



## The Centre for ADHD Awareness, Canada

*The only Canadian charity focusing solely on ADHD, providing leadership in education, awareness and advocacy to improve the lives of families and individuals with ADHD across Canada*



# CADDAC Interactive ADHD Adolescent Parenting Course

## ADHD and Learning

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# ADHD and Learning

**Past Research on ADHD and Learning**  
**Classroom Presentations**  
**Common Cognitive Impairments**  
**Executive Functioning**  
**Paths to Academic Success**

# RESEARCH ON ADHD AND LEARNING

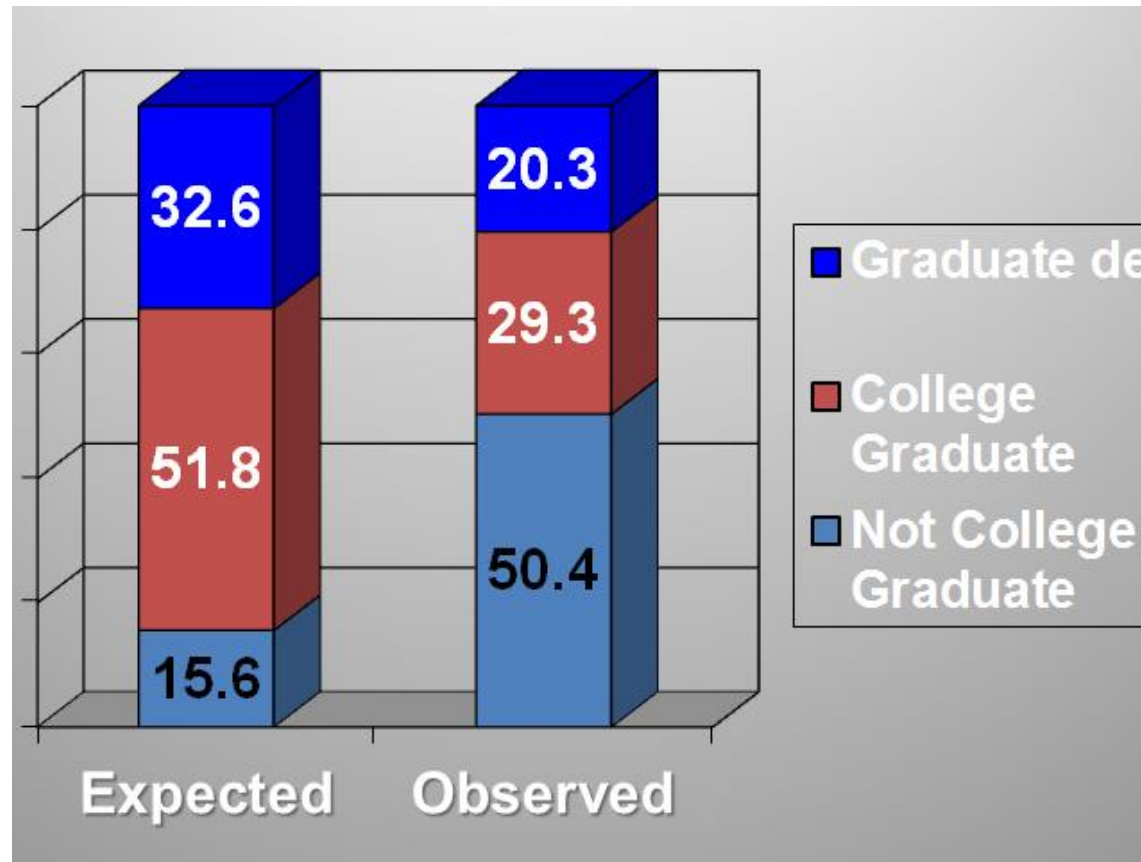
# Past Research on Academic Outcomes

## ADHD is associated with poor academic outcomes even without coexisting learning disabilities

- Higher risk for lower levels of academic achievement
- 2 fold risk of grade retention
- 2 – 4 fold risk of Cs and Ds
- Reading and math scores 8 to 10 % lower
- More likelihood and more years in special education
- 3 fold risk of high school dropout
- Less likely to attend college and highest level completed 2 years less



# Expected versus Observed Educational Attainment Levels in Adults with ADHD



Modified from Biederman et al. (2008) J Clin Psychiatry 69:1217-1222 (Fig 1, p.1219)

With permission of Dr. Rosemary Tannock

# Additional Facts - ADHD and Learning

- ADHD does not impact IQ – these kids can learn.
- Classroom interventions focused on improving on task behaviour and decreasing disruptive behaviour do not result in better learning or better academic outcomes.
- Inattention, not hyperactivity or impulsivity during elementary years predicts poor long term academic outcomes.
- Specific interventions targeting learning deficits and accommodating and improving cognitive difficulties need to be implemented.
- These interventions will also improve behaviour.
- Fine and gross motor impairments are common and will impair physical activities.





