

# Treatment Adherence in Children and Adolescents with T1D: The Role of Patient and Parental Executive Functioning

E. Goethals<sup>1,2</sup>, N. Van Broeck<sup>2</sup>, J. Lemiere<sup>1</sup>, D. Van Liefvering<sup>2</sup>, J. Laridaen<sup>4</sup>, K. Casteels<sup>1,5</sup> & K. Luyckx<sup>3</sup>

<sup>1</sup> University Hospital Leuven, Pediatric Diabetes, Leuven, Belgium, <sup>2</sup> KU Leuven, Department of Clinical Psychology, Leuven, Belgium, <sup>3</sup> KU Leuven, Department of School Psychology & Child and Adolescent Development, Leuven, Belgium, <sup>4</sup> University Hospital Ghent, Ghent, Belgium, <sup>5</sup> KU Leuven, Department of Development and Regeneration, Leuven, Belgium

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## Background

- Managing type 1 diabetes (T1D) requires effective neuropsychological competencies of patients and their families, including the ability to make critical decisions regarding treatment, to execute complex tasks accurately and to make adjustments when problems arise.
- EF is a multifaceted construct involving various high-level self-regulatory cognitive abilities related to frontal cortex functions. It refers to a set of skills necessary for independent, purposeful, goal-directed activity:
  - Inhibition
  - Mental flexibility
  - Working memory
  - Planning and Organization
- Research on the influence of neuropsychological concepts such as EF towards treatment adherence in type 1 diabetes (T1D) is scarce and focused mainly on EF in young children with T1D as well as leaving the role of parental EF unaddressed.

## Objective

- To study associations and interactions between child and parental EF and treatment adherence in T1D.
- Based on multi-informants: children and adolescents with T1D as well as both their mothers and fathers

## Methods

- 284 patients (aged 6-18 years) with T1D:
  - 54% male
  - 13 years old on average ( $SD=3.03$ )
  - 136 11-18 year olds filled out self-reports
- 229 mothers and 163 fathers
- Self-report questionnaires:
  - EF measured by Behaviour Rating Inventory of Executive Functioning (BRIEF):
    - Mother & Father report about child
    - Mother & Father self-report
    - Patient self-report (11-18year olds)
  - Treatment Adherence measured by Diabetes Self Management Profile - Self Report:
    - Mother & Father report
    - Patient self-report (11-18year olds)
- Analyses within and across informants examined the associations between patient and parental EF and treatment adherence (and potential moderation effects in these associations)

