Inattention Predicts Increased Thickness of Left Occipital Cortex in Men with Attention-Deficit/Hyperactivity Disorder

Peter Sörös, Katharina Bachmann, Alexandra P. Lam, Manuela Kanat, Eliza Hoxhaj, Swantje Matthies, Bernd Feige, Helge H. O. Müller, Christiane Thiel, Alexandra Philipsen

Front. Psychiatry, 13 September 2017
DOI: https://doi.org/10.3389/fpsyt.2017.00170

Background:
Attention-deficit/hyperactivity disorder (ADHD) in adulthood is a serious and frequent psychiatric disorder with the core symptoms inattention, impulsivity, and hyperactivity. The principal aim of this study was to investigate associations between brain morphology, i.e., cortical thickness and volumes of subcortical gray matter, and individual symptom severity in adult ADHD.

Methods:
Surface-based brain morphometry was performed in 35 women and 29 men with ADHD using FreeSurfer. Linear regressions were calculated between cortical thickness and the volumes of subcortical gray matter and the inattention, hyperactivity, and impulsivity subscales of the Conners Adult ADHD Rating Scales (CAARS). Two separate analyses were performed. For the first analysis, age was included as additional regressor. For the second analysis, both age and severity of depression were included as additional regressors. Study participants were recruited between June 2012 and January 2014.

Results:
Linear regression identified an area in the left occipital cortex of men, covering parts of the middle occipital sulcus and gyrus, in which the score on the CAARS inattention subscale predicted increased mean cortical thickness \(F(1,27) = 26.27, p < 0.001, \text{adjusted } R^2 = 0.4744\). No significant associations were found between cortical thickness and the scores on CAARS subscales in women. No significant associations were found between the volumes of subcortical gray matter and the scores on CAARS subscales, neither in men nor in women. These results remained stable when severity of depression was included as additional regressor, together with age.

Conclusion:
Increased cortical thickness in the left occipital cortex may represent a mechanism to compensate for dysfunctional attentional networks in male adult ADHD patients.