



A COLLABORATIVE ONLINE EVENT

PUSHING THE BOUNDARIES OF ACHIEVEMENT

A SERIES ON THE LATEST EVOLUTION OF APPLIED NEUROSCIENCE

Thank you for joining us today, along with our
International Partners.



Your Panelists

Alex Kitzes Ph.D.

Clinical Psychologist & Co-Founder of Stronger Brains Inc, USA

Cheryl Chia

Physiotherapist & Founder of Singapore-based BrainFit

Dave Stanley

Director of Learning Ecosystems at LearnFast Australia

Your Presenter

David Rabiner Ph.D.

A Research Professor in the Department of Psychology & Neuroscience at Duke University, and a Senior Associate Dean and Director of Academic Advising for Trinity College at Duke University.

Publishes an online newsletter called *Attention Research Update* that helps over 30,000 subscribers stay informed about important new research on ADHD. Free subscriptions are available at www.helpforadd.com.

Attention Problems & Academic Achievement

David Rabiner, PhD · Duke University



Hinshaw's 1992 Review on Externalizing Problems and Academic Underachievement

- Inattention-hyperactivity linked to reading underachievement in early & middle childhood.
- Longitudinal studies with appropriate controls were lacking.
- Inferences about causality could not be made.
- Also unclear which externalizing problems are most directly linked to academic struggles?

Will review three studies on this issue:

- What is the concurrent relationship between attention problems and academic achievement?
- What is the predictive relationship between attention problems and academic achievement?
- Do attention problems moderate the impact of traditional academic interventions?

Study 1 - What is the concurrent association between ADHD symptoms & academic difficulties?

Sample - 621 students from eight Durham elementary schools.

- 122 Caucasian students
- 310 African American students
- 147 Hispanic students

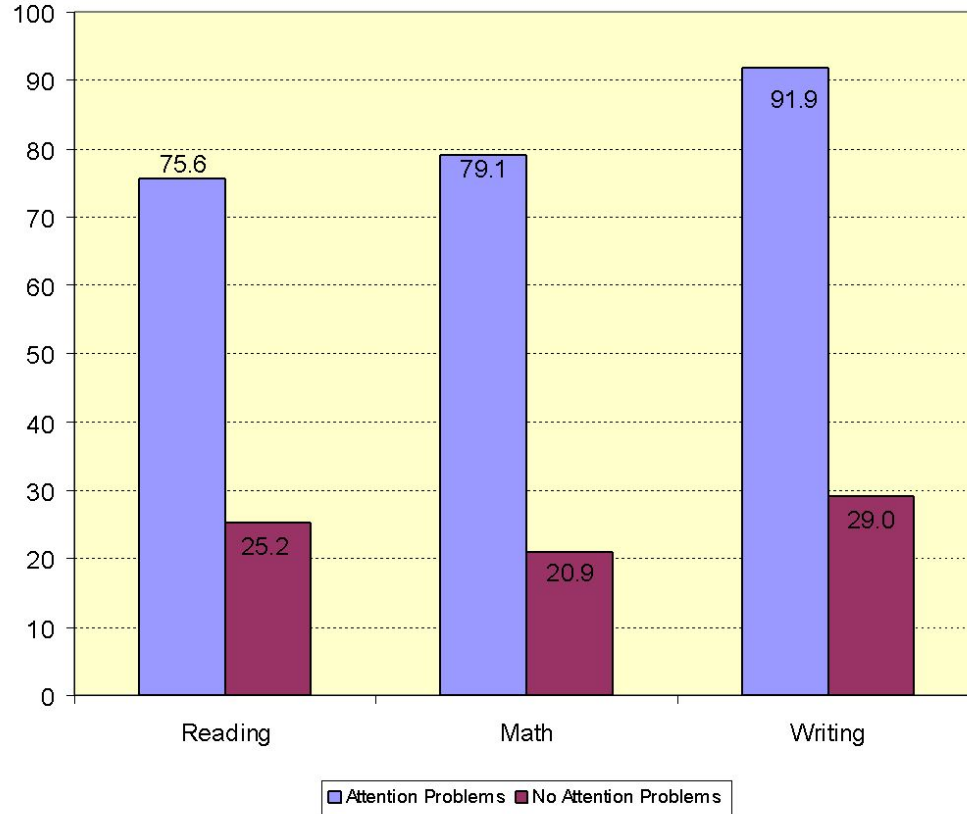
Study Measures

- Teachers rated students' academic achievement from 'far below grade level' to 'far above grade level' in reading, math, and written language.
- Teachers completed Conners Rating Scale on each student.
- Students classified as inattentive if standard score on DSM-IV inattentive scale > 1.0 . 86 children scored above this level.

