

Effective Strategies to Help Children with ADHD Succeed in School

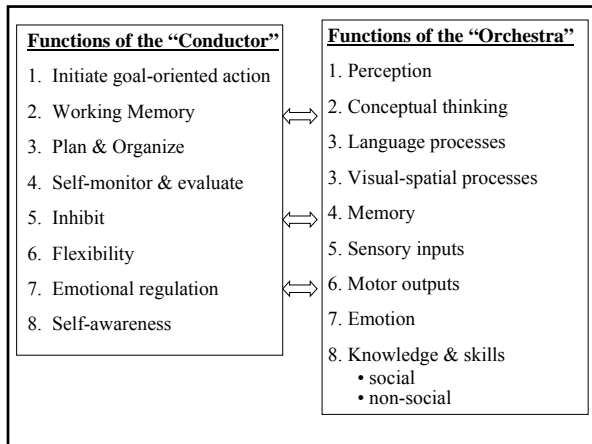
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ADHD: A Disorder of Executive Function

- “An “umbrella” term, encompassing... those interrelated skills necessary for purposeful, goal-directed activity” (Anderson, 1998)
- “Capacities that enable a person to engage successfully in independent, purposeful, self-serving behaviors” (Lezak, 1993)

Functional Domains of The Executive

- Initiate - begin task, activity, attention
- Working Memory - hold information actively in mind
- Inhibit - stop an action or not react to impulse
- Shift - move from one task or situation to another
- Plan - anticipate future events and develop steps
- Organize - establish, maintain order
- Self-monitor - attend to behavior/output; revise
- Emotional Control - regulate emotional response



ADHD as a Disorder of EF

Frequent problems impeding academics

- Disorganization
- Can't remember 3-step instructions
- Poor planning
- Not checking his/ her work
- Failure to write down homework assignments
- Failure to bring home assignments
- Locker/ notebook looks like a disaster

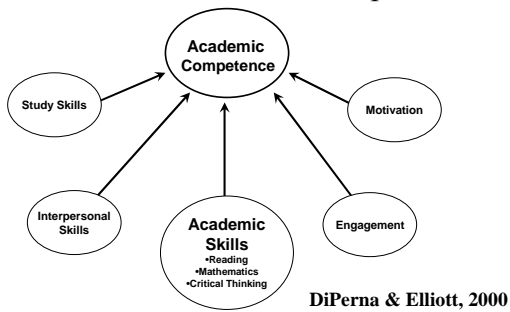
**Associated Impairments in ADHD:
Academic Functioning**

- These difficulties are present despite normal general intellectual function, language, visual-spatial and perceptual abilities (posterior brain regions).
- May be attributable to inefficient application and regulation of these other processing systems (orchestra).

Associated Impairments in ADHD: Academic Functioning

- LD prevalence can range 10-50% in ADHD depending on the diagnostic criteria used.
- Earlier research often defined LD based on an IQ-achievement discrepancy model.

Investigating academic achievement with an Academic Model of Competence



Academic Function in ADHD

- Inclusion criteria: 5-18 years of age, diagnosis of ADHD, and normal IQ
- Sample size of 60 (Mean age = 9.51; SD = 3.02)
- Intellectual Functioning: FSIQ 107, SD=13.73
- Ethnicity: 62% Caucasian, 22% Latino, 15% African-American, 2% Asian-American
- Gender: 78% male, 22% female
- ADHD/PI (n = 33); ADHD/C (n = 27)

RESULTS
Achievement Measures: WIAT-II

WIAT-II Subtest/Index	ADHD/PI ^a		ADHD/C		<i>p</i>	<i>η</i> ²
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Composite Average	103.9	9.72	105	10.69	0.473	0.009
Word Reading	102	18.77	108.7	11.7	0.069	0.059
Numerical Oper.	103.9	17.29	101.2	13.91	0.703	0.003
Spelling	102.7	10.42	105.1	14.15	0.369	0.015