## Results

Correlations

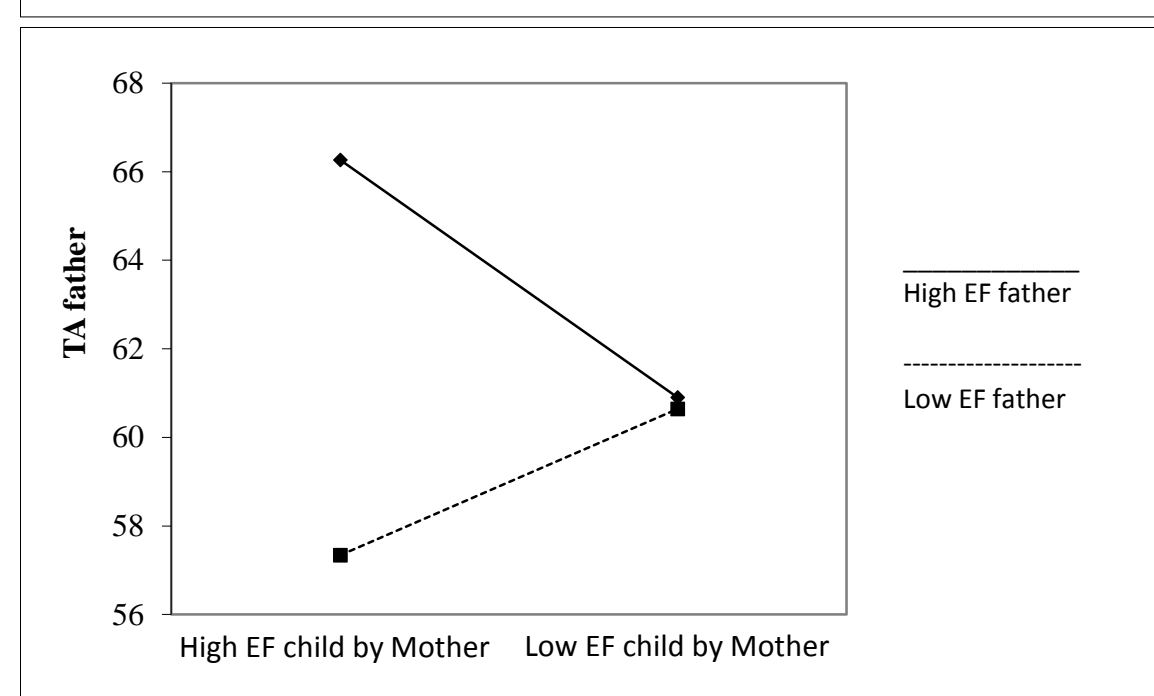
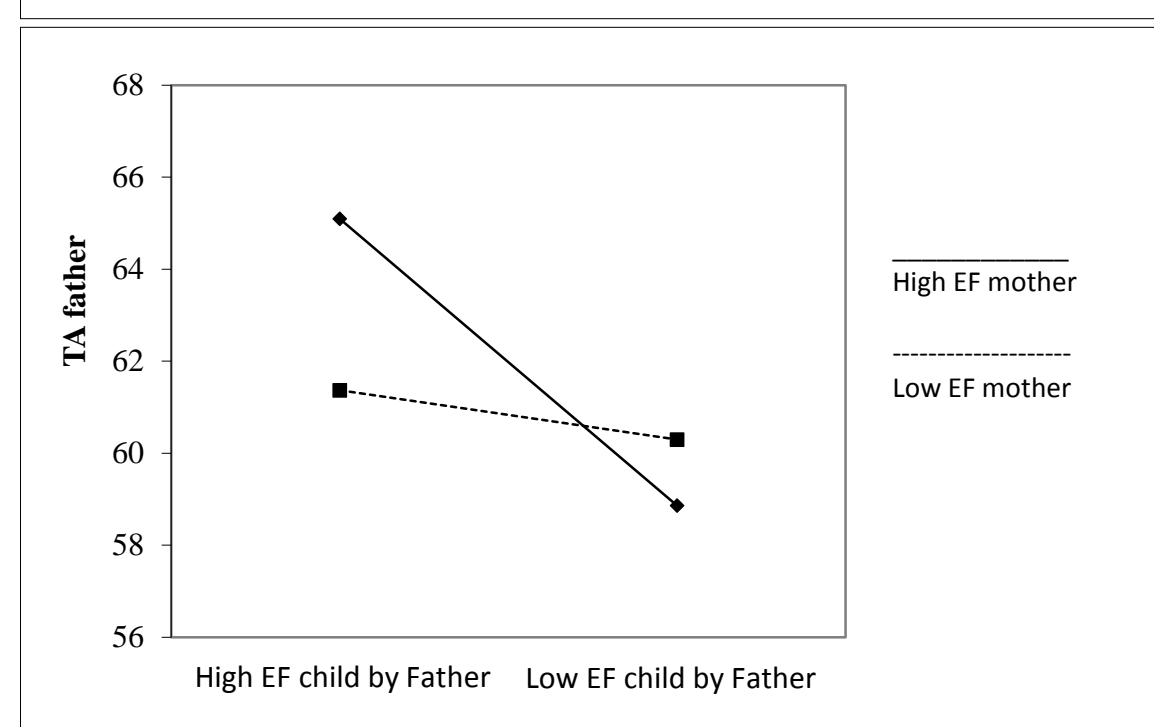
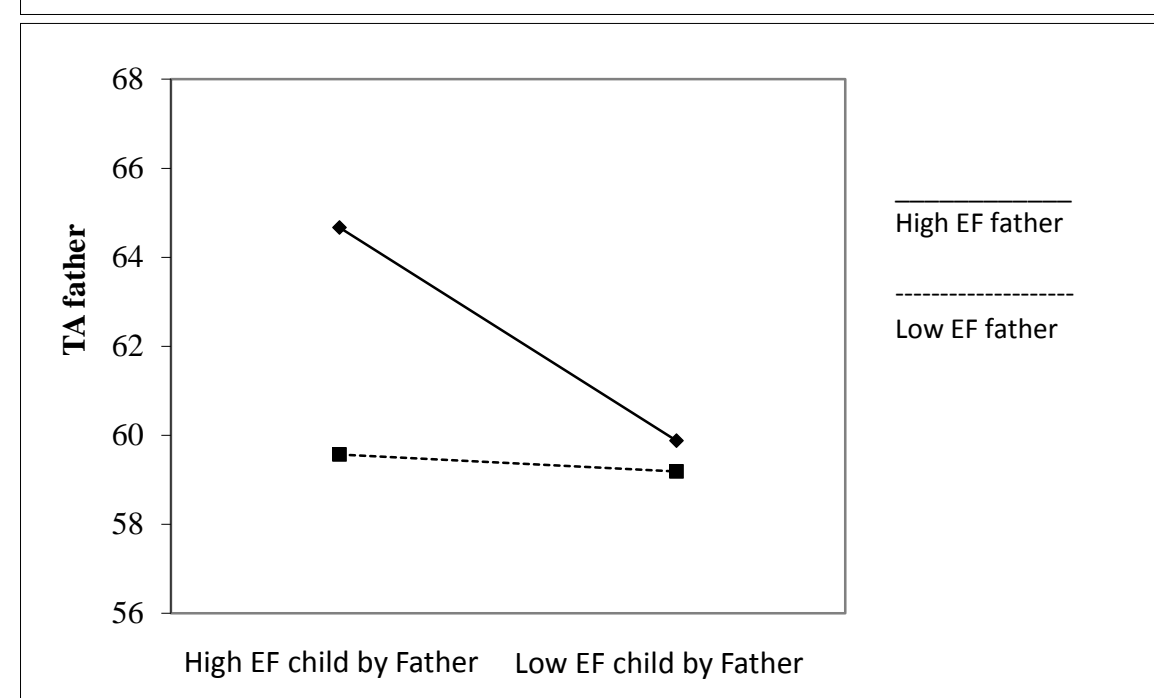
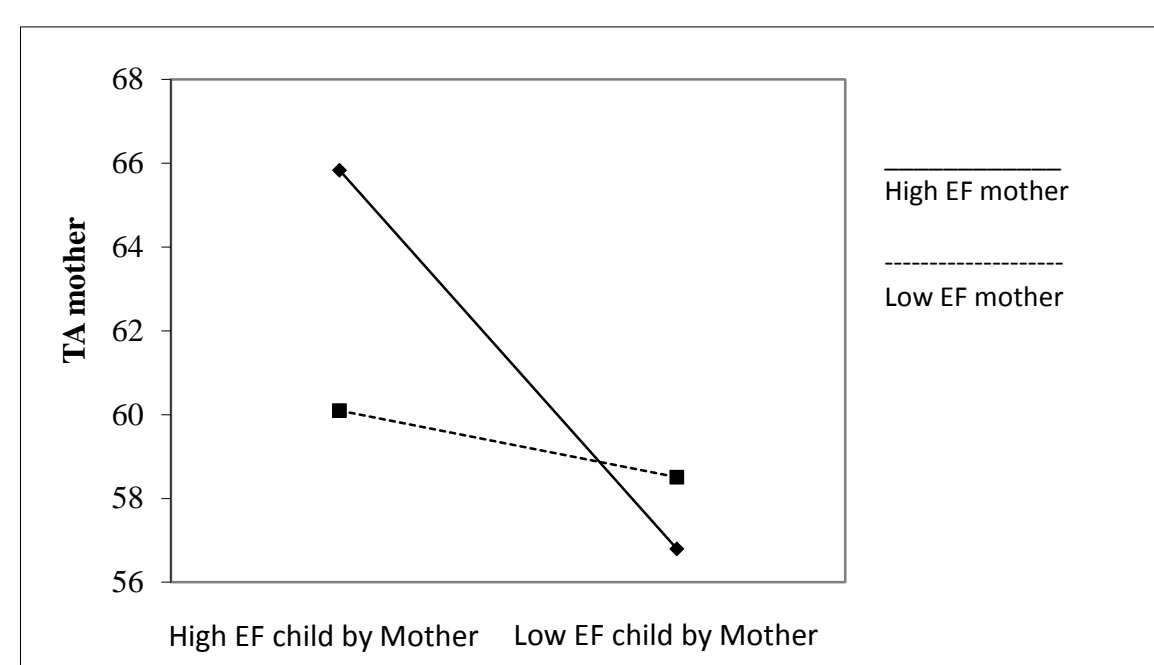
|                      |                                     | EF Youth self-report | TA Youth self-report | EF Mother-report | TA Mother-report | EF Father-report | TA Father-report | EF Mother      |
|----------------------|-------------------------------------|----------------------|----------------------|------------------|------------------|------------------|------------------|----------------|
| EF Youth self-report | Pearson Correlation Sig. (2-tailed) | 1                    |                      |                  |                  |                  |                  |                |
| TA Youth self-report | Pearson Correlation Sig. (2-tailed) | -.330**<br>,000      | 1                    |                  |                  |                  |                  |                |