# CLASSROOM PRESENTATIONS

# The Classroom Environment

**It is difficult to imagine a more difficult setting for an adolescent with ADHD than the classroom.**

We ask adolescents to be able to:

- sit still for long periods of time while lecture type teaching occurs and to stay still and quiet,
- listen and comprehend continuous lists of instructions,
- follow lists of multiple directions,
- work independently and be productive and
- self regulate their behaviour and regulate their emotions to be able to interact appropriately with their peers and teachers.



# ADHD in the Classroom

## General Impairments Seen in Academic Settings:

- More frequent off-task behavior
- Less accurate work
- Less work produced
- Interfere with classmates more often
- Disobey class rules more frequently
- Less likely to obey teachers' requests & demands



# Teach ADHD Resources

# Classroom Presentations of Attentional Symptoms

- Inability to regulate attention causes learning impairment
- Easily distracted, pulled away from tasks
- Does not listen when spoken to
- Starts assignment but cannot remain focused to complete
- Cannot follow instructions
- Difficulty remembering routines and organizing tasks
- Rushes through work, difficulty with attention to detail – frequent mistakes
- Difficulty keeping track of belonging
- Difficulty starting tasks especially if challenging
- Day dreamy

TeachADHD Table 1-1: Manifestation of ADHD Symptoms in the Classroom Tannock, R., Hum, M., Masellis, M., et al. (2000). Teacher Telephone Interview Basic Training Manual © 2000. Toronto: Unpublished Manuscript, The Hospital for Sick Children, Department of Psychiatry, Toronto, Canada



# Classroom Presentations of Hyperactive/Impulsive Symptoms

- Fidgety, squirms in seat during teaching
- Constantly on the go, moving, rocking, jiggling leg, grabs objects
- Leaves seat and wanders or runs around classroom (not usually as evident in teens)
- Makes a lot of noise during play and activities (these presentations are also more subtle for teens)
- Talks incessantly and at inappropriate times, but quiet when called upon
- Blurts out answers and interrupts others
- Easily frustrated when waiting for turn or in line

TeachADHD Table 1-1: Manifestation of ADHD Symptoms in the Classroom Tannock, R., Hum, M., Masellis, M., et al. (2000). Teacher Telephone Interview Basic Training Manual © 2000. Toronto: Unpublished Manuscript, The Hospital for Sick Children, Department of Psychiatry, Toronto, Canada



# Cognitive (Thinking Impairments)

## Think of your teen

# Typical Cognitive Impairments in Students with ADHD in the Classroom

- Missed signals
- Sower reaction time
- Difficulty following rules and instructions and comprehending what they hear and read
- Reduced sensitivity to errors, difficulty editing work
- Difficulty becoming motivated and sustaining motivation to tasks
- Tire easily cognitively
- Long term goals lose their significance
- Easier to discount future rewards





# Language Deficits

## Obvious Language Difficulties

- Modulating voice, speaking at an appropriate level – immature motor system
- Blurting out answers, interrupting and talking excessively

## Impairing Language Difficulties

- ADHD associated with poorer performance of expressive, receptive and social language skills
- Increased difficulty in accuracy and speed of listening and comprehending language
- Miss 20% of information therefore may not process what you are asking them to do
- Answers often vague, “don’t know” or can’t find words
- Difficulty organizing coherent and fluent thoughts
- Difficulty with verbal ping pong – will dominate conversation or not respond
- Comprehension, expression, vocabulary, grammar and syntax



# Reading Difficulties

## Listening and Reading Comprehension Impairment

- 40 - 50% of those with ADHD also have a reading disability
- They have difficulty with comprehension especially when reading silently or long complex passages
- Difficulty following a sequence of verbal instructions
- Material may need to be read and reread especially as content increases in difficulty and amount
- Reading at upper grade levels is repetitive, frustrating and time consuming



