



# The development of alerting, orienting and executive attention in childhood



Jennifer C. Mullane, MA , Michael A. Lawrence, BA, Penny V. Corkum, PhD, Raymond M. Klein PhD, & Elizabeth N. McLaughlin, PhD

## Introduction and methods

Attention Network Theory proposes three processing networks associated with specific and separable forms of attention: alerting, orienting, and executive networks.

To date, very little research has investigated the developmental trajectories of the three attention networks within a single sample of typically developing children.

Participants were 8 males and 8 females in each of grades one (~7 years old) through six (~12 years old), with primarily caucasian middle-class family backgrounds.

The present research sought to examine the development of networks of attention using the ANT-I, a variant of Posner et al's Attention Network Test (ANT) that was designed by Callejas et al to provide researchers with a powerful and thorough picture of attention.

The ANT-I is a speeded two-alternative forced choice task in which Ss are instructed to indicate the identity of rightward- or leftward-pointing arrows presented at either above, below, to the left or to the right of a central fixation cross.

### Alerting measures

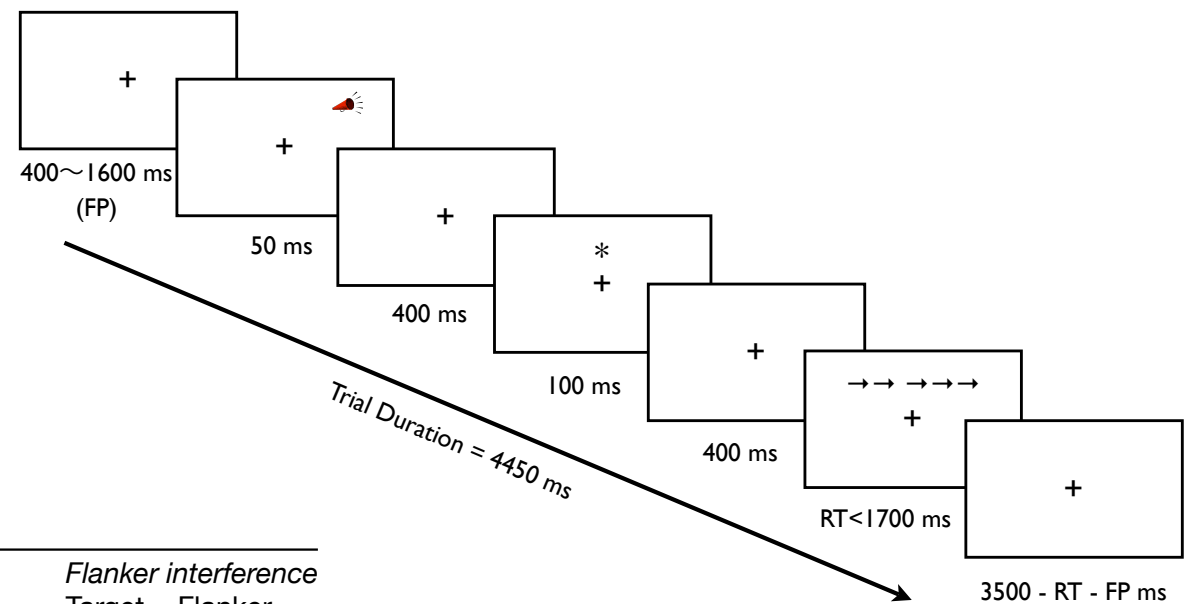
Preparation tone vs No preparation tone

### Orienting measures

Valid spatial cue vs Invalid spatial cue vs No spatial cue

### Executive measures

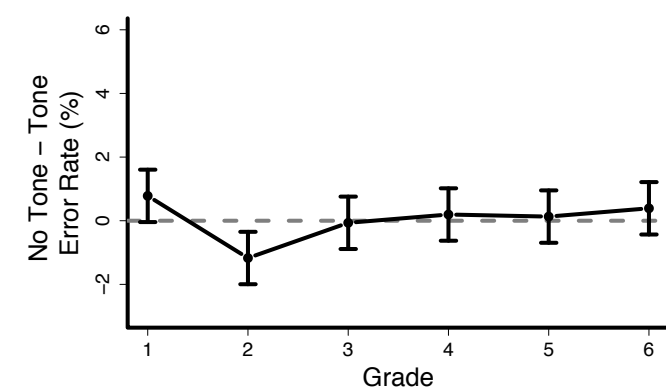
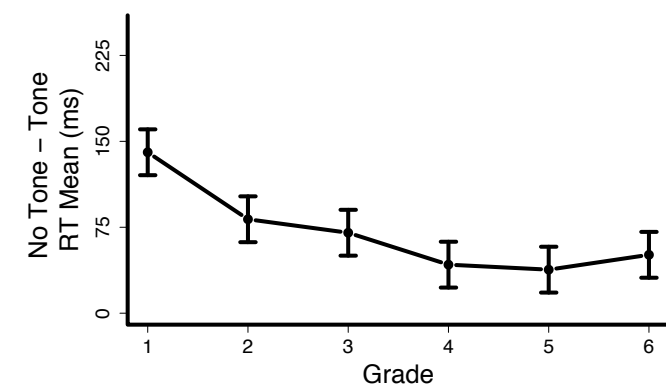
*Simon* vs *Flanker interference*  
Response hand = Target side vs Target = Flanker  
Response hand ≠ Target side vs Target ≠ Flanker



