



HASSENFELD
**CHILDREN'S
HOSPITAL**
AT NYU LANGONE



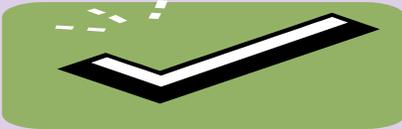
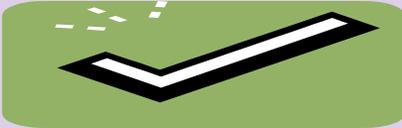
Center of Excellence at
NYU Langone

Academic Challenges for Youth with Tourette's: Executive Function and Organizational Skills Factors and Their Treatment

Richard Gallagher, PhD

September 14, 2022

Disclosure of Sources of Funding and Potential Conflicts of Interest (past year) Richard Gallagher

	Royalties	Grants
MultiHealth Systems		
Guilford Press		
NIMH & IES		



Agenda

- Clinical Features of Tic Disorders
- Understanding and Addressing related Attention and Academic Challenges through Organization Skills Training

What is Tourette's Disorder?

- Neurological disorder
- Characterized by repetitive, stereotyped, involuntary movements and vocalizations called tics
- Average onset between ages 4 and 6
- Males affected ~2.5-4x's more often than females
- Severity ranges: mild to moderate tics much more common
- 1 in every 100 school-aged children (1%) in the United States has Tourette's Disorder or another tic disorder

Course

- Come and go over time, varying in type, frequency, location, and severity
- Fractal quality: occur in bouts over any length of time observed (seconds, minutes, weeks, etc.)
- First symptoms usually in the head and neck area and may progress to muscles of the trunk and extremities
- Motor tics generally precede development of vocal tics and simple tics often precede complex tics
- Peak tic severity before mid-teen years with improvement for majority of patients in the late teen years and early adulthood
- ~10-15 percent have progressive or disabling course that lasts into adulthood

DSM-5 Criteria

Tourette Disorder

- Both multiple motor and one or more vocal tics have been present at some time during the illness, although not necessarily concurrently.
 - The tics may wax and wane in frequency but have persisted for more than 1 year since first tic onset.
 - Onset is before age 18 years.
 - The disturbance is not attributable to the physiological effects of a substance (e.g., cocaine) or another medical condition (e.g., Huntington's disease, postviral encephalitis).
- If only motor tics: Persistent Motor Tic Disorder
 - If only vocal tics: Persistent Vocal Tic Disorder
 - If < 1 year: Provisional Tic Disorder

Examples of tics

Simple Motor Tics

- Eye blinking
- Eye movements
- Nose movements
- Mouth movements
- Facial grimace
- Head jerks or movements
- Shoulder shrugs
- Arm movements
- Hand movements
- Abdominal tensing
- Leg, foot, or toe movements

Complex Motor Tics

- Eye movements; Mouth movements; Facial movements or expressions
- Head gestures or movements; Shoulder movements; Arm movements; Hand movements
- Writing tics
- Dystonic or abnormal postures; Bending or gyrating; Rotating
- Leg, foot or toe movements; Blocking
- Tic-related compulsive behaviors (e.g., touching, tapping, grooming, evening-up)
- Copropraxia (obscene gestures)
- Self-abusive behavior
- Groups of simple tics

Simple Vocal Tics

- Sounds, noises
- Coughing, throat clearing, sniffing, animal noises, or bird noises