Inattentive Symptoms of ADHD

- Forgets things he/she has already learned
- Fails to give close attention to details or makes careless mistakes
- Avoids tasks that require sustained mental effort
- Does not seem to listen to what is being said to him/her
- Difficulty organizing tasks or activities.
- Has difficulty sustaining attention in tasks or play activities
- Loses things necessary for tasks or activities
- Does not follow through on instructions and fails to finish schoolwork
- Easily distracted by extraneous stimuli

**Percentage of Students With and Without
Attention Problems Rated Below Grade Level**



Study 2 - Do attention problems predict reading difficulties?

Attention problems ==> reading difficulties

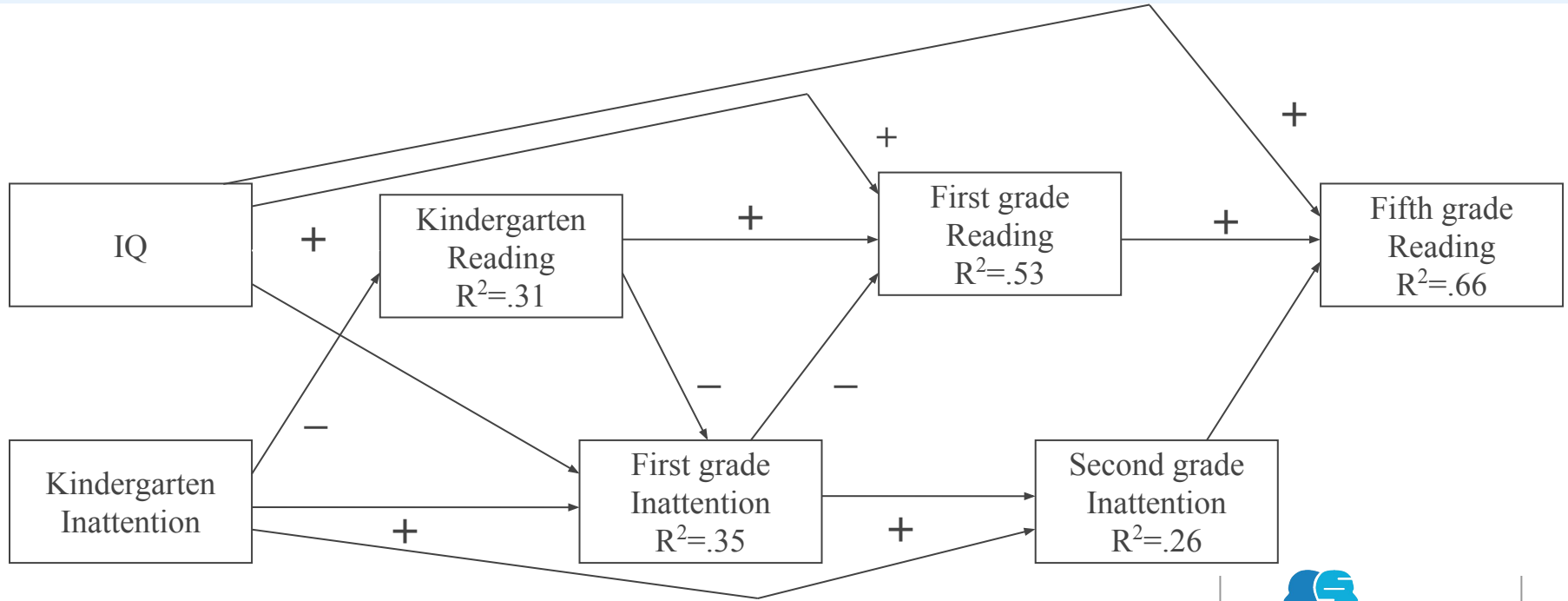
or

Reading difficulties ==> inattentive behavior

Fast Track Study

- Followed 387 children from end of K thru end of 5th grade.
- Reading measured after K, 1st, 2nd, and 5th grade using the Woodcock Johnson Tests of Achievement.
- Teacher ratings of attention problems, hyperactivity, and internalizing/externalizing problems obtained at similar times.
- Also measured IQ at school entry.

