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**CHILDREN'S
HOSPITAL**
AT NYU LANGONE

Department of Child and Adolescent Psychiatry
Child Study Center

Executive Functions and Youth Anxiety: Emerging Studies & Implications for Social Anxiety and Selective Mutism

Richard Gallagher, Ph.D.
The Child Study Center at NYU Langone Health
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Today's Agenda

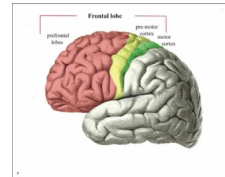
- Understanding Executive Functions
- Theoretical explorations of executive functions and youth anxiety
- Implications of research for understanding youth anxiety
- Practical suggestions for application in raising and treating children with selective mutism
- Questions

What are the Executive Functions?



What are the Executive Functions?

- They are the set of actions, both conscious and unconscious, that facilitate reaching a goal that has been developed consciously or unconsciously
 - In effect, they are the brain actions that tell our bodies what to do after we have selected a goal and set priorities
- They are activated all of the time
- They have been defined and described variably
- They are associated with regions and networks in the brain that are primarily in the frontal regions and related subcortical structures



What is the importance of the the Executive Functions?

- Positive associations and positive outcomes have been found in children that show early strength in aspects of executive functioning
 - Delay of gratification is associated with positive adolescent and adult outcomes
 - Effective organization, time management, and planning is associated with school success and advances in achievement
 - Effective inhibitory control and emotional regulation are associated with positive peer relationships
- Research in psychopathology and neurological disorders (including neurodevelopmental disorders) has highlighted that inappropriate execution of behaviors is a component of these conditions
 - Examples: schizophrenia, obsessive compulsive disorder, Tourette's syndrