

**Conclusions:** This study provides evidence that caregiver sessions within a Tier-4 service are efficacious and can (i) meet caregivers' needs to better understand ADHD, executive functioning difficulties as well as of other ADHD-related issues, and (ii) may equip caregivers with the knowledge to access resources to appropriately manage their children with ADHD – a possible precursor to improved clinical and functional outcomes in children. That the session on ADHD medications only led to improved understanding of the topic but not to perceived gains in strategies or perceived access to strategies could be attributed to low pre-and post-session questionnaire response rates as well as to the nature of those sessions which were purely informative and did not discuss strategies and resources. Nonetheless, longitudinal studies, with control groups, should determine whether any post-intervention improvements are sustained over time and should establish whether these are associated with improved outcomes in children.

**Categories:** ADHD/Attentional Functions

**Keyword 1:** executive functions

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### 39 Anxiety as a Longitudinal Compensatory Factor for Executive Functioning Abilities in Youth with ADHD

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**Objective:** ADHD and anxiety symptoms are highly comorbid in childhood. While worse functional outcomes are typically expected for children with comorbid ADHD and anxiety symptoms, an emerging body of literature has suggested that anxiety symptoms may actually contribute to compensatory effects for executive functioning (EF) skills in children with ADHD symptoms. However, the results of studies investigating this claim have been quite mixed,

possibly due to the use of smaller sample sizes and cross-sectional datasets. The current study extends the previous literature by examining the possible compensatory effects of anxiety symptoms in the context of ADHD symptoms on EF abilities (e.g., working memory [WM] and inhibition) both cross-sectionally and longitudinally in a large, well-validated sample. **Participants and Methods:** 547 children and adolescents (8-16 years) were included from a population-based sample of twins (CLDRC sample) with enrichment for reading and attention challenges. Participants were retested at a second time point approximately 5 years later. ADHD symptoms (inattention and hyperactivity-impulsivity) were measured by a DSM-based ADHD rating scale, anxiety symptoms were measured by the RCMAAS, inhibition was measured by stop-signal reaction time (SSRT), and working memory was measured by Digit Span Backwards (WISC/WAIS-R/III). Covariates included age and sex assigned at birth. Multiple regression models examined cross-sectional and longitudinal associations between ADHD (inattention and H-I) symptoms, anxiety symptoms, and the interaction between ADHD and anxiety symptoms on WM and inhibition abilities.

**Results:** As expected, higher anxiety, inattention, and H-I symptoms were generally associated with lower inhibition and WM abilities both cross-sectionally and longitudinally. While no significant interactions between ADHD and anxiety symptoms were identified cross-sectionally at Time 1, significant interactions between Time 1 ADHD and anxiety symptoms predicted Time 2 inhibition scores. An inattention x anxiety interaction ( $p=.002$ ) and a H-I x anxiety ( $p=.016$ ) interaction significantly predicted Time 2 inhibition. Simple slopes analysis confirmed a compensatory interaction pattern, where ADHD symptoms showed a stronger association with inhibition weaknesses in children without anxiety symptoms compared to those with anxiety symptoms. This suggests that anxiety symptoms may be serving as a compensatory factor for children with ADHD symptoms as compared to their peers without ADHD symptoms.

**Conclusions:** These findings help clarify a previously mixed literature. Our findings suggest that the compensatory effect of anxiety symptoms on inhibition abilities in children with ADHD symptoms may be a developmental mechanism that takes time to emerge. The fact

that the compensatory effect may take time to emerge may explain conflicting results within prior cross-sectional samples. These findings also have implications for research investigating the link between ADHD symptoms and EF abilities, as anxiety symptoms may be an important moderator to consider when attempting to explain why the correlation between ADHD symptoms and EF abilities is often weaker than expected. Finally, clinical implications for this work help to provide empirical evidence to support anecdotal experiences reported by individuals with ADHD and the clinicians who assess them, who often report that anxiety symptoms help them to improve EF performance.

**Categories:** ADHD/Attentional Functions

**Keyword 1:** attention deficit hyperactivity disorder

**Keyword 2:** executive functions

**Keyword 3:** anxiety

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#### 40 Metamemory performance of children with ADHD in comparison to typically developing children.

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**Objective:** Metamemory is an aspect of metacognition that is one's knowledge of memory and understanding of their own memory performance (Kreutzer et al., 1975). Executive function skills are foundational skills required for the development of metamemory in early school-age children (Lockl & Schneider, 2007; Lecce et al., 2015). Previous studies have suggested children with Attention-Deficit/Hyperactivity Disorder (ADHD) may have weaker study and organizational strategies, suggesting weaker metamemory skills (O'Neill & Douglas, 1991; Voelker et al., 1989). The current study aimed to examine the metamemory knowledge of typically developing (TD) children and children with ADHD on a novel declarative metamemory questionnaire. We

hypothesized that the ADHD group would have worse metamemory performance than the TD group and that executive functioning skills would be significantly associated with metamemory for all groups.

**Participants and Methods:** The current study recruited a total of 93 English-speaking children between the ages of 6 to 12 years old, including 70 typically developing (TD) children (M age=9.1+1.92; females 49%), and 23 children with diagnoses of ADHD (M age=9.56+1.27; females 57%). Fifty-seven percent of the ADHD group reported daily use of stimulant medication, but no participants took medication on the day of testing. The participant groups did not significantly differ regarding age or sex. Participants completed the Measure of Metamemory (MoM-10) which included 10 multiple choice questions (i.e., Accuracy) and asked participants to explain their multiple-choice answer (i.e., Explanation). This provided three scores: Accuracy (max 10 points), Explanation (max 20 points), and Total (max 30 points). Additionally, participants' parents completed the 12-item Behavior Rating Inventory of Executive Function, 2nd Edition (BRIEF-2) Screening form, evaluating the child's executive functioning, which provided a percentile based on age and sex.

**Results:** Within the ADHD group, BRIEF-2 percentiles and MoM-10 scores did not differ between those who were medicated and those who were not. As previous literature has shown, the TD and ADHD groups significantly differed on the BRIEF-2 screening score percentiles ( $t(91)=-5.78, p<0.001$ ; TD M=52.89+26.1; ADHD M=85.26+13.82). The TD and ADHD groups did not significantly differ on either the MoM-10 Accuracy ( $p=0.13$ ; TD M=7.22+1.84; ADHD M=7.87+1.32), the Explanation ( $p=0.08$ ; TD M=9.34+3.80; ADHD M=10.57+2.92), or Total ( $p=0.13$ ). There was a trend towards a significant correlation between the Explanation scores and BRIEF-2 for TD participants ( $r=-0.23, p=0.06$ ), but there was no significant correlation between Explanation, Accuracy, or Total scores and the BRIEF-2 for the ADHD group.

**Conclusions:** Our results tentatively suggest a possible association between metamemory and parent reported executive functioning for TD children, supporting the expected association between the development of executive functioning and the development of metamemory. However, there was no association between metamemory and executive functioning for children with ADHD,