Prediction of Reading Achievement



What about consequences of “serious” attention & reading problems?

- Examined change in reading achievement between end of K and end of 1st grade for children who were highly inattentive in grade 1.
- Standardized reading achievement score declined for 43 of 57 children.
- Group avg. declined from $-.52$ to $-.86$; $p < .01$.

What about change in attention problems for students who began first grade as poor readers?

- Attention problems increased for 20 students and declined for 17.
- Group avg. went from .67 to .76, a non-significant increase.
- Data suggest attention problems ==> reading problems
- Little indication that reading problems ==> attention problems

Youth were followed through high school - Here's what we found:

- First-grade attention problems predicted lower reading achievement scores in fifth grade.
- First-grade attention problems predicted lower 5th grade grades in all areas.
- Magnitude of these effects similar to what was found for IQ and SES.
- First-grade attention problems also significantly reduced odds of high school graduation.

Study 3 - Do traditional Academic Interventions help Inattentive Children?

1. Do attention problems moderate the impact of tutoring?
2. Do attention problems diminish the benefits of tutoring for children who need it the most?

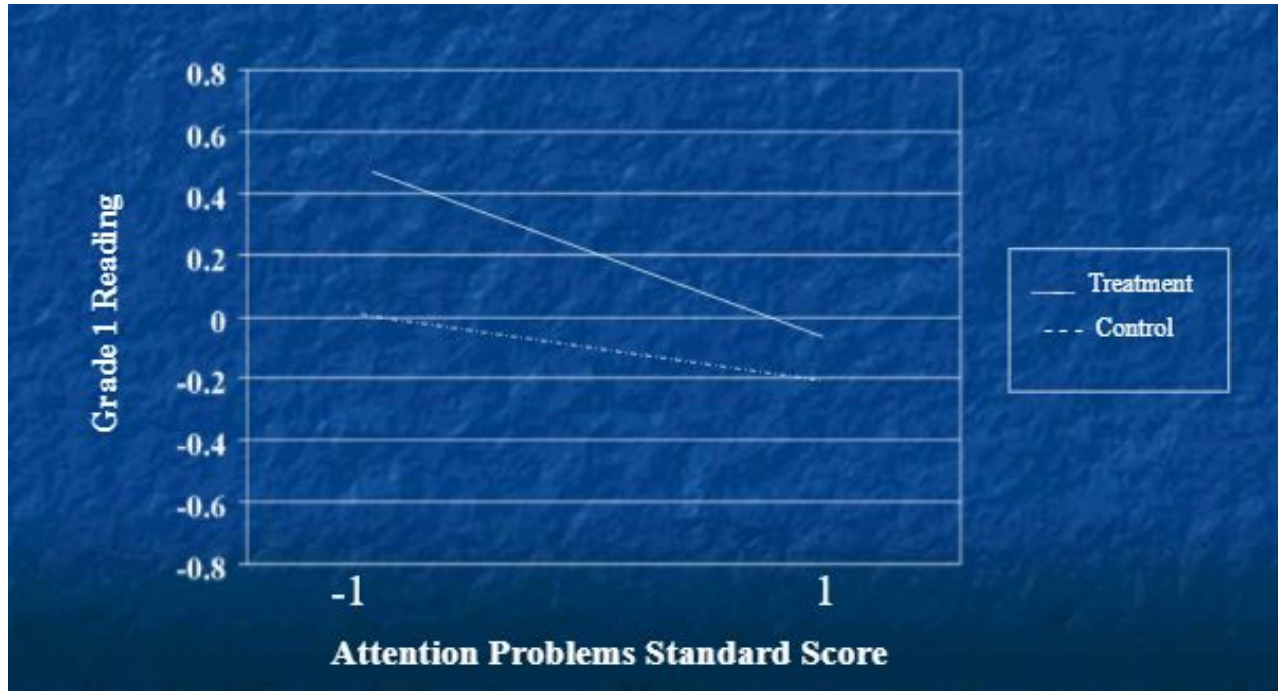
Study Design

- Participants - 581 children from intervention and control samples of Fast Track.
- Intervention children received 90 minutes/week of individual tutoring in reading during 1st grade.

