) using voxel-based morphometry and the diffusion tensor imaging modality (89 and 422 adolescents respectively) using tract-based spatial statistics. Whole brain analyses were performed with a statistical threshold set to $p < 0.05$ corrected for multiple comparisons.

Results: Compared with controls, adolescents with subthreshold depression had smaller gray matter volume in caudate nuclei, medial frontal and cingulate cortices; smaller white matter volume in anterior limb of internal capsules, left forceps minor and right cingulum; and lower fractional anisotropy and higher radial diffusivity in the genu of corpus callosum.

Conclusions: The findings suggest that adolescents with subthreshold depression have volumetric and microstructural gray and white matter changes in the emotion regulation frontal-striatal-limbic network.