Complex Phonic Symptoms

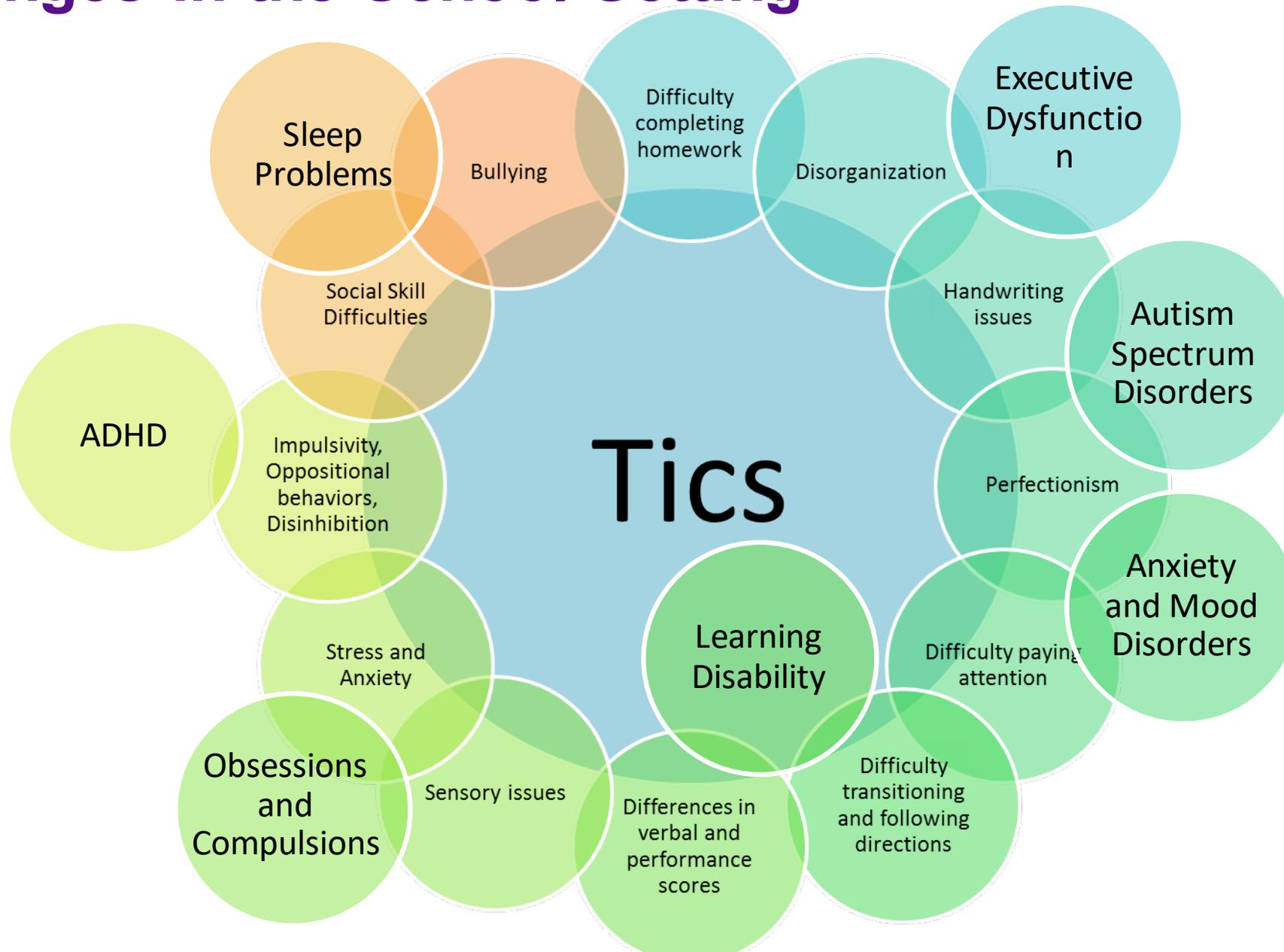
- Syllables
- Words
- Coprolalia (obscene words)
- Echolalia (repeating other's words)
- Palilalia (repeating your own words)
- Blocking
- Disinhibited speech

Comorbidity

- ADHD (~63%)
- Learning disabilities
- OCD (~30%)
- Obsessive-compulsive symptoms (~60%)
- Anxiety: (~49%)
- Depression: (~25%)

