

Supporting the Development of Planning and Organizational Skills: Laying a Foundation for Future Success

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Looking to the Future for X & Y Chromosome Variations

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 **Outline for Today**

- Define executive functions (EF).
- Discuss how brain development relates to the developmental of EF skills.
- Develop an understanding of EF skills expected at different ages.
- EF interventions



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 **Foundations for Success**

Executive Functioning Skills

Persist	Metacognition	Attention
Initiate		Plan
Regulate Emotions		Flexibility
Time Management		Working Memory
Inhibit		Organize

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Executive Functioning: Thinking Skills

- Planning:
 - The ability to develop a plan to help you reach a goal.
- Organization:
 - The ability to develop and maintain a system to help keep track of information and materials.
- Time Management:
 - The capacity to estimate how much time one has and how to use time effectively.
- Working Memory:
 - Ability to hold information in mind while completing complex tasks.
- Metacognition:
 - The ability to monitor and evaluate one's problem-solving skills.

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Executive Skills: Behavior

- Inhibition:
 - Ability to think before you act.
- Self-regulation:
 - Ability to manage emotions
- Sustained Attention:
 - Ability to remain focused despite distractions.
- Initiation:
 - Ability to begin a task.
- Flexibility:
 - Ability to revise plans when faced with obstacles or new information.
- Persistence:
 - Ability to complete tasks despite other demands or competing interests.

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Brain Development

- The frontal lobes and prefrontal region play the largest role in the implementation of EF skills because of the connections with other brain regions responsible for:
 - Motivation
 - Motor planning
 - Processing sensory information
 - Perceptions
 - Knowledge base

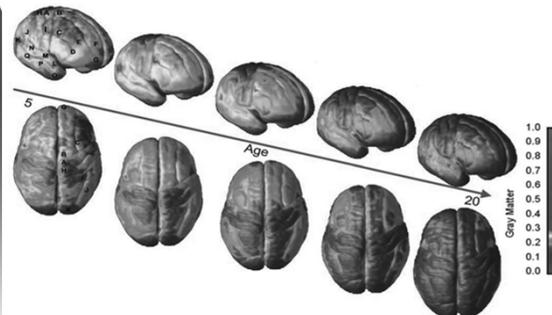
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Brain Development

- Development of EF skills is related to underlying brain maturation.
- Myelination vs pruning.
- EF skills progresses slowly, starting shortly after birth and continuing into the third decade of life.



Brain Maturation Over Time



Age

Gray Matter

Giedd, et al., 1999

Brain Maturation Over Time

Developmental Plasticity/Repair

Longitudinal Development of Human Brain Wiring Continues from Childhood into Adulthood

Calhoun Lebel and Christian Beaulieu
Department of Clinical Neurophysiology, University of Alberta, Edmonton, Alberta T6G 2P3, Canada



Female: 5 years, 8 years

Male: 6 years, 9 years

Male: 12 years, 17 years

Male: 24 years, 28 years

Development of EF Skills

- Typically progress from external to internal.

EF Development: Preschool

- Running simple errands
- Straightening up room with assistance
- Performing simple chores
- Inhibiting behaviors

Dawson & Guare (2010)

EF Development Kindergarten – Second Grade

- Run Errands (two- to three-steps)
- Cleaning up personal space
- Performing simple chores
- Bringing papers to and from school
- Completing homework assignments
- Money management
- Inhibiting behaviors

Dawson & Guare (2010)

 **EF Development: Grades 3-5**

- Run Errands
- Cleaning up personal space
- Performing chores
- Transporting materials to and from school
- Keeping track of belongings
- Completing homework assignments
- Planning simple school projects
- Keeping tracking of daily schedule
- Saving money
- Emotional and behavioral regulation

Dawson & Guare (2010)

 **EF Development: Grades 6-8**

- Help with Chores
- Providing supervision for younger siblings
- Organizing schoolwork
- Follow complex schedules
- Plan and carry out long-term assignments
- Plan time necessary for activities
- Inhibit rule breaking in absence of authority

Dawson & Guare (2010)

 **EF Development: High School**

- Management of schoolwork
- Establishing long-term goals
- Making good use of leisure time
- Inhibiting reckless and dangerous behaviors

Dawson & Guare (2010)

 **Variability in Executive Functioning Skills**

- The developmental trajectory of EF skills can be influenced by a number of factors including:
 - Genes
 - Environment
 - Trauma or injury
 - Mental health and/or behavioral disabilities
 - Attention-deficit/hyperactivity disorder, anxiety, depression, etc.

