Brain Activity Associated with Conflict. Significant group differences were observed in the activation of this region in the RD compared to TD participants.

Statistical Analyses

We assessed group differences in conflict-related activation in healthy individuals (n=14) and age-matched healthy controls (n=19) with anxiety (RCMAS Total Score). We found that children with reading disorders (RD) had greater activation in this region compared to TD participants, specifically during their performance of the Simon Spatial Incompatibility task.

Given the common occurrence of anxiety in learning disorders, we assessed the functioning of frontal cortices with an anxiety symptom scale (Fitzgerald, 2013). Excessive activation of the prefrontal cortex (pmFC) was positively associated with anxiety, r = 0.402, p = 0.025, suggesting that children who have the most anxiety activate this region the most during conflict resolution.

Figure 2a. Correlation of pmFC activation with reading impairment and anxiety (P<0.001).

Significant group differences in conflict-related activation were observed in lesion patients (n=14) during their performance of the Simon Spatial Incompatibility task.

CONFLICT-RELATED ACTIVATION OF POSTERIOR MEDIAL FRONTAL CORTEX

When engaging the cognitive control necessary to resolve conflict, children with reading impairment activate frontal control regions the most during resolution of conflict.

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