Impact of Tourette's Disorder on Learning

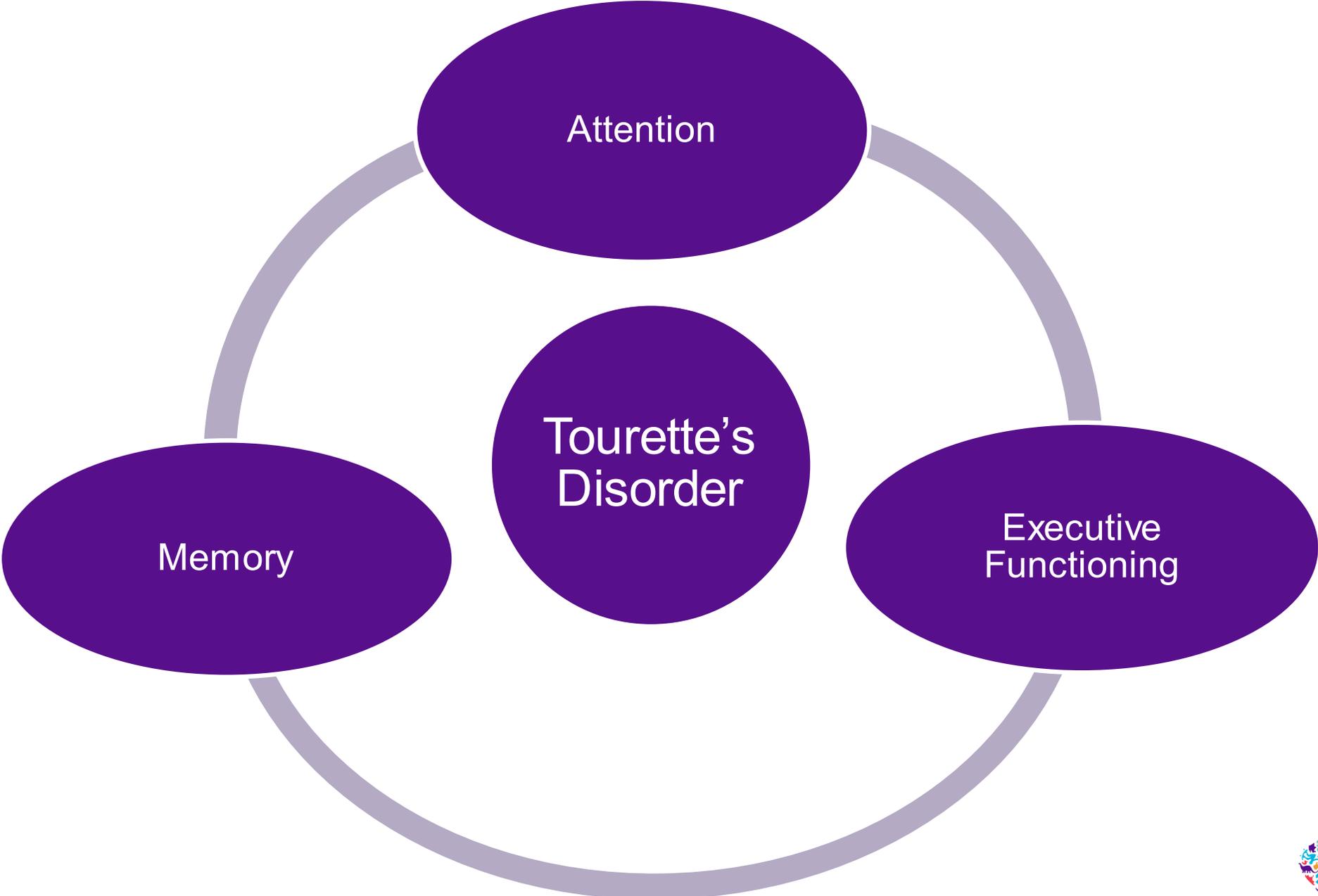
Challenges in the School Setting



Tourette's Disorder and Learning

- Many children with tics are in special education settings
- Tourette's Disorder is *not* associated with differences in general intellectual functioning
- Children with TD are more likely to have a specific learning disability, particularly if they also have ADHD
- A recent literature review found impairments in **attention, memory, and other executive functions** in individuals with TD