^a*p*<.05

RESULTS
Achievement Measures: Academic Skills

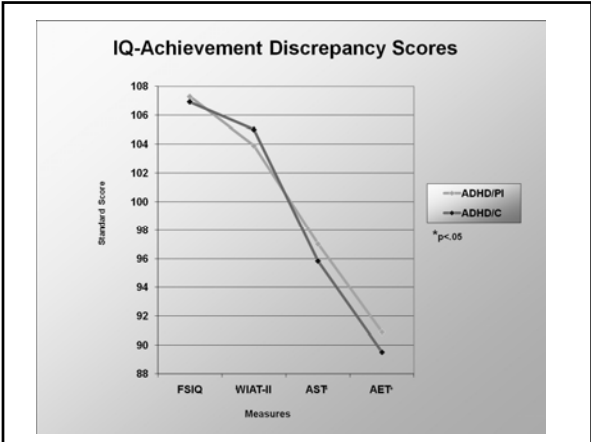
Subtest/Index	ADHD/PI		ADHD/C		<i>p</i>	<i>η</i> ²
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Academic Skills Total (AST)	97.03	11.1	95.83	10.1	.38	.02
Reading & Language Arts	96.81	11.27	97.75	11.58	.82	.00
Math	96.85	11.73	95.04	10.02	.33	.02
Critical Thinking	98.03	12.13	94.25	9.61	.16	.04

^a*p*<.05

RESULTS
Achievement Measures: Academic Enablers

Subtest/Index	ADHD/PI		ADHD/C		<i>p</i>	<i>η</i> ²
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Academic Enablers Total (AET)	90.88	12.57	89.50	10.91	.22	.03
Interpersonal Skills	97.59	13.0	91.08	11.83	.01*	.13
Engagement	92.14	14.04	90.29	12.95	.49	.01
Motivation	87.96	12.83	91.08	11.42	.83	.00
Study Skills	89.85	12.69	90.2	13.5	.56	.01

^a*p*<.05



Academic Strategies/Intervention

Unique findings in regard to ADHD subtypes

- ADHD/PI: EF subdomains of Initiation, Monitor and Planning & Organization were most predictive of academic function.
- ADHD/C: EF subdomains of Working Memory, Organization of Materials, and Planning & Organization were most predictive of academic function.

Academic Strategies/Intervention

Factors interfering with academic success

- Children with ADHD are less actively engaged in in academic instruction compared to their peers.
- Lack of efficient and effective application of core academic skills (i.e., disorganization, poor study habits, and significant difficulty planning ahead, poor estimation of time necessary to complete tasks).

Academic Strategies/Intervention

Overview of Positive Reinforcement Systems

- System designed to increase the frequency and duration of desired behavior, which is typically necessary to achieve supraordinate goal.
- Desired behavior is rewarded with some type of prize (token that can be exchanged for desired object at a later point as well as other forms of reinforcement).

Academic Strategies/Intervention

Setting Up a Positive Reinforcement System

- Select behaviors to be rewarded
- Define the desired behavior in a specific and observable manner
- Quantify how this behavior will be measured or observed
- Select the initial reinforcers (poker chips, tickets, etc.)
- Carefully select back-up reinforcers that can be earned with collected chips or tokens

Academic Strategies/Intervention

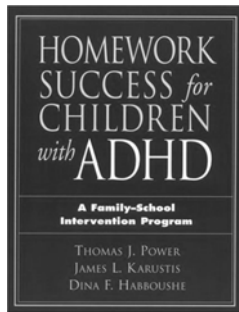
Setting Up a Positive Reinforcement System

- Back-up reinforcers can either consist of tangible prizes (toys and trinkets) or activity-oriented rewards (extra video game time, staying up a few minutes past routine bedtime, picking a favorite meal, etc.).
- Value of a reinforcer typically declines with repeated use, therefore a variety of reinforcers is optimal, which should be varied on a routine basis.