# Processing Speed

## Processing Speed

- Defined as the rate that incoming and outgoing information can be processed
- Adolescents with ADHD are frequently slower, inconsistent and inaccurate in processing and responding
- This can impact the time it takes to process information and instructions, retrieve information, answer questions, copy things from the board and complete
- Students with ADHD may not be able to keep up with the rest of the class if speed is not adjusted
- Be careful not to interpret this as defiance



# More Common Deficits

## Difficulty with Cognitive Shifting

- Become frustrated and reactionary when asked to shift cognitive focus
- Resulting in difficulty with transitions

## Internalized Speech (also an EF)

- 30 to 40% behind in internalization of speech
- Underdeveloped self talk results in less well thought out choices and reactions



# Questions

# EXECUTIVE FUNCTIONING & ADHD

# ADHD and Executive Functioning

- ADHD is often accompanied by an impairment or weakness in Executive Functioning (EF)
- If so, the child is at greater academic risk
- EF impairments impact overall daily functioning
- EF impacts both Literacy and Numeracy
- Demand on EF becomes greater as the child ages, while EF supports decrease as the child ages
- It is now believed that ADHD is essentially a deficit in EF and self-regulation skills
- EF can be thought of as a more “Hidden Learning Disability” since it impacts all school subjects
- EF impairments will appear to be laziness or lack of motivation to the uninformed rather than a disability





## Executive Functioning Skills Include the Ability to

Control attention and resist distraction

Apply self restraint

Regulate emotions

Evaluate thoughts and actions (self awareness)

Self motivate when external motivations do not exist

Plan and problem solve (hindsight and forethought)

Organize thoughts and things

Manage time

Prioritize

Execute and complete tasks

Make decisions about and self-regulate behaviour

Apply social skills

Access and use working memory

Access and use self-speech (verbal working memory)



# Supporting Executive Functioning

“We will need to externalize EF information as much as we can at points of performance and in the natural setting “ (Barkley)

- Restate rules and expectations
- Visual reminders
- Lists of steps
- External time manage
- Chunk work

## Additional Resources to Access

- EF is the CEO or conductor of the brain – Dr. Thomas Brown [www.drthomasebrown.com](http://www.drthomasebrown.com)
- [The Role of EF and Self-regulation in ADHD](#) Dr. R. Barkley



# Working Memory

## What is Active Working Memory (WM)?

- Where information is stored to organize and manipulate it for only seconds
- Different from short term memory where information is simply stored so it can be retrieved
- Working Memory is associated with:
  - success in literacy and numeracy
  - reading comprehension and written expression
  - attention control and the ability to resist distractions
  - the ability to stay on task and remember our end goal
  - self-regulation of behaviour



# Executive Functioning Impairment

## A Way to Understand Working Memory

- The ability to hold, juggle and manipulate numerous open files in the mind
- Visualize the mind as having computer files
- Consider how many files you need open to write a paragraph
- Even moderate impairment impacts self-regulation of behaviour
- How many files does an adolescent need open to weigh the pros and cons of a behaviour?



# Attention & WM Work Together

- Attention is need to allow information to be gathered

## Parts of attention required to gather information:

- alertness (ready to pay attention),
- selection (deciding on what to pay attention to) and
- sustaining and shifting attention.

## After information is gathered it enters short-term memory

- At this time, working memory decides what to use and manipulates (orders and categories) info so it to useful

## The information than moves to long-term memory

- If there are issues along the way the information in long term memory may be disorganized, incorrect, partial or be lost and not enter long term memory

[Understood, Attention: How It's Different From Working Memory](#)



# Planning and Problem Solving

## Impaired Planning and Problem Solving

- How we play with information in our minds to come up with new ways of doing things or solving problems
- Problem solving has four stages ([Zelazo 1997](#))
  - Problem representation
  - Planning
  - Execution
  - Evaluation
- Those with ADHD have difficulty with Hindsight and Foresight
- Inability to use experiences to interpret outcomes
- Difficulty reviewing options for the future
- Poor flexibility when circumstances change



# Organization

## Poor Organization Abilities

- Difficulty following instruction or sequence of steps – frequent continuous reminders of routines, rules, instructions and sequences
- Overwhelmed with large assignments and great difficulty in breaking assignments down
- Difficulty prioritizing and completing tasks
- Poor execution – beginning the task (procrastination)
- Unable to organize things and frequently loses belongings
- Will fail without organizational supports