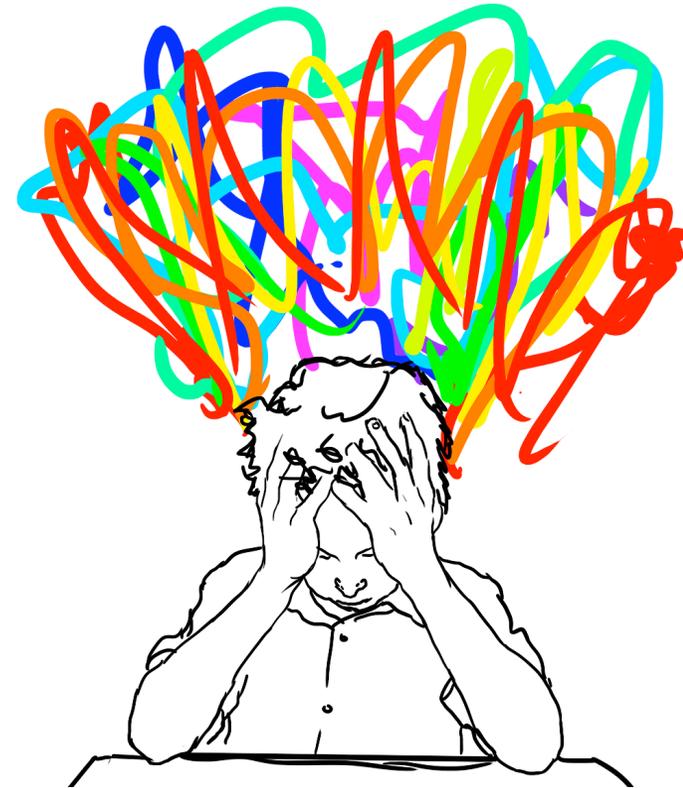




Addressing Executive Functioning challenges in Tourette's Disorder

TD-comorbid disorders affecting EF

- **Attention-deficit/hyperactivity disorder (ADHD)**
 - ADHD symptoms have been reported in **8% to 90%** of children with TD, with lower rates in general population vs. clinical samples
 - TD + ADHD is associated with poorer academic performance/difficulties than TD alone
 - TD + ADHD is associated with persistence of symptoms into adulthood compared to TD alone or TD + other disorders



Strategies for improving executive functioning

- **EF psychoeducation** for individuals with TD and their families
- **Consider 504 Plan or IEP** accommodations for EF difficulties
- **Include students with TS** in the development of their tic management strategies, as well as teachers and educators
- **Safe spaces** designated for releasing tics may help some students cope with anxiety or extra stress
- **Preferential seating** in class for teachers to more easily assist with schoolwork
- **Multi-sensory teaching methods.** Whenever possible, present information orally, visually, and using manipulatives to assist with encoding
- **Allow extra time** to complete tests and assignments; and/or allow testing to take place in a separate or quieter setting

Strategies for improving executive functioning (cont'd)

- Allow **attention breaks** during class. Brief attention breaks such as putting one's head on the desk, standing up, and going for a drink have been shown to help refocus and sustain attention for longer periods.
- **Break tasks into small components** and provide **clear, explicit step-by-step instructions**, especially when new material is introduced.
- **Reduce sources of distraction** in the classroom.
- Use **attention-grabbing/self-monitoring devices**, such as a highlighter.
- **Reminders** at the beginning of the day to turn in homework or take homework out of backpack/locker; reminders at the end of the day about what is needed for school and home

Strategies for improving executive functioning (cont'd)

- Offer **one-on-one instruction** time, especially before tests [SEP]
- Frequently **elicit questions and opinions** to maintain involvement in an activity
- **Increased structure** in the environment or in an activity can help with initiation difficulties. Building in **routines** for everyday activities is often important, as routine tasks and their completion becomes more automatic, reducing the need for independent initiation
- Create **“to-do” lists** on paper or index cards as a method of developing automatic routines and to serve as external cues to begin an activity. These lists can be posted in child’s room to remind them to get started on tasks
- **Post directions** on board or give written copies to students

Strategies for improving executive functioning (cont'd)

- Have student use a **planner and calendar** to keep track of all assignments and tests
- Have teachers (or appoint “row captains” to) **check to see that homework assignments are written down and later submitted.**
- Let student take a **picture** of the posted assignment on his cell phone
- Keep parents and students informed about **missing assignments**
- **Provide transition warnings** (e.g., 5 more mins on X activity before we switch)
- **Divide long-term projects** into segments with separate due dates and grades.
Notify parents about projects