## Results

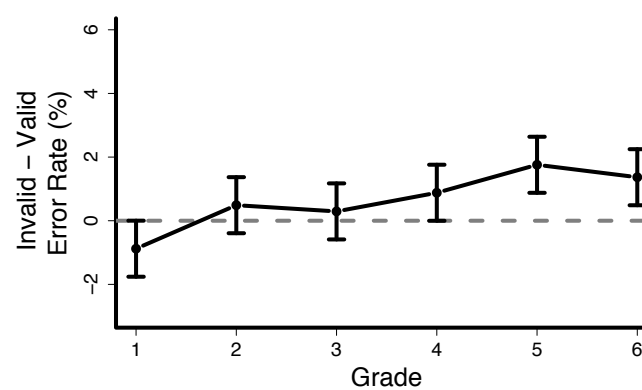
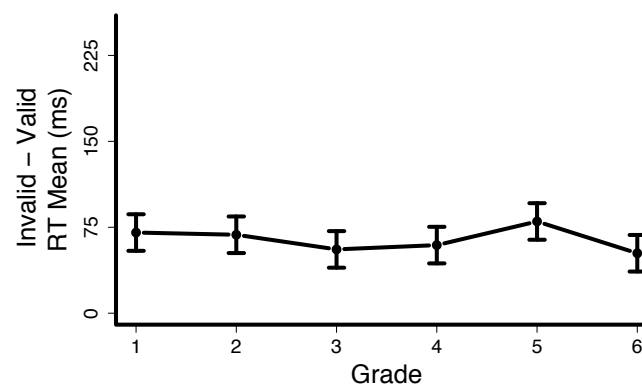
### Alerting network

The RT difference between Tone and No Tone trials decreased through development, driven by improving performance on No Tone trials.



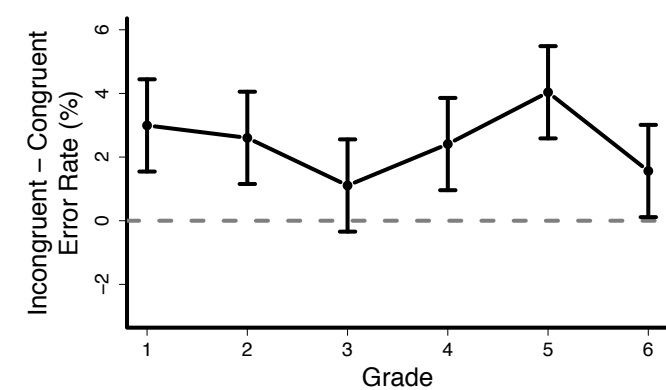
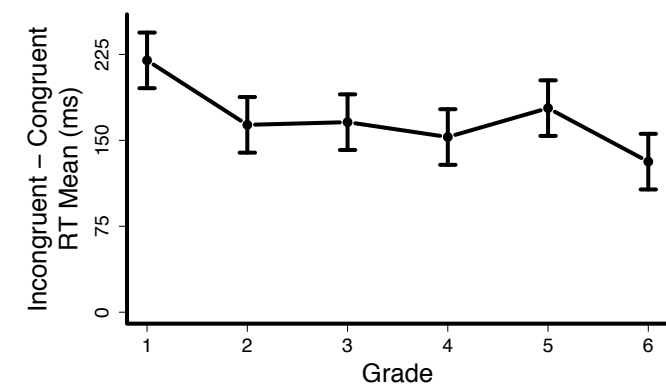
### Orienting network

The Error rate difference between Invalid and Valid trials increased through development, driven by improving performance on Valid trials.



### Executive network

The RT difference between Incongruent and Congruent trials decreased through development, driven by improving performance on Incongruent trials.



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