# Time Management

## Time Management

- Very poor concept of time /passing of time “time blindness”
- Will over/underestimate amount of time something takes
- Often depends on their interpretation of the difficulty or how much they enjoy or dread the task
- Frequently loses time through distraction, day dreaming, or lack of awareness of time passing
- Does not use it effectively





## How EF Weaknesses May Manifest in the Classroom

- Identifying the problem, knowing what the finished product of a task should look like
- Planning, executing, and monitoring projects or assignments (organization, chunking work time management)
- Holding directions in mind, especially if the directions are complex or multi-step
- Multi-tasking (trying to organize and complete several tasks within a specific time frame)
- Resisting or delaying impulses (for example, tendency to blurt out answers rather than resisting the impulse and putting up hand)
- Children may have difficulty with: getting started on assignments (that is, difficulty with initiation) despite interest in the work
- Setting goals and carrying out steps to achieve goals
- Monitoring school work (for example, checking for errors)
- Monitoring how their actions affect others in a social context

From: Tannock, R., Hum, M., Masellis, M., et al. (2000). Teacher Telephone Interview Basic Training Manual © 2000. Toronto: Unpublished Manuscript, The Hospital for Sick Children, Department of Psychiatry, Toronto, Canada – Section Rethinking ADHD from a Cognitive Perspective



# Teach ADHD Resources

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# Educational Implications of Executive Function Weaknesses

## Interventions

- Children may require direct instruction, coaching or supports to be able to, plan and monitor school assignments, set goals and evaluate progress – they do not learn skills through osmosis as other students do.
- Tasks should be analyzed for number of steps, newness and complexity and skills required to understand where students may need support
- Executive function weaknesses may be present even though the student does well on standardized tests and exhibits good ability
- Executive function difficulties should not be considered to reflect laziness or unmotivated behaviour on the part of the student
- EF weaknesses may hinder the student in performing new/or complex tasks independently



# Educational Implications of EF Weaknesses Continued

## Interventions Continued

- Instruction that helps student learn "how to learn" can help them perform complex academic tasks (for example, reading comprehension, written composition)
- Executive function difficulties should not be considered to reflect laziness or unmotivated behaviour on the part of the student
- EF weaknesses may hinder the student in performing new/or complex tasks independently
- Instruction that helps student learn "how to learn" can help them perform complex academic tasks (for example, reading comprehension, written composition)

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# Neuropsychological Testing and EF

- This testing was designed to quantify and diagnose LDs and brain injury.
- Neuropsychological tests of executive function are not accurate in qualifying ADHD impairments.
  - Less than one third of adolescents and adults with ADHD indicate below average functioning in standardized psycho-educational assessments, even though they are impaired in functioning.
  - Only half of children with ADHD show significant impairment in specific EF functions on performance based tests.
  - EF rating scales may give a more accurate real life view of executive functioning impairments because they are designed to evaluate functioning in complex, everyday, problem solving situations, in non-optimal environments, over time



# **ADHD IN THE CLASSROOM**

## **A PATH TO SUCCESS**

# Areas of Concern in the Classroom

**There are three general areas of concern**

- Symptoms that impact learning and productivity
- Symptoms that impact interactions with peers and adults
- Symptoms that disrupt the rest of the class

**Research indicates that interventions that target academic impairments should be targeted first as this frequently also improves other behaviours**



# Where to Start

## Develop an Understanding of the Whole Adolescent

- Understand the adolescent's "Profile" – both strengths and needs (ADHD symptoms/impairments)
- Review list of EF impairments and decide how these may also be impacting the teen
- If struggling academically, especially in a particular area or subject, additional testing (psychoeducational, speech and language, occupational) may be helpful to understand the full picture – LDs, graphomotor, language delays?
- You need all the pieces of the puzzle to understand impairments and implement correct strategies
- Ask the student about their classroom difficulties – they can be more insightful than we give them credit





# The EF Impairment Profile

## Developing a EF profile

- It is essential to understand a adolescent's executive functioning strengths and weaknesses along with impairments caused by their ADHD symptoms
- This will allow for the development of a learning plan
- Once weaknesses are identified strategies can be put in place to support and teach skills
- Medication does not teach these skills

