

# Executive functioning development in school-aged children : A longitudinal study



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## SUMMARY

- We examined the development of executive functions (EF) from middle childhood to early adolescence.
- Results demonstrated that EF improve considerably from ages 9 to 13.

## INTRODUCTION

### Executive functions

- Higher-order cognitive processes: working memory, planning, cognitive flexibility, inhibition

### EF development

- Preschoolers :
  - Several longitudinal studies
  - Results suggest rapid EF development
- School-aged children :
  - Mostly cross-sectional studies
  - Results suggest that older children perform better than younger children

### Gaps in literature

- EF development in school-aged children is largely inferred from cross-sectional studies

### The current longitudinal study

Examines the development of working memory, cognitive flexibility and inhibition between 9 and 13 years of age.

## METHOD

### Participants

- Low-risk, neurotypical population assessed longitudinally (N = 75)
- EF assessment at 9 years (T1) and 13 years (T2)

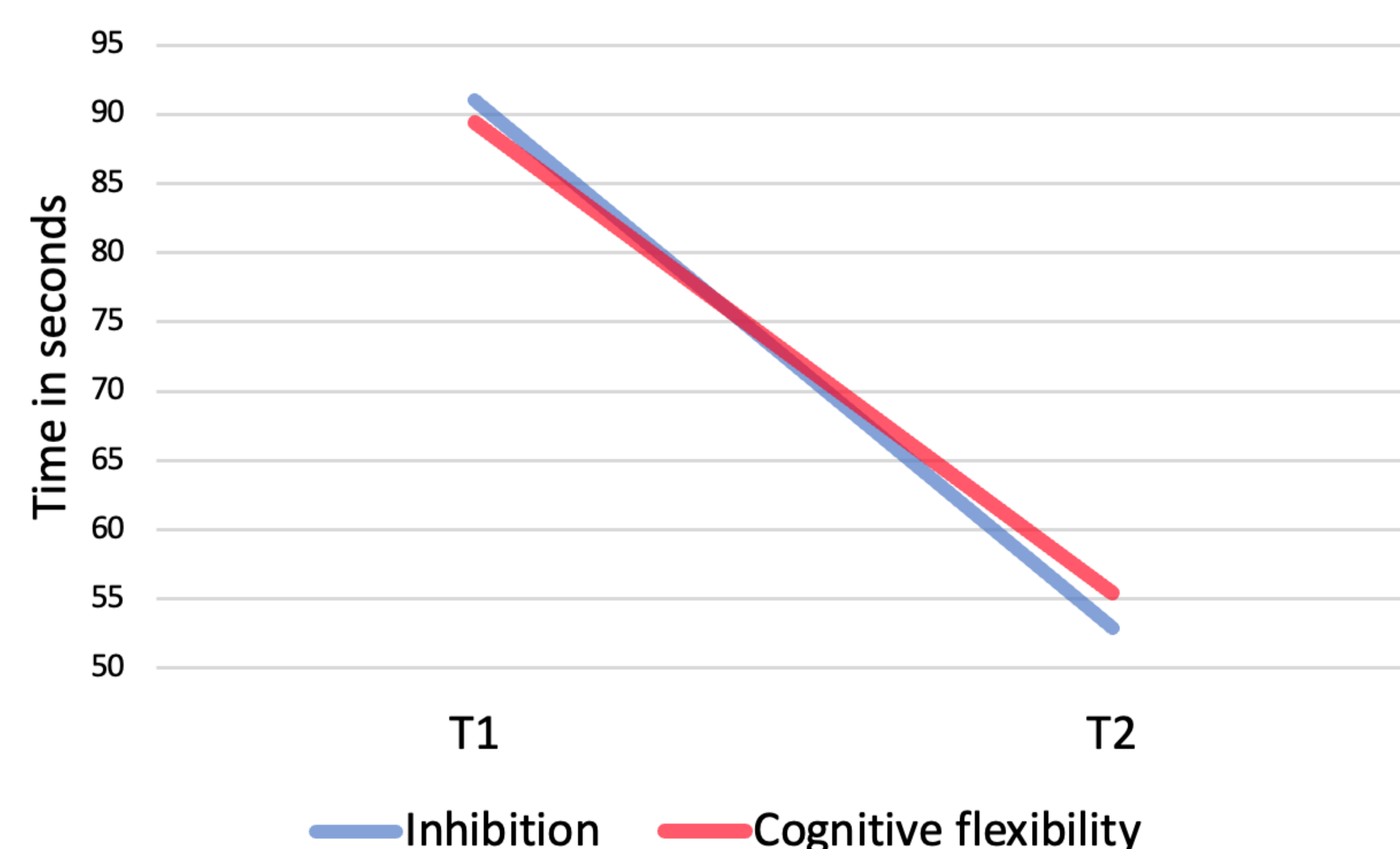
### Measures

- *Digit Span Backward*: working memory
- *Color-Word Interference Test (D-KEFS)*: inhibition and cognitive flexibility

## RESULTS

- **Repeated measures ANOVAs** showed that children improved from Time 1 to Time 2 on :
  - Inhibition ( $F(1,71) = 247.85, p < .001, \eta^2 = .78$ )
  - Cognitive flexibility ( $F(1,69) = 415.7, p < .001, \eta^2 = .86$ )
  - Working memory ( $F(1,74) = 44.51, p < .001, \eta^2 = .38$ )

Figure 1. Reaction time to the Color-Word Interference Test from T1 to T2



## RESULTS

Table 1. Working memory performance from T1 to T2

	Numbers of digits recalled
T1	6.08
T2	7.81

## DISCUSSION

- Results add to a limited but growing body of research indicating that **EF improve considerably during childhood**
- Research with at least 3 timepoints is needed to characterize the full **developmental trajectories** of EF during childhood

## CONTACT INFORMATION

- Contact information: marie-pier.cote.6@umontreal.ca
- QR code linked to the lab's website



## REFERENCES

- Best, J. R. & Miller, P. H., 2010, Child Development
- Carriedo, N. et al., 2016, Developmental Psychology
- Clark, C. A. et al., 2013, Developmental Psychology
- Miyake, A. et al., 2000, Cognitive Psychology

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