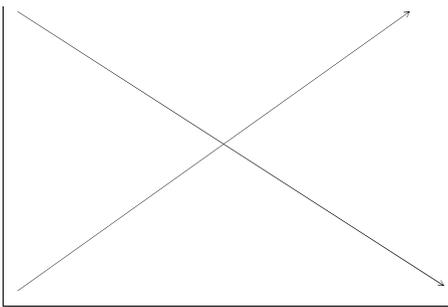
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 **Variability in Executive Functioning Skills**

- EF skills fall along a continuum.

 **Demands for Executive Functioning Over Time**



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Executive Functioning Deficits

- Can occur when the child's abilities do not match the expectations of the environment.
- Can become more apparent over time as demands for independent work and/or expectations increase.



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EF Interventions

- Interventions to help compensate for EF difficulties require active adult support and participation.
- Effective strategies will vary depending on the individual characteristics of the child, setting, and task demands.

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Parent and Child EF Skills

Parent	Child
Strength	Strength
Strength	Weakness
Weakness	Weakness

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 **EF Interventions**

- Teach skills
- Development
- External to Internal
- Changes in the Environment
- Using your child's desire to be independent
- Modifying tasks
- Incentives
- Support

Dawson & Guare (2009) 22

 **Two Levels of Intervention**

- Intervention at the level of the *environment*
 - Changes adults and teachers can implement
 - Provide modeling and scaffolds with the expectation that external support will be reduced as child internalizes skills
- Intervention at the level of the *child*
 - Explicit instruction in EF strategies
 - Giving a "tool kit" of strategies the child can apply to different situations

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 **General Principles of Environmental Interventions**

- Increase structure of environment
- Establish simple and consistent routines
- What are ways to...
 - Change the physical or social environment (e.g., seating in class)
 - Change the nature of the task (e.g., shorter; closed-ended)
 - Change the way cues are provided (e.g., lists)
- Change the ways adults interact with students (e.g., anticipate problems and intervene)

Dawson & Guare (2004) 24

 **Environmental Interventions**

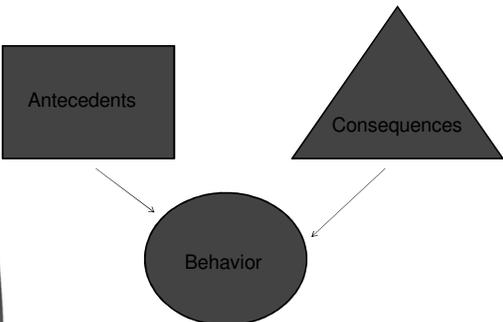
- Provide outlines of lecture notes.
- Breakdown long-term assignments into smaller tasks with separate due dates.
- Provide scaffolding during instruction.
- Repeated presentation
- Modeling
- Using multiple modes to present information
- Use manipulatives
- Review the expectations of the assignment with the child

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 **Environmental Interventions**

- Environmental interventions at school can be arranged through:
 - 1) 504 Plan
 - Formal accommodations provided through the general educational classroom.
 - 2) Individualized Education Plan (IEP)
 - Formal accommodations and modifications provided through special education.
- Families can request a Full and Individual Evaluation (FIE) through the school district to determine if their child qualifies for accommodations and/or modifications.