## To assist with developing a profile of impairments access

1. CADDAC's Teaching Strategies for Typical ADHD and [Executive Functioning Impairments Chart](#)
2. CADDAC's [High School Chart](#)



# TEACHING STRATEGIES

## For Typical ADHD & Executive Functioning Impairments

Specific Learning/Classroom Presentation of ADHD/EF Impairments	Teaching Strategies /Accommodations
<p><b>1. Difficulty Sustaining Attention and/or Easily Distracted</b></p>	<ul style="list-style-type: none"> <li>• Reduce visual and auditory external stimuli</li> <li>• Keep visual distractions at the front of the class to a minimum</li> <li>• Cue student before giving directions</li> <li>• Ask student to repeat instructions to confirm comprehension</li> <li>• Attempt to actively involve student in lesson – cue and use prompts to encourage and set up opportunities to participate</li> <li>• Give frequent, specific, immediate feedback</li> <li>• Dramatize information</li> <li>• Reward attention and timely accomplishments</li> <li>• Break activities and lessons into small units</li> <li>• Teach self- monitoring of their own attention – stop and ask themselves if they have been listening – prompts can assist</li> <li>• Change teaching style frequently to capture the student’s attention</li> <li>• Use physical proximity and agreed upon touch to redirect attention</li> <li>• Use earphones, study carrels, quiet places, preferential seating</li> <li>• Reduce noise stimuli with the use of a FM system, tennis balls on the legs of chair</li> <li>• Allow for use of headsets with music when working</li> <li>• Allow the use of chewing gum, sour candies or straws to chew on as many as they may aid concentration</li> </ul>
<p><b>2. Difficulty Following and Holding Directions in Mind</b></p>	<ul style="list-style-type: none"> <li>• Ensure the student has heard you and you have their attention before giving directions</li> <li>• Use visual, non-verbal, gesturing cues to alert student that important instructions are coming</li> <li>• Use a multi-sensory approach with both visual &amp; oral instructions</li> <li>• Rephrase and repeat directions allowing time for processing</li> <li>• Encourage the student to ask questions to clarify their understanding</li> </ul>



## ADHD Symptoms, Impairments and Accommodations in the High School Environment

DSM-5 Symptom	Possible Resulting Impairments in High School	Possible Accommodations
<b>Inattention</b>		
Fails to give close attention to details OR makes careless mistakes	<input type="checkbox"/> Difficulties with including details such as name and date and misses spelling mistakes <input type="checkbox"/> Misses details in test questions and assignments <input type="checkbox"/> Rarely checks for errors, proof reads or edits <input type="checkbox"/> Poor quality of work – inaccurate, careless mistakes <input type="checkbox"/> Poor time management so doesn't leave time to complete details or check for mistakes	<input type="checkbox"/> Allow to write exams on computer with spellcheck software or do not deduct marks <input type="checkbox"/> Work with education staff to review assignment, check details, assist with time management & due dates <input type="checkbox"/> Flexibility in due dates – with opportunity to complete details & correct mistakes <input type="checkbox"/> Allow clarification of questions on an exam or test and clarification of an assignment
Difficulty sustaining attention	<input type="checkbox"/> Difficulties remaining focused during class, conversations, or when reading lengthy material <input type="checkbox"/> Day-dreaming or mind-wandering during lectures or reading text books etc. <input type="checkbox"/> Difficulty focusing on & completing large amounts of written work (essays, reports etc.) <input type="checkbox"/> Gaps in learning due to inability to stay focused during class etc.	<input type="checkbox"/> Allow student to audiotape lectures, use audiotaped textbooks, receive notes & copies of PowerPoint presentations <input type="checkbox"/> Allow use of a note-taker <input type="checkbox"/> Use of a computer for tests or exams <input type="checkbox"/> Allow testing/exams to be completed over several shorter sessions rather than one long session <input type="checkbox"/> No more than one exam per day
Difficulties listening when spoken to directly	<input type="checkbox"/> Mind often wanders when discussing something with peers <input type="checkbox"/> Often misses social cues or key words during one-on-one or small group interactions	<input type="checkbox"/> Provide notes from class discussions & presentations <input type="checkbox"/> Work with educational staff or mentor to learn strategies for keeping mind on conversations, watching for social cues <input type="checkbox"/> Allow clarification of instructions of an assignment
Difficulties following through on instructions AND fails to finish	<input type="checkbox"/> Begins but unable to remain focused to complete assignment or task, easily side-tracked <input type="checkbox"/> Moves from one incomplete assignment to another	<input type="checkbox"/> Work with staff to chunk & review progress on assignments <input type="checkbox"/> Allow clarification of questions on an exam or test and clarification of an assignment
Difficulty organizing tasks & activities	<input type="checkbox"/> Unable to chunk assignments into manageable pieces – easily overwhelmed <input type="checkbox"/> Difficulty organizing thoughts	<input type="checkbox"/> Ability to access 'prompt' sheets with outline of steps, formulas etc. <input type="checkbox"/> Allow alternative methods of assessment