Academic Strategies/Intervention
Common Pitfalls in a Reinforcement System!

- Target behavior is initially too challenging or overly difficult at first. This may require breaking down the behavior into smaller subcomponents that are more realistic to obtain.
- Time interval between when the desired behavior is observed and the reinforcement is given.
- Lack of varied reinforcers (i.e., they are no longer motivating and undermine incentive to stick with the program).
- Reinforcement systems can become overly complex and difficult to keep up with, particularly for caretakers, educators and supervisors.

Academic Strategies/Intervention
Individually Tailored Program for Homework Success



Academic Strategies/Intervention
Individually Tailored Program for Homework Success

- STEP 1: Establish Daily Time Limit for Homework
 - General Guidelines for point of diminishing returns with HW
 - Grade 1: 30 minutes
 - Grade 2-3: 60 minutes
 - Grade 4-6: 90 minutes

Academic Strategies/Intervention

Individually Tailored Program for Homework Success

- STEP 2: Enroll teacher support through initiation of a parent-teacher meeting at the start of program:
 - Identify HW problems and resources
 - Emphasize home-school collaboration
 - Enlist teacher's support in intervention
- Ask teacher to identify maximum amount of time child should spend on homework. Parents and teacher will need to define absolute time limit on HW

Academic Strategies/Intervention

Individually Tailored Program for Homework Success

- STEP 3: Implement tool for recording, monitoring and keeping track of HW assignments:

DAY:	Subject	Assignment	Due	Complete
MONDAY	Reading	Read Chpt 4; q: 1-5 (p11)	Monday 10/04	√

Academic Strategies/Intervention

Individually Tailored Program for Homework Success

- STEP 4: Modify and establish optimal HW ritual
 - Examining the ABC's of HW Routines
 - Analyze Antecedents and Consequences of Behavior
 - Select location with minimal distractions and maximum supervision
 - Importance of starting HW at time when most able to pay attention (HW will be divided into units)
 - If possible, select a consistent time to begin HW
 - Child will be responsible for being organized and prepared to start assignments

Academic Strategies/Intervention

Individually Tailored Program for Homework Success

- STEP 4: Modify and establish optimal HW ritual
Homework Ritual Worksheet

Where		Consistent place Minimal Distraction Can I easily supervise
When		Consistent start time Time limits HW broken into segments Scheduled short breaks
What		HW log signed and complete Child has materials? Child has supplies?

Academic Strategies/Intervention

Individually Tailored Program for Homework Success

- STEP 5: Providing Positive Reinforcement
 - Different types of positive reinforcers include: intrinsic pride and motivation; attention (verbal and nonverbal); praise; privileges (activity oriented awards); concrete tangible rewards.
 - Select specific reinforcers used (tokens, tickets, poker chips).
 - Devise REWARD MENU: should contain both items that can be earned in the short-term and long-term; joint negotiation and collaboration between parent and child.

Academic Strategies/Intervention

Individually Tailored Program for Homework Success

- STEP 5: Providing Positive Reinforcement
 - Clearly review tasks and behaviors needed to earn rewards. Should include both easy and difficult tasks.
 - Assign number of chips or points for each reinforcer (err on the side of being generous, particularly at start of implementing positive reinforcement system).
 - Daily log to track down tokens and points earned
 - Reinforcers should be given only after task or target behavior is achieved (beware of bargaining).
 - Include siblings in reinforcement system .

Academic Strategies/Intervention

Individually Tailored Program for Homework Success

- STEP 5: Providing Positive Reinforcement
 - CISS-4
 - CONSISTENCY
 - IMMEDIACY
 - SPECIFICITY
 - SALIENCY
 - 4:1 ratio of positive reinforcement to punishment

Academic Strategies/Intervention

Individually Tailored Program for Homework Success

- STEP 6: Incorporating Response Cost
 - Removing positive reinforcement (e.g., turning off the TV when a child hits a sibling).
 - If possible, try not to take away rewards the child has already earned (e.g., if a child has earned extra video game time, a response cost for unwanted behavior could be going to bed early rather than taking away their extra video game time).
 - Ineffective punishments that should **not** be used include time out and corporal punishment (i.e., a time out will enable a child to avoid doing their homework).

