Linking state regulation, brain laterality, and self-reported attention-deficit/hyperactivity disorder (ADHD) symptoms in adults.


Abstract

INTRODUCTION:
Many clinical studies have shown that performance of subjects with attention-deficit/hyperactivity disorder (ADHD) is impaired when stimuli are presented at a slow rate compared to a medium or fast rate. According to the cognitive-energetic model, this finding may reflect difficulty in allocating sufficient effort to regulate the motor activation state. Other studies have shown that the left hemisphere is relatively responsible for keeping humans motivated, allocating sufficient effort to complete their tasks. This leads to a prediction that poor effort allocation might be associated with an affected left-hemisphere functioning in ADHD. So far, this prediction has not been directly tested, which is the aim of the present study.

METHOD:
Seventy-seven adults with various scores on the Conners' Adult ADHD Rating Scale performed a lateralized lexical decision task in three conditions with stimuli presented in a fast, a medium, and a slow rate. The left-hemisphere functioning was measured in terms of visual field advantage (better performance for the right than for the left visual field).

RESULTS:
All subjects showed an increased right visual field advantage for word processing in the slow presentation rate of stimuli compared to the fast and the medium rate. Higher ADHD scores were related to a reduced right visual field advantage in the slow rate only.

CONCLUSIONS:
The present findings suggest that ADHD symptomatology is associated with less involvement of the left hemisphere when extra effort allocation is needed to optimize the low motor activation state.