# Questions

# Discussing Impairments With Your Teen – Where are they tripping Up?

- Discuss a typical class scenario (lesson and assignment given).
- Ask questions using their language with lots of examples and prompting.
- Were they able to begin to focus and sustain focus on the lesson being taught? Why or why not?
- Did they understand the material taught at the rate it was being taught?
- Would a slower pace or additional time to ask questions (clarify) help?
- Were they able to understand all or just part of the instructions?
- Why was something missed or misinterpreted (Inattention/ distraction, became lost after first two things, interchanged parts of instructions, unable to recognize important points, forgot certain steps)?
- Were they overwhelmed or unable to break down a large assignment?
- Were they able to start the assignment (initiate)?
- Were they able to stay focused until it was completed?
- Did they understand what the finished product was suppose to look like?



# Homework Tips

## Questions to ask and then discuss with your teen's teachers

- Do they understand what they are suppose to do?
- Did they understand what was taught prior to the homework?
- Are they capable of completing the homework assigned easily? Do they have the EF skills required to do so?
- Is the homework geared to practicing a skill or just drudge work? Can the amount be decreased?
- Is homework being done at a specific time and in a specific place? (Routine) Is the time and place conducive to their productivity?
- Has their medication worn off by the time homework is started?
- Are parents acting as the tutor and is this increasing parent /child conflict?



# Developing Your Teen's Profile Handouts

## Developing Your Teen's Profile Part 1

- <https://caddac.ca/wp-content/uploads/2021/03/Developing-Your-Teens-Profile-Part-1.pdf> Speaking with Your Adolescent Part 1

## Speaking with Your Teen Part 1

- <https://caddac.ca/wp-content/uploads/2021/03/Tips-on-Speaking-with-an-Adolescent-Part-1.pdf>

## School Environment

- <https://caddac.ca/wp-content/uploads/2021/03/School-Environment.pdf>

## Secondary School Impairment Chart

- <https://caddac.ca/interactive-adolescent-parenting-course/>





# Teen Profile Templates

## Teen Profile Template

### Sample Teen Profile

- [https://caddac.ca/adhd/interactive-adolescent-parenting-course/?doing\\_wp\\_cron=1616606709.0611250400543212890625](https://caddac.ca/adhd/interactive-adolescent-parenting-course/?doing_wp_cron=1616606709.0611250400543212890625)

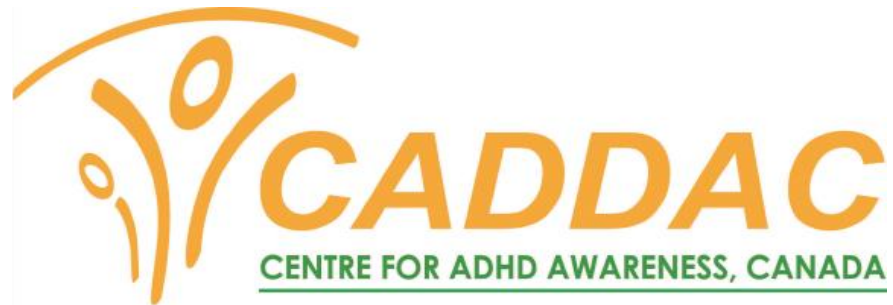


# Discussion

## Discussion Questions

- While listening to the presentation did you gain any insight into why your adolescent might be struggling at school, at home?
- Do you feel that your teen's school has an understanding of their EF impairments?
- Does your teen have any knowledge about what EF is and how impairments in EF might impact his/her functioning?
- Has learning about these impairments shifted your thinking at all about the expectations you have for your teen and what might need to be changed?





**THANKS FOR LISTENING**

**QUESTIONS???**