Are we just monkeys?

“Hey buddy, I’m not doing any more homework unless I get a token”



Academic Strategies/Intervention

Individually Tailored Program for Homework Success

- STEP 7: Time Management and Goal Setting
 - Review HW assignments and segment into manageable units (segment by subjects and any particularly lengthy assignments can be segmented into subunits if needed).
 - Set time limits for each subunit of work. General guideline for subunit length is 3x's that of the grade of the child (3rd grade = 9 minutes; 4th grade = 12 minutes). At first be generous with time limits. At the end of allotted time limit for HW segment, parent and child must move on to next subunit regardless of whether subunit work was completed or not.

Academic Strategies/Intervention

Individually Tailored Program for Homework Success

- STEP 7: Time Management and Goal Setting
 - Parent and child negotiate goals for work completion. Long-term goal may be 100% work completion, but initial goal may need to be 50-80% completion.
 - Parent and child negotiate definition of HW completion and accuracy goals. Strive for 80% success rate in meeting these goals throughout program.
 - Ensure comprehension of directions and use countdown timer to enforce adherence to time limits.
 - Evaluate if goals were met (no, yes, exceeded).

Academic Strategies/Intervention

RECOMMENDATIONS TO IMPROVE MEMORY

- Acquisition of academic skills is highly dependent upon the functional integrity of executive functions.
- Parents and teachers of children with ADHD often report the presence of memory problems despite relatively intact performance on most memory measures.
- Reported memory problems likely reflect inefficient learning caused by EF deficits in planning and organization and working memory that impede storage and retrieval of information into short-term and long-term memory.

Academic Strategies/Intervention

RECOMMENDATIONS TO IMPROVE MEMORY

- Typically, encoding and retrieval of more explicit information (facts, words and information with little context) will be the most challenging to learn and retrieve in children with ADHD.
- In contrast, more contextual information will typically be easier to embed within the memory system and therefore easier to recall.

Academic Strategies/Intervention

RECOMMENDATIONS TO IMPROVE MEMORY

- The format or manner in which a child is tested can significantly impact recall. If a child is asked to freely recall and write down information learned this will place greater strain on the memory system than recognition testing (e.g., multiple choice tests).
- Two separate memory systems exist, one which is predominantly verbal and the other predominantly nonverbal (visual). It is normal, to a degree, for individuals to have a relatively better verbal memory or nonverbal memory. Therefore, providing opportunities to encode information both verbally and visually is optimal, as it allows one to capitalize on relative strengths.

Academic Strategies/Intervention

RECOMMENDATIONS TO IMPROVE MEMORY

Specific Memory Recommendations:

- Employ recognition testing to the maximum extent possible
 - Multiple Choice Questions
 - Matching (verbal or visual)
 - Yes/No
 - True-False

Academic Strategies/Intervention

RECOMMENDATIONS TO IMPROVE MEMORY

Specific Memory Recommendations:

- Spacing out review and learning of material over longer periods of time
- Instruction on “chunking” information as a set or group of details rather than as a single series
- Focusing on more critical larger themes and concepts rather than getting bogged down with less relevant details

Academic Strategies/Intervention

RECOMMENDATIONS TO IMPROVE MEMORY

Specific Memory Recommendations:

- Tape recording lectures to allow for additional review of content as needed
- Increasing verbal context of information (e.g., creating creative story lines or themes to weave together individual facts, and clustering facts into alike conceptual categories)
- Provision of verbal cues and prompts to assist recall by educators and teachers

Academic Strategies/Intervention

RECOMMENDATIONS TO IMPROVE MEMORY

Specific Memory Recommendations:

- Facilitating encoding with visual aids and visual mnemonics:
 - Lindamood Bell’s *Visualize and Verbalize*, which enhances children's listening skills and reading comprehension by using visualization.
 - Visual Mnemonics: *The Memory Book: The Classic Guide to Improving Your Memory at Work, at School, and at Play*, by Harry Lorayne & Gerry Lucas, and *Super Memory Super Student: How to Raise Your Grades in 30 Days* by Harry Lorayne

Academic Strategies/Intervention

RECOMMENDATIONS TO IMPROVE MEMORY

Specific Memory Recommendations:

- Facilitating encoding with visual aids and visual mnemonics:
 - Use of Graphic Organizers (pictorial representations for more complex content and information being taught). Resource: The Big Book of Reproducible Graphic Organizers: 50 Great Templates to Help Kids Get More Out of Reading, Writing, Social Studies and More, by Jennifer Jacobson and Dottie Raymer

Academic Strategies/Intervention

RECOMMENDATIONS TO IMPROVE MEMORY

Specific Memory Recommendations:

- Facilitating encoding with visual aids and visual mnemonics:
 - Visual Strategies for Improving Communication: Practical Supports for School and Home, by Linda A. Hodgdon.

Academic Strategies/Intervention

SETTING UP ACCOMMODATIONS AT SCHOOL

STEP 1:

• Referral for Academic Accommodations

- Date:
- To Whom It May Concern:
- I am the parent of _____, who is currently enrolled at _____. I am writing to make a referral to determine the eligibility of accommodations for _____. He/she may be eligible for academic accommodations and assistance through a formal academic plan. I am requesting _____ undergo a review by the school's study team (SST) to determine eligibility for accommodations. I look forward to receiving an assessment plan within 15 days. If you have any questions please feel free to contact me. Thank you for your cooperation and assistance.
- Sincerely, _____ Parent Name, Address, Contact Info

Academic Strategies/Intervention

SETTING UP ACCOMMODATIONS AT SCHOOL

STEP 2: School's Study Team will meet to review the case and one of the following decisions will be made:

- No Action Necessary
- General Education Function
- 504 Plan
- Individualized Education Plan (IEP)

Academic Strategies/Intervention

SETTING UP ACCOMMODATIONS AT SCHOOL

STEP 3: Children with ADHD often qualify for a 504 plan under the category of OHI (Other Health Impaired). Examples of accommodations typically provided under a 504 plan, which are useful include:

- preferential seating
- extra time on assignments and tests
- reduction in classwork and homework as needed
- greater assistance with organization and planning

Academic Strategies/Intervention

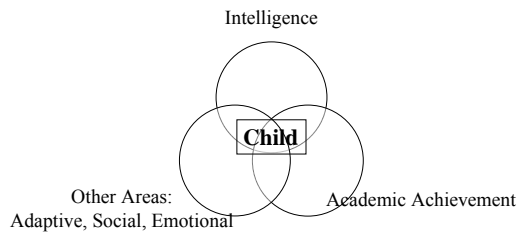
Neuropsychological Evaluation

- Primary Goals:
 - Document a child's current cognitive status and delineate strengths/weaknesses
 - Document improvement or deterioration in function
 - Confirm, differentiate or clarify a diagnosis
 - Identify candidate brain areas of neuropathology
- Comprehensive Assessment of the following domains:
 - Intellectual abilities
 - Attentional regulation
 - Executive Functions
 - Behavioral /Emotional
 - Visual-perceptual and spatial
 - Speech and language
 - Memory and learning
 - Adaptive functioning
 - Motor skills (visual-motor)

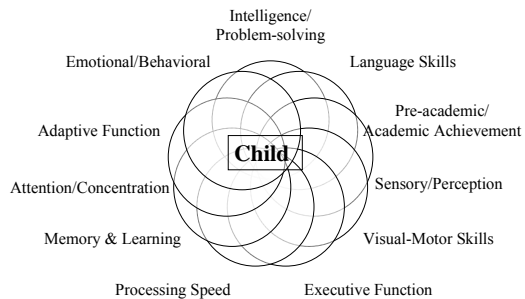
Neuropsychological Evaluation versus Psychological/School Evaluations

- School assessments are typically performed to determine whether a child qualifies for special education services; they focus primarily on skills directly associated with academic achievement (IQ & achievement).
- School psychologists do not as routinely use performance measures of attention, learning, memory or executive functions nor do they use a brain-based interpretive framework.

