

Attention Deficit (AD) and Sluggish Cognitive Tempo (SCT) symptoms in Congenital Hypothyroidism (CH): results from a case-control study.

Annalisa Esposito¹, Ida D'Acunzo¹, Raffaella Di Mase¹, Ennio Del Giudice¹, Mateu Servera², Mariacarla Salerno¹

¹ Department of Translational Medicine (Section of Pediatrics), Federico II University, Naples, Italy ; ² Department of Psychology, Balears Islands University

Introduction and Objective

Despite neonatal screening, children with Congenital Hypothyroidism (CH) may still display behavioural problems such as inattention, distractibility, hyperactivity and restlessness. The aim of present study was to evaluate attention and Sluggish Cognitive Tempo (SCT) symptoms in 32 children with CH compared to 32 healthy matched controls.

Method

► The study population consisted of 32 CH children aged 9-14 years. CH children were diagnosed by neonatal screening and treated at a mean age of 19.3 ± 4.5 days with mean starting L-thyroxine (L-T4) dose of 11.8 ± 1.4 $\mu\text{g}/\text{kg}/\text{day}$ (range 10-15 $\mu\text{g}/\text{kg}/\text{day}$). Hormonal features at diagnosis are reported in Table 1.

► 32 healthy subjects, comparable for age, sex and socioeconomic status were enrolled as control.

CH patients and controls underwent **Child and Adolescent Disruptive Behaviour Inventory-Plus (CADBI-plus)** to evaluate attention and SCT symptoms. Teacher and both parents cooperation was required to enter the study.

SCT is a newly defined childhood disorder associated with a slow cognitive processing, sluggishness, daydreaming, drowsiness, lethargy and under-activeness.

Tab. 1: Hormonal features of 32 enrolled CH children at diagnosis.

Age at diagnosis (days)	19.34 \pm 4.5
Serum TSH at diagnosis (mcUI/ml)	442.77 \pm 214.6
Serum FT4 at diagnosis (ng/dl)	0.46 \pm 0.21
L-T4 at diagnosis ($\mu\text{g}/\text{kg}/\text{day}$)	11.84 \pm 1.4

Results

CH children scored significantly higher than controls in:

► **Attention Problems** reported by both mothers (M) (5.29 ± 5.01 vs 3.17 ± 2.54 ; $p < 0.04$), and teachers (T) (7.2 ± 8.49 vs 2.69 ± 3.28 , $p < 0.01$) (**Fig.1**);

► **SCT symptoms** reported by both parents (F 9.61 ± 7.04 vs 5.41 ± 4.77 , $p < 0.01$; M 10.63 ± 9.57 vs 4.9 ± 4.68 , $p < 0.01$) and teachers (T 13.2 ± 13.01 vs 4.28 ± 5.63 , $p < 0.01$) (**Fig.2**).

No significant differences were found in hyperactivity or opposite behaviors.

Concerning academic performance, teachers report lower scores in **Mathematics** in CH children compared to controls (6.25 ± 2.13 vs 7.1 ± 1.13 , $p < 0.05$).