Forms of Study Investigating the Impact of EF Training

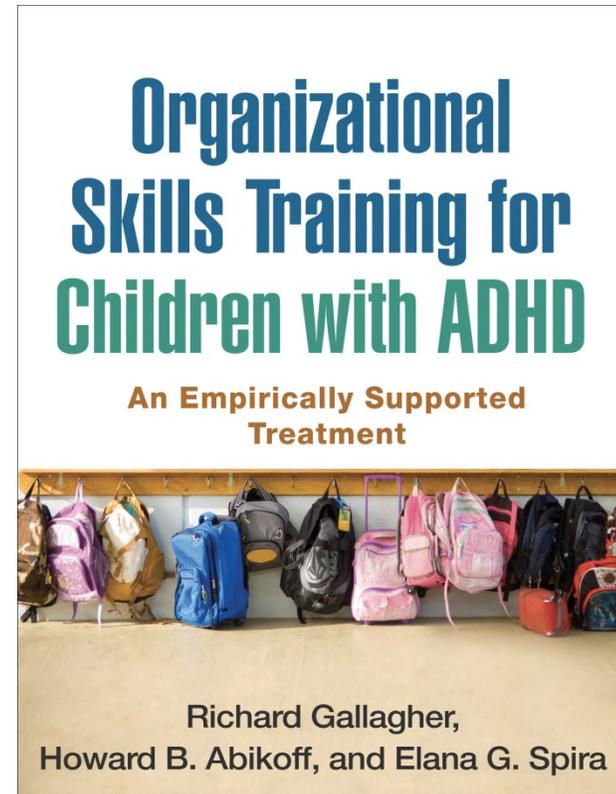
- Global instructional Studies
 - Find that early training in response inhibition and working memory facilitate later learning
 - This is found in reading, but not mathematics
 - May contribute to general advancements in achievement in children from backgrounds with limited resources
 - Specific forms of instruction for children with attention disorders
 - Improves their capacity to perform similar tasks
 - Contributes to changes in parent ratings of core symptoms in some studies
 - Does not contribute to teacher ratings of core symptoms
 - Does not contribute to improvements in academics
 - References summarizing the work:

Chacko, et al (2014) A randomized clinical trial of CogMed. *Journal of Child Psychology and Psychiatry*, 55, 247-255.

Rappoport et al. (2013) Do programs designed to train ...: A meta-analytic review. *Clinical Psychology Review*, 33, 1237-1252.

Organizational Skills Training (OST)

- Evidence-based treatment for children, teens, and young adults with EF difficulties
- Involves parents and teachers
- Targets school and home functioning
- Incorporates **psychoeducation and behavior management training for parents and teachers**
- Skills training modules include development of tools and routines for **tracking assignments, managing materials, time management, and planning**



The Rationale & Need for Treating Organization, Time Management, and Planning Behavior Deficits

- Children with components of ADHD often evidence significant difficulties with organization
 - Planning and completing assignments
 - Managing materials for school and activities
 - Remembering tasks and materials
 - Creating a schedule to complete tasks
 - Keeping track of time
- This negatively impacts academic performance and creates parent-child conflict, particularly around homework

Why Is Organizational Skills Training Needed?

- General efforts to improve executive functioning in children with ADHD have not been effective
- But, executive function deficits are likely to contribute to low OTMP skills in children with ADHD
- Poor attention control → failing to attend to teacher prompts to write down homework, seeing items that are on the desktop, but need to go into the backpack
- Poor behavior control → prefer to engage in fast actions and are frustrated when having to slow down (needed to write down information, store papers carefully or plan)
- Weak spatial working memory → do not recall where they left items
- Time blindness → fail to keep track of the passage of time, fail to learn how long tasks take to complete
- So, why not go directly to the behaviors of concern?

Characteristic OTMP Difficulties in Children with Neurodevelopmental Disorders

- **Misplacing or losing materials needed for:**
 - Schoolwork
 - Sports or extra-curricular activities
- **Careless approach to storing materials**
 - Desk, backpack, room are typically messy
- **Forgetting when assignments are due or tests are scheduled**
- **Failing to bring home materials needed for homework or turn in completed homework**
- **Poor time management, time estimation, and planning lead to difficulties starting or completing tasks or assignments**
 - Poor planning and follow-through of long-term projects
 - Little consideration given to other demands; not completed on time
 - Impacts chores or routines (e.g., getting ready in the AM)

What has been learned ...