School/Psychological Evaluation:



Neuropsychological Evaluation:



Academic Strategies/Intervention

NEUROPSYCHOLOGICAL EVALUATION

How can a neuropsychological evaluation help?

- Provides necessary documentation, diagnoses and data for school to initiate a formal educational plan (either 504 plan or IEP).
- Provides an advocate for the family as well as a liaison to facilitate communication with school.
- Provides individually tailored recommendations based on an individual's unique profile of neurocognitive strengths and weaknesses.

Case Study

- Clinical and Demographic information:
 - John is a 12 yr. old male with ADHD
 - Starting 7th grade at public school in Fall
 - Diagnosed with ADHD in Kindergarten
 - Prescribed psychostimulant medication since 4th grade
 - Stable family environment
- Developmental & Family History:
 - No prenatal complications; normal birth/delivery
 - Early developmental milestones emerged within typical age level expectations
 - Maternal family history was significant for ADHD and Tourette's Syndrome

Nature of the Referral

- Primary Presenting Problem:
 - Poor organizational skills and attention span
 - Difficulty keeping up with HW assignments and often failed to hand in HW
 - Consequently grades declined, but was able to still pass his classes due to relatively adequate performance on in class exams
 - Family was seeking input as to whether John should remain in honors classes or be placed in mainstream classes
 - Difficulty falling asleep and staying asleep
 - Medications: Concerta 72 mg in the morning, and Ritalin 10mg at 4pm

Evaluation Findings

- Behavioral Observations:
 - Right handed; used awkward immature pencil grip when writing and drawing
 - Difficulty with planning and organization
 - Required more time to process information
 - Mild verbal retrieval difficulties

Evaluation Findings

Broad Skill	Classification
Global Functioning (IQ)	Average/Above Avg
Receptive Language	Average
Expressive Language	Average
Verbal Memory	Average/Below Avg
Visual Memory	Above Avg
Visual Spatial	Average/Above Avg
Visual Motor Integration	Below Avg
Attention/Adaptive/EF	Below Avg
Academic Achievement Skills	Average/Above Avg

Evaluation Findings

- Summary/Conclusions of Test Findings:
 - Intact Global Reasoning (IQ)
 - Primary Deficits:
 - 1) Attention and executive function
 - 2) Fine motor skills
 - Secondary Deficits:
 - 1) Explicit verbal memory & verbal retrieval

Intervention & Recommendations

Target areas	Recommendations
Curriculum	504 plan was set-up
	Adjust workload according to amount of time spent on assignments
Fine Motor Skills	Occupational Therapy
	Use of word processor
	Providing advance notes and outlines

Intervention & Recommendations

Target areas	Recommendations
Organization	Spacing apart exams and project due dates
	Assistance with project time lines
	Work samples
	Audio recording of multi-step directions
	Purchase 2 sets of books and materials for home and school

Intervention & Recommendations

Target areas	Recommendations
Homework	Established Reinforcement System
	Homework Folders
	Teacher/Parent Homework Logs
	Consultation/Collaboration with teacher and school

Intervention & Recommendations

Target areas	Recommendations
Memory	Increase verbal context
	Review lectures after class
	Recognition testing to aid recall
	Facilitating encoding with visual memory (visual mnemonics)
	Multiple exams cannot be scheduled on the same day

Intervention & Recommendations

Target areas	Recommendations
Sleep Hygiene	Helped set-up study hall at the end of the day in school for HW
	This permitted elimination of late afternoon dosage of Ritalin

THE END
