Predicting Academic Achievement Using Intelligence, Executive Functioning, and Socioeconomic Status in Children With and Without ADHD

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Introduction

- Socioeconomic status[3] (SES), intelligence[4] (IQ), and executive functioning[5,6] (EF) influence academic achievement (AA).
- Considering the cognitive deficits in Attention-Deficit/Hyperactivity Disorder (ADHD) are primarily deficits of EF, this domain may have a greater impact on AA in children with ADHD compared to their peers[7,8].
- No published work has examined these combined factors on AA in children with and without ADHD.
- The current study investigated the impact of IQ, SES, and EF on AA in children.
- It was predicted that the study variables would differentially predict AA for these groups.

Participants & Methods

- Children with (n = 17) and without (n = 30) ADHD aged 9 to 15 years (M_{age} = 11.8, 38% female) were recruited as part of a larger study.

ACADEMIC ACHIEVEMENT
WRAT-4 average: Word Reading, Spelling, Math Computation

EXECUTIVE FUNCTIONING
BASC-2 Executive Functioning Index: Parent Report

SOCIOECONOMIC STATUS
Hollingshead Index: Education, Occupation, Sex, Marital Status

INTELLIGENCE
WISC-IV Est. IQ: Vocabulary, Digit Span, Coding, Block Design

Results

- t-tests revealed the ADHD and non-ADHD group did not differ on IQ, SES, age, gender, or AA, but the ADHD group had greater EF impairment.
- Linear regression analyses were conducted using EF, IQ, and SES to predict AA.
- For the ADHD group, EF was a significant predictor of AA, but SES and IQ were not.
- For the non-ADHD group, both SES and IQ were significant predictors of AA, whereas EF was not.

†Predictor^{ADHD}	$_{adj}R^2$	t/F	p	β*
Model	0.49	6.21	0.01	-
Intelligence	-	0.55	0.59	0.11
Executive Function	-	3.77	0.00	0.72
Socioeconomic Status	-	0.14	0.89	0.03

†Predictor$^{Non\text{-}ADHD}$	$_{adj}R^2$	t/F	p	β*
Model	0.44	8.60	0.00	-
Intelligence	-	3.73	0.00	0.55
Executive Function	-	0.04	0.97	0.01
Socioeconomic Status	-	2.22	0.04	0.32

*Standardized β Coefficients reported; † Dependent Variable = Academic Achievement

Discussion & Conclusions

- Differential learning strategies may be useful in maximizing improvement in academic performance for students who differ on ADHD traits.
- Research suggests that EF may be improved[9] through activities like mindfulness awareness practices[10] and physical activity[11].
- Those with ADHD may benefit most from learning strategies specifically targeting executive functioning skills, whereas tools targeting multiple academic domains and home-life factors may differentially benefit students without ADHD.

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