 **The ABCs of Behavioral Modification**



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    graph TD
      Antecedents[Antecedents] --> Behavior((Behavior))
      Behavior --> Consequences[Consequences]
      Consequences --> Antecedents
  
```

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 **Child-Based Interventions:
Inhibition**

- External Modifications:
 - Increase external structure
 - Increase supervision
 - Provide cues to help increase self-control abilities
- Teaching Skills:
 - Outline behavioral goal
 - Practice the desired skills/behaviors
 - Provide cues initially
 - Reinforce behavior
 - Ignore undesirable behavior
 - Gradually reduce external supports

 **Child-Based Interventions:
Working Memory**

- External Modifications:
 - Provide direct instruction regarding how to record information
 - Agenda books
 - To-do lists
 - Use of smart phones
 - Provide cues to help improve memory
 - Verbal reminders
 - Alarms
 - Visual cues
 - Physical cues
- Teaching the Skills:
 - Explain concern to be addressed
 - Provide options to address concern
 - Practice strategies
 - Develop monitoring system

 **Child-Based Interventions:
Emotional Control**

- External Modifications:
 - Anticipate problem situations
 - Teach coping strategies
 - Provide social scripts
 - Prevent frustration
 - Break task into smaller parts
 - Give breaks
 - Model desired behaviors
 - Provide reinforcement
- Teaching Skills:
 - Help child to independently use coping strategies through:
 - Explanation of skill
 - Practice
 - Reinforcement
 - Cueing

 **Child-Based Interventions:
Sustained Attention**

- External Modifications:
 - Outline time requirements
 - Specify start and stop times
 - Use timer
 - Be sensitive to time of day
 - Use incentive systems
 - Break tasks into smaller parts
 - Provide supervision
 - Increase interest in tasks
- Teaching Skills:
 - Provide instruction in how to break down a task
 - Help child develop a plan
 - Provide cuing and reinforcement
 - Gradually remove external support

 **Child-Based Interventions:
Initiation**

- External Modifications:
 - Provide verbal or visual cuing
 - Provide support during initial phases of task
 - Work with child to develop a work plan
 - Start/stop times
 - How to cue a child to begin task
- Teaching Skills:
 - Help develop a written plan
 - Decide on a cue to help remind child to complete task
 - Provide support and reinforcement to make sure child begins task
 - Gradually remove external support

 **Child-Based Interventions:
Planning**

- External Modifications:
 - Develop a plan for child
 - Review task expectations
 - Break long-term assignments down into smaller parts
 - Complete a template
- Teaching Skills:
 - Model planning process
 - Provide adult guidance and support to practice and reinforce planning strategies
 - Gradually remove external supports



**Child-Based Interventions:
Organization**

- External Modifications:
 - Provide direct instruction in organizational schemes
 - Provide adult guidance and support to ensure use of systems
 - Reinforce use of systems

- Teaching Skills:
 - Model organizational schemes
 - Walk the child through problem-solving strategies
 - Teach a variety of different schemes once the child has mastered one system



**Child-Based Interventions:
Time Management**

- External Modifications:
 - Initially provide child with a schedule to follow
 - Create time limits
 - Develop cues to help guide task completion

- Teaching Skills:
 - Help child understand task demands
 - Provide instruction regarding time estimates
 - Discuss potential difficulties the child may encounter that may impact his/her schedule.



**Child-Based Interventions:
Persistence**

- External Modifications:
 - Provide goals and cues to keep child on task.
 - Increase visibility of task
 - Provide feedback regarding progress towards goal

- Teaching Skills:
 - Providing coaching towards task completion



**Child-Based Interventions:
Flexibility**

- External Modifications:
 - Increase a child's knowledge of new places or schedules
 - Provide preview of new information
 - Provide warnings before transitions
 - Gradually expose a child to a new situation or task
 - Modify tasks
 - Create social stories
 - Increase level of external support
- Teaching Skills:
 - Help child understand and recognize inflexibility
 - Discuss imaginary scenarios
 - Teach coping strategies
 - Provide plans or rules for specific settings
 - Provide scripts for problem-solving
 - Teach relaxation strategies



**Child-Based Interventions:
Metacognition**

- External Modifications:
 - Provide direction instruction in:
 - Self-monitoring skills
 - Self-evaluative skills
 - Problem-solving skills
 - Error monitoring
 - Review task demands
- Teaching Skills:
 - Help child develop checklists
 - Develop a set of questions to use when confronted with a problem
 - Provide direct instruction, modeling, practice, and reinforcement



**Child-Based Interventions:
Teaching EF Strategies**

- Describe the target behavior or concern.
- Set a specific goal.
- Create a list of actions that need to be completed in order to achieve the goal.
- During the initial phases of teaching, complete the actions together with your child.
 - Remind
 - Prompt
 - Observe
 - Provide Feedback
 - Praise
- Evaluate and make any necessary changes.
- Gradually decrease adult supervision.

Dawson & Guare, 2004

 **Child-Based Interventions: Effort and Motivation**

- A child's motivation to complete a task can be effected by:
 - The level of task difficulty
 - The level of task desirability
- Strategies to increase motivation and/or effort for difficult and/or undesirable tasks:
 - Break down assignments into more manageable sections with specific time limitations.
 - Provide external support and praise for task completion.
 - Provide a short break after completion of step(s).



 **When to Consult Additional Help**

- Consult with medical team about:
 - Screening for medical issues that might be related to difficulties with attention
 - Determining if trial of medication for attention difficulties might be helpful



 **When to Consult Additional Help**

- Consulting with a psychologist or therapist for help with development of strategies to address concerns or comorbid difficulties.



Resources

- Dawson, P. & Guare, R. (2004). Executive Skills in Children and Adolescents. New York: Guilford Press.
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- Giedd JN, Blumenthal J, Jeffries NO, Castellanos FX, Liu H, Zijdenbos A, et al. Brain development during childhood and adolescence: a longitudinal MRI study. *Nat Neurosci* 1999;2(10):861–863.
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