- Children vary in their development of organizational skills
 - Some children are able to pick up skills by watching others and listening to advice
 - Others have difficulty developing effective organizational routines
 - Some of these children may learn by verbal instruction & demonstration
 - Others probably require systematic instruction with reinforced practice

Patterns of organizational skills

- Organizational problems are more common in:
 - Boys
 - Students in special education or with learning challenges
 - Children with attentional and/or behavioral control difficulties

Three important areas of organizational skill problems:

1. Lapses in memory and managing materials
 - (e.g., forgetting assignments or losing books)
2. Problems with task planning
 - (e.g., not thinking through all of the steps for a project)
3. Inconsistent use of organizational tools or special actions for organizing
 - (e.g., not using calendars or folders, skipping rough drafts)



**“MY WHAT? IS DUE WHEN?”
(AND, WHERE Is It?)**

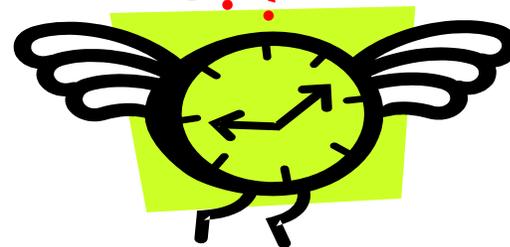
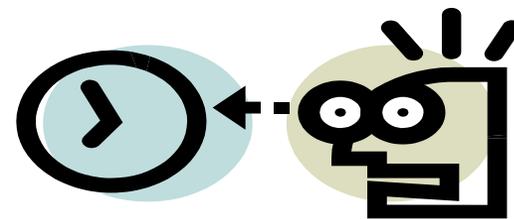
IT'S IN HERE SOMEWHERE!!



Relax. I have plenty of time.



Oh No! I can't get this done. What happened to all of that time??



How OTMP-Related Difficulties in Managing Materials, Managing Time, Tracking Assignments, or Planning Can Contribute to a Missing HW Assignment

Vignette:

- Teacher: “Pat, where is your math homework, it was due today?”

- Possible contributors to the missing assignment

- Pat: *“I did the homework, but I forgot to bring it to school.”*

Or

- Pat: *“I know I put it somewhere in my backpack, but I can’t find it.”*

Or

- Pat: *“I thought that this math assignment was due next Wednesday.”*

Or

- Pat: *“I forgot to write the assignment in my homework planner, and never did it.”*

Or

- Pat: *“I started to do it last night, but I ran out of time, and didn’t finish it.”*

The *Organization* of Tests to Build Organization, Time Management, and Planning

- Remedial intervention, not 1st line treatment for ADHD or the primary symptoms in other neurodevelopmental disorders
- 20-session manualized clinic-based program
- Twice weekly 1 hour sessions after school
- Teacher involvement to prompt and reinforce use of skills in school
- Two approaches tested - Organizational Skills Training (OST) and Parents and Teachers Helping Kids Organize (PATHKO)

Treatment Targets

- Increase acceptance of impact of attention and behavior control problems on academic functioning
- Improve interactions associated with the execution of academic tasks
- Increase awareness of academic tasks
- Increase likelihood of having needed materials and books
- Increase the completion of tasks on time
- Increase the demonstration of planning behaviors
 - Anticipate demands
 - Show preparation
 - Spread out tasks over time

Empirical Support for the Interventions

- Improved OTMP behaviors
 - As rated by parents and teachers
 - Parents rated OST as significantly more effective than PATHKO
- Improved Academic Productivity
- Improved Academic Performance was present in those that received OST not PATHKO
- Decreased Homework Problems
- Decreased Family Conflict
- Improvements were present when evaluated in the next school year by parents and teachers

The Treatment Course

Overview and Example Content

Selecting Children for OST

- Enrolled in 3rd, 4th, or 5th grade
- Rated as having significantly low levels of OTMP skills that are interfering with functioning
 - Interview with parents
 - Use of the Children's Organizational Skills Scales
 - Use of other rating scales
 - Interview approach
- EBT for middle-school students - Margaret Sibley – STAND -

Assessment Methods – Interview

- Conduct a functional analysis
 - When thinking about school-related situations:
 - How often does the child bring home all of the papers and books needed to complete homework?
 - How often does the child return needed papers to school?
 - Does the child have a way to record what assignments are given? Does the child use this regularly?
 - Does the child keep work areas free of clutter and distracting items?
 - How often does the child complete work on time?
 - How often does the child have to rush to meet deadlines?
 - Does the child know how long it takes to complete common tasks?
 - How often is the child able to come up with viable plan to complete tasks?
 - Do problems in organization, time management, and planning interfere with the child's success?
 - Do problems with OTMP contribute to family conflict?