Measurement

- Reading achievement measured after Kindergarten & 1st grade.
- Teachers rated child attention in spring of 1st grade. Also rated other behavior problems in K and 1st grade.
- IQ estimates obtained using vocabulary and block design subtest from WISC-R.

Figure 2: Grade 1 reading achievement as a function of Grade 1 attention problems & intervention status



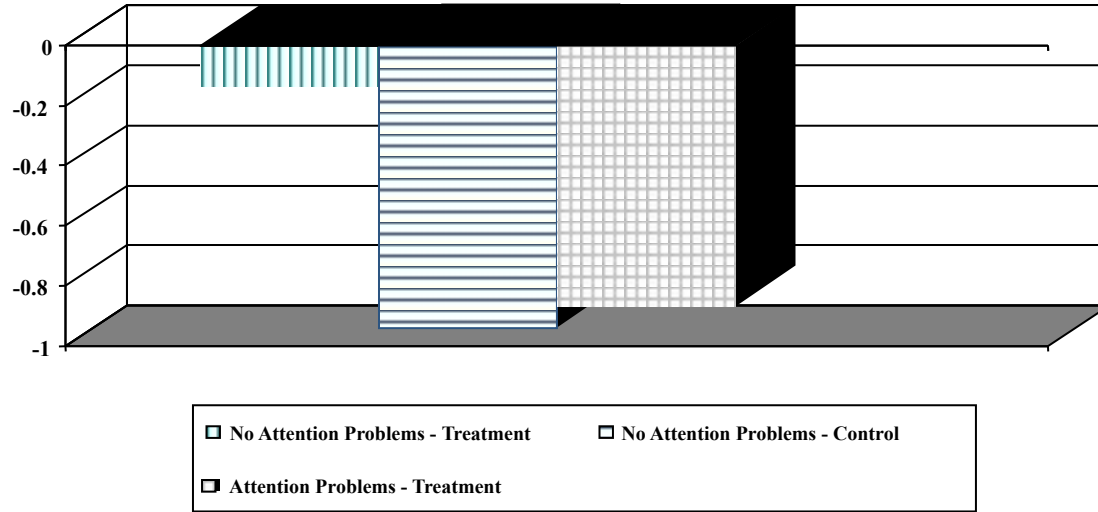
Do attention problems moderate impact of tutoring for children with early reading difficulties?

Group 1 – Children with early reading problems, no attention problems, who receive tutoring; n=34

Group 2 – Children with early reading problems, no attention problems, who don't get tutoring; n=33

Group 3 – Children with early reading problems & attention problems, who receive tutoring; n=20

Impact of Tutoring on Students with and without Attention Problems



Summary and Implications

- Early attention difficulties have a long-term adverse effect on academic achievement and educational attainment.
- This is true even when attention problems may not rise to a level seen in children with ADHD.
- Traditional interventions are less effective for children with attention difficulties in addition to early academic struggles.
- Effective interventions to improve attention skills are important to pursue.

Panel Discussion & Questions

Thank you again for joining us!

Join us again next week (January 28) for,
*The Basics of Electroencephalogram (EEG),
Neurofeedback Practice & Science*
with Ed Hamlin PhD



ELITE PERFORMANCE
SOLUTIONS


Elite Performance Solutions provides our software and services through our partners:



BRAINFIT®



**STRONGER
BRAINS**

For better lives 



A COLLABORATIVE ONLINE EVENT

PUSHING THE BOUNDARIES OF ACHIEVEMENT

A SERIES ON THE LATEST EVOLUTION OF APPLIED NEUROSCIENCE



ELITE PERFORMANCE
SOLUTIONS