

# Latent class analysis of attention and white matter correlation in children with attention-deficit/hyperactivity disorder

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## Abstract

This study aimed to explore attentional patterns among children with inattentive attention-deficit/hyperactivity disorder (ADHD-I) and children with typical development (TD), using a latent class analysis (LCA). Patterns of brain connectivity were also explored. The sample comprised 29 ADHD-I and 29 TD matched children. An LCA was conducted to reclassify subjects according to their attentional performance, considering cognitive measures of attention and behavioral symptoms, regardless of group of origin. The new clusters were then compared in respect to brain white matter measurements (extracted from diffusion tensor imaging). Participants were rearranged in 2 new latent classes, according to their performance in an attention task and the results of behavioral scales, resulting in groups with more homogeneous attentional profiles. A comparison of the 2 new classes using the white matter measurements revealed increased fractional anisotropy in the left inferior fronto-occipital fasciculus and left inferior longitudinal fasciculus for the class composed by participants with a higher risk of attentional problems. The findings indicated that it was possible to observe variability regarding neuropsychological profile, accompanied by underpinning neurobiological differences, even among individuals with the same disorder subtype - inattentive ADHD. This specific data-driven clustering analysis may help to enhance understanding of the pathophysiology of the disorder's phenotypes.