The Components of Organizational Skills Treatment

Psychoeducation and Altering the Cognitive Set

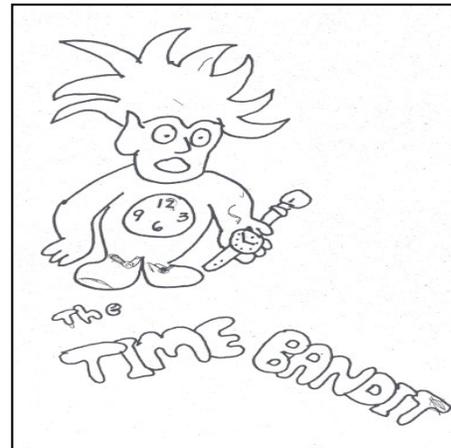
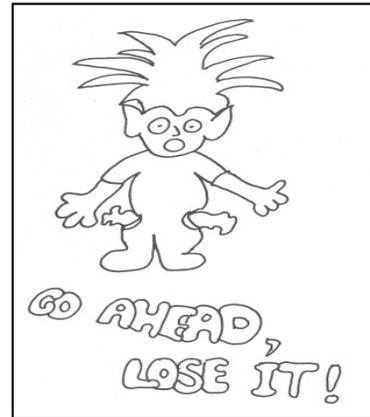
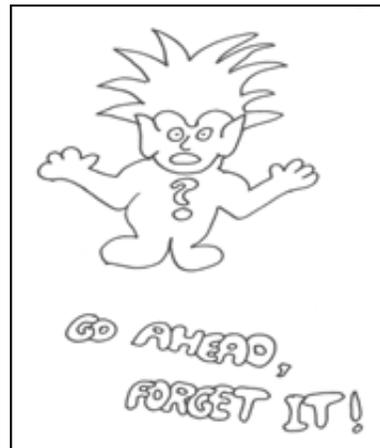
Behavior Management by Parents and Teachers – Praise and Rewards

Skills Building

- Through traditional skills-building methods children learn how to use new tools and routines to facilitate development of skills in four major areas
 - ***Tracking assignments***
 - Learn how to record and monitor assignments and due dates
 - ***Managing materials***
 - Learn how to organize papers into accordion binders, organize backpack and desk, discard what's no longer needed, use checklists to verify they have necessary materials
 - ***Managing time***
 - Learn to estimate and track time required for task completion
 - ***Task planning***
 - Learn to break down and schedule task steps for short and long-term projects

The Glitches in OST

- **“Glitch” analogy:** To help externalize OTMP issues, students are taught to think of their organizational difficulties as a set of mischievous Glitches that like to see kids falter



Parent and Teacher Behavior Management

- Trained to use:
 - Effective prompts
 - Careful and consistent monitoring
 - Provide praise
 - Give points toward rewards – daily and weekly

Behaviors	Day 1	Day 2	Day 3	Day 4	Day 5
School: complete DAR?					
School: put papers in binder?					
Home: bring filled DAR home?					
Home: have all papers in binder?					
Home: complete assignment & test calendar?					
Total points of 5					
Points for the week					

The Components of Organizational Skills Training

- **Skills Building**
 - Review of the target situation and goals for that situation
 - Discuss the child's current practices
 - Propose an alternative
 - Obtain the child's interest
 - Demonstrate the alternative
 - Practice the alternative
 - Support the use of the alternative

Skill Building for Tracking Assignments

- Tools and Routines
 - The Daily Assignment Record
 - Test and Assignment Calendar
 - Home Behavior Record
 - School Report

