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**Implementation of a neuropsychological intervention in secondary school:
Targeting executive problems in young adolescent boys**

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POSTER SUMMARY (590 words, max=500)

Research question and brief review of relevant studies

The aim of our research is to implement and evaluate a recently developed neuropsychological intervention in a school setting. The intervention is specifically designed for young adolescent boys that experience executive problems in school and consequently perform less than expected by teachers and/or parents. There is an increased need for these types of interventions, because underachievement of boys is a widespread concern in many countries. In the Netherlands, boys more often repeat a grade and/or switch to lower educational streams during the early years of secondary school. This has resulted in a lower success rate of boys in the highest educational streams of the Dutch educational system (CBS, 2009).

A potent explanation for the lower achievement of boys compared to girls during the first years of secondary school relates to protracted brain development in brain areas responsible for cognitive control and goal-directed actions (Giedd, 2008). During adolescence, there is a developmental lag in brain maturation of boys (De Bellis et al., 2001) and as a consequence, young adolescent boys experience more difficulties with attention, planning and response inhibition than girls of the same age.

A neuropsychological intervention with psychoeducation, goal management training and exchange of experiences as main components may have potential value for diminishing executive problems. Previous studies in other populations (aging people, adults with ADHD) have shown that this type of intervention reduced cognitive complaints and increased coping skills (Van Hooren et al., 2007; Scholtissen-In de Braek, Dijkstra, Ponds en Jolles, *submitted for publication*). In the current research, we evaluated the neuropsychological intervention relative to a standard homework support intervention.

Participants and methods

Participants included 46 boys in grade 8 who perform at one of the two highest educational streams in the Dutch educational system. Participants were selected by their teacher based on scores on a checklist for executive difficulties. Participants were randomly assigned to either a neuropsychological or a homework support intervention group. Every group consisted of 8-10 boys, guided by two specially trained teachers. There were 9 meetings of 50 minutes, twice a week after regular school hours. Evaluation took place before (double baseline), directly after and three months after intervention. Measures included objective neuropsychological tests and several multiple informant (parent, teacher, self) cognition questionnaires.

Summary of significant findings

Since data-collection is not completed yet, the first results will be made available at the conference. During the teacher training, teacher reactions were very positive with respect to the content of the neuropsychological intervention. Preliminary data from parent reports shows that participant satisfaction was 51,7% in the neuropsychological intervention, compared to 42% in the homework support group. This between groups difference was not significant ($p=.342$).

Educational and scientific importance of study

The poor performance of boys in higher educational streams in the Dutch educational system indicates the burgeoning need to develop and evaluate interventions for this population. This may improve school performance in boys in this age range and potentially prevent repeating of a grade and/or switching to lower, more practice based educational streams. Furthermore, this research also contributes to the professionalism of teachers, since the teachers get training in how to deal with boys with executive problems. Finally, this study will be a step towards the development of evidence-based education, as it will underscore the feasibility of a scientific approach to educational methods. In sum, we believe that this kind of research is not only necessary for improving the achievements of young adolescent boys in secondary school, but also paves the way towards a more evidence-based educational system.

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Abstract (283 words; max=250)

A widespread concern about poor performance of boys in secondary education indicates the burgeoning need to develop and evaluate interventions for this population. Due to protracted and delayed brain development in areas responsible for cognitive control (Giedd, 2008, De Bellis et al., 2001), young adolescent boys may experience more difficulties with attention, planning and response inhibition than girls of the same age. These executive difficulties during the early years of secondary school hinder boys' academic achievement. This study describes a new neuropsychological intervention targeting mild executive difficulties in young adolescent boys. The main components of this intervention are psychoeducation, goal management training and exchange of experiences. The intervention focuses on improving metacognitive skills. The aim of the research was to evaluate the effectiveness of the neuropsychological intervention program relative to a standard homework support intervention. The intervention was implemented in three Dutch secondary schools. Participants included 46 boys from grade 8 who experience executive difficulties as rated by their teacher. Participants were randomly assigned to either the neuropsychological or homework support intervention. An intervention group consisted of 8-10 boys guided by two trained teachers. Since data-collection is not completed yet, the first results will be made available at the conference. Initial teacher reactions with respect to the content of the neuropsychological intervention were very positive. Preliminary data shows that participant satisfaction was 51,7% in the neuropsychological intervention, compared to 42% in the homework support group (parent report, $p=.342$). Participants in both interventions will be compared on objective neuropsychological test performance and multiple informant cognition questionnaires (teacher, parent, self). This research will be a step towards the development of evidence-based education, as it will underscore the feasibility of a scientific approach to educational methods.