| EF Mother-report     | Pearson Correlation Sig. (2-tailed) | .502**<br>,000       | -.071<br>,478        | 1                |                  |                  |                  |                |
| TA Mother-report     | Pearson Correlation Sig. (2-tailed) | -.311**<br>,001      | .604**<br>,000       | -.313**<br>,000  | 1                |                  |                  |                |
| EF Father-report     | Pearson Correlation Sig. (2-tailed) | .478**<br>,000       | -.081<br>,441        | .647**<br>,000   | -.047<br>,621    | 1                |                  |                |
| TA Father-report     | Pearson Correlation Sig. (2-tailed) | -.304**<br>,003      | .412**<br>,000       | -.069<br>,460    | .415**<br>,000   | -.211**<br>,008  | 1                |                |
| EF Mother            | Pearson Correlation Sig. (2-tailed) | .200<br>,041         | -.089<br>,376        | .508**<br>,000   | -.147<br>,029    | .236<br>,011     | -.031<br>,745    | 1              |
| EF Father            | Pearson Correlation Sig. (2-tailed) | .330**<br>,001       | -.110<br>,294        | .257**<br>,005   | .010<br>,918     | .552**<br>,000   | -.173<br>,030    | .348**<br>,000 |

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

**Note:** When interpreting correlations: 'high' EF = high score on questionnaire BRIEF = low overall EF and 'low' EF = low score on questionnaire BRIEF = high overall EF

EF = Executive Functioning & TA = Treatment Adherence



- Overall, especially child EF was consistently and clearly associated with treatment adherence (between and across informants).
- There was a consistent interaction effect between child and parental EF in the prediction of treatment adherence. For instance, child EF had an effect on treatment adherence especially when parental EF was good.

## Conclusion

This multi-informant study adds to current knowledge about treatment adherence by implementing not only child but also parental EF.

It demonstrates the significant role of child as well as parental EF.

Researchers and clinicians should remain attentive towards the role of neuropsychological concepts such as EF in the domain of T1D.

Implementation in clinical practice seems necessary and meaningful.