The Daily Assignment Record

Language Arts/Reading	<i>Write the rough draft for letter to the editor essay</i>	<input type="checkbox"/> Worksheet <input type="checkbox"/> Book <input checked="" type="checkbox"/> Handouts <input type="checkbox"/> Workbook <input checked="" type="checkbox"/> Other: <i>notes</i>	<i>11/25</i>	Teacher Check for "School Points" – Did the child use the skill?
Social Studies	<i>Government worksheet Test chapter 3 & 4 December 5th</i>	<input checked="" type="checkbox"/> Worksheet <input checked="" type="checkbox"/> Book <input type="checkbox"/> Handouts <input type="checkbox"/> Workbook <input type="checkbox"/> Other	<i>11/26 12/5</i>	List the Target Skills 1. Record Assignments on the DAR
Science	<i>N/A</i>	<input type="checkbox"/> Worksheet <input type="checkbox"/> Book <input type="checkbox"/> Handouts <input type="checkbox"/> Workbook <input type="checkbox"/> Other		
Math	<i>Problems 1-25 on pp. 36 Study for quiz Wednesday</i>	<input type="checkbox"/> Worksheet <input checked="" type="checkbox"/> Book <input type="checkbox"/> Handouts <input checked="" type="checkbox"/> Workbook <input type="checkbox"/> Other	<i>11/25 11/27</i>	Yes/No
Spelling	<i>N/A</i>	<input type="checkbox"/> Worksheet <input type="checkbox"/> Book <input type="checkbox"/> Handouts <input type="checkbox"/> Workbook <input type="checkbox"/> Other		Initials _____
Other	<i>N/A</i>	<input type="checkbox"/> Worksheet <input type="checkbox"/> Book <input type="checkbox"/> Handouts <input type="checkbox"/> Workbook <input type="checkbox"/> Other		2. DAR information is accurate
Announcements or Special Papers	<i>Bring cans for the food drive</i>	<input type="checkbox"/> Handouts <input checked="" type="checkbox"/> Other: <i>canned goods</i>		Yes/No
Anything Else?				Initials _____

Skill Building for Managing Materials

- Goals
 - Store and transfer papers effectively
- Sort papers to reduce clutter
- Pack up bags effectively
- Get work areas ready to go



Tools and Routines

Accordion Folders

Weeding-It-Out and File Box

Backpack Checklist

Ready-to-Go Routine

Home Behavior Record

School Record

Backpack Checklist



Check It Out List for Child

1. Write down all assignments and items needed on your DAR.
2. Put all papers in your Accordion Binder.
3. Put away your DAR in the Binder.
4. Put all of your books and your Accordion Binder in your bag.
5. CHECK IT OUT on your backpack checklist.

Skill Building for Time Management and Planning

- Time Management Goals

- Time Awareness
- Learn how long tasks take to complete
- Learn about their personal calendar
- Get comfortable estimating time
- Get comfortable setting a schedule
- Collaborate with parents and teachers to set goals for when tasks should be complete
- Complete tasks on time without rushing at school and at home

- Planning Goals

- Learn the steps needed for a good plan
- Apply planning steps for homework completion
- Apply planning steps for long-term assignments
- Apply planning steps for recreational and home activities
- Get comfortable discussing plans with parents and teachers

References

- Abikoff, Howard; Gallagher, Richard; Wells, Karen C.; Murray, Desiree W.; Huang, Lei; Lu, Feihan; Petkova, Eva (2013) Remediating organizational functioning in children with ADHD: Immediate and long-term effects from a randomized controlled trial. *Journal of Consulting and Clinical Psychology, 81*, 113-128.
- Gallagher, R., Abikoff, H., Spira, E. (2014) *Organizational Skills Training for Children with ADHD; An Empirically Supported Treatment*. Guilford Press.
- Sibley, M.H., Graziano, P.A., Kuriyan, A.B., Coxe, S., Pelham, W.E., Rodriguez, L.M. et al., (2106). Parent-Teen Behavior Therapy + Motivational Interviewing for Adolescents with ADHD. *Journal of Consulting & Clinical Psychology, 84*, 699-712.
- Sibley, M.H. (2016) *Parent-Teen Therapy for Executive Function Deficits and ADHD Building Skills and Motivation*. New York: Guilford Press