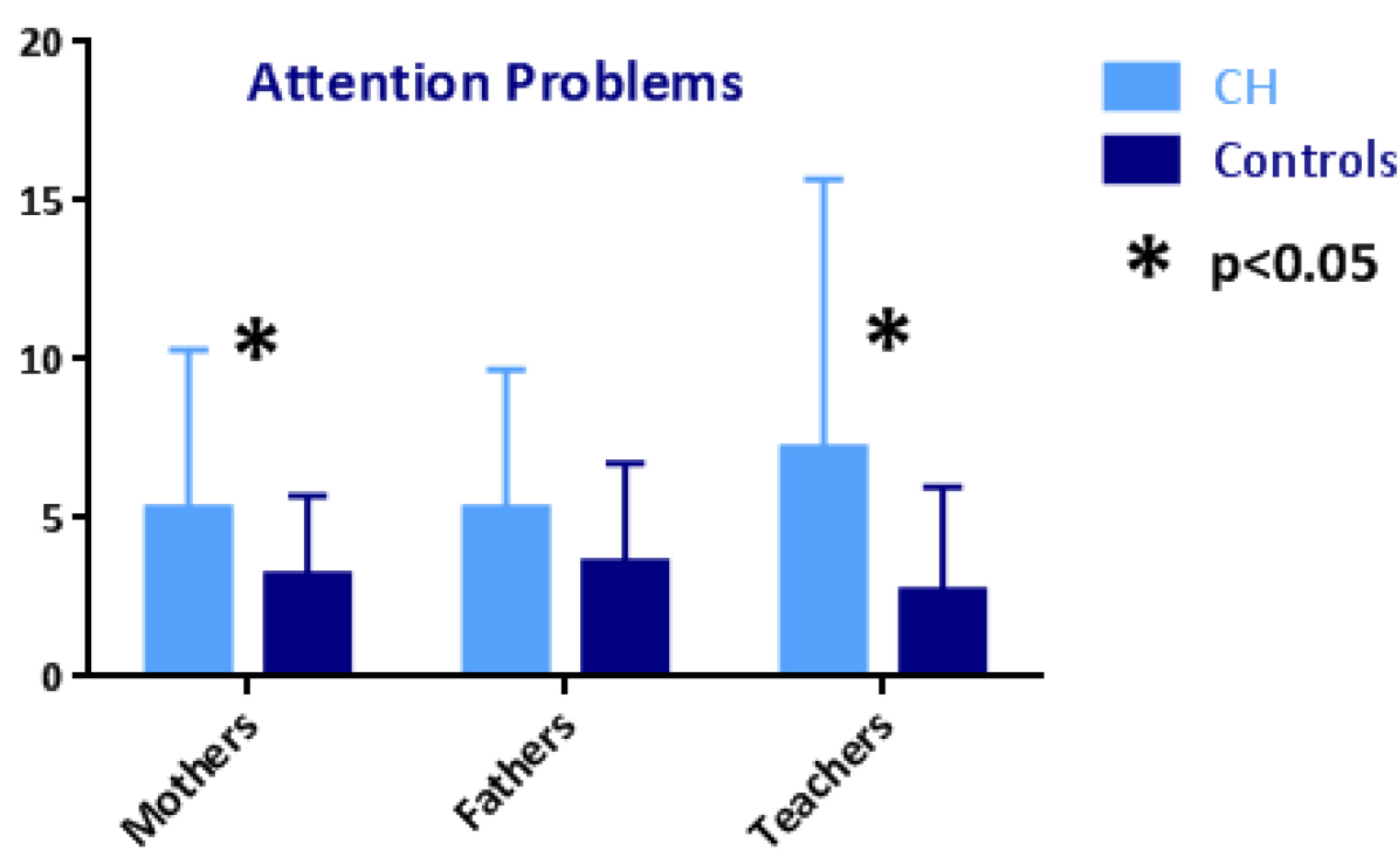


Fig.1. Comparison between Attention Problems reported by mothers, fathers and teachers in CH children and Controls.

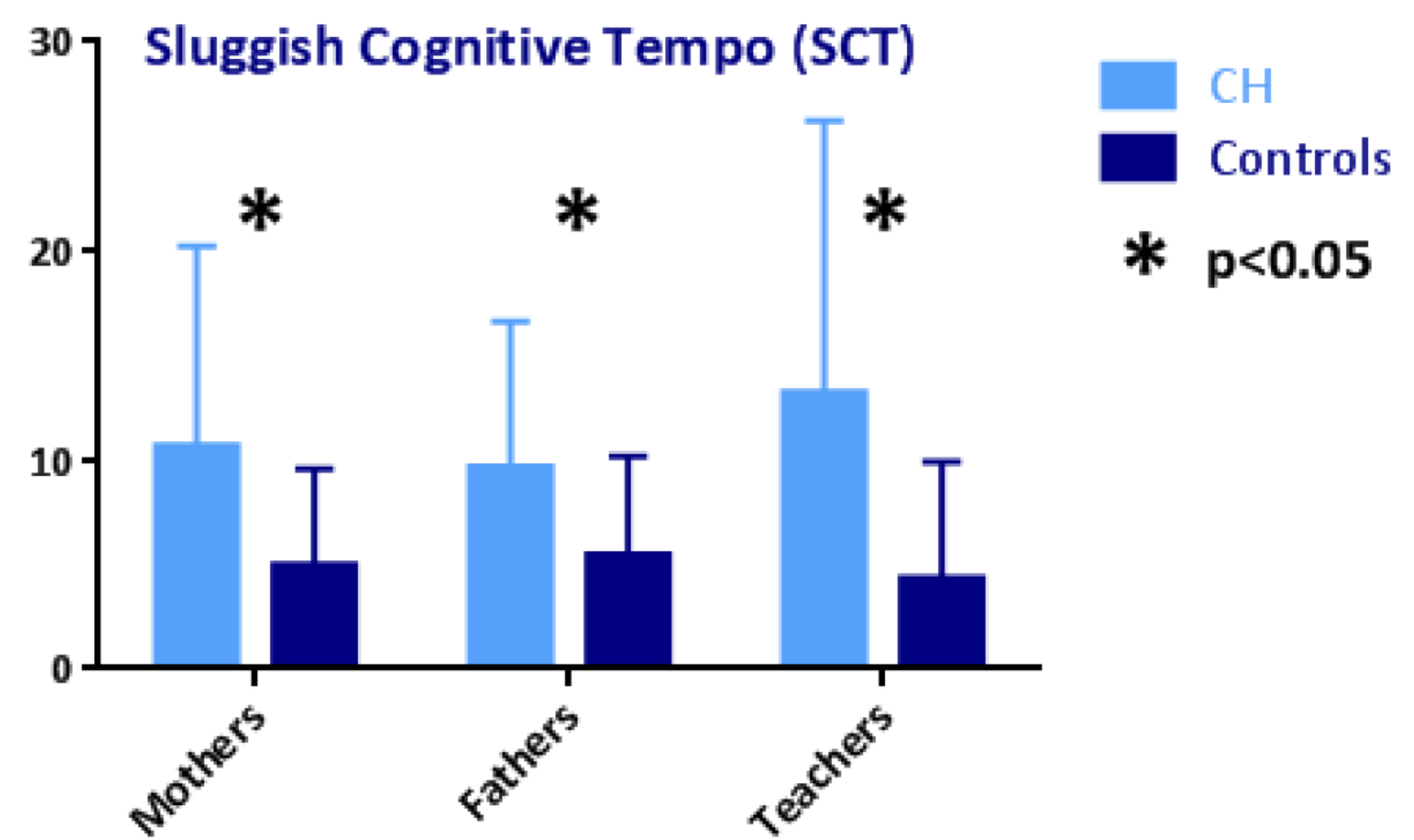


Fig.2. Comparison between Sluggish Cognitive Tempo (SCT) symptoms reported by mothers, fathers and teachers in CH children and Controls.

Conclusions

The results of our study suggest that CH children may have attention deficits, SCT symptoms and impaired mathematical abilities, despite early replacement therapy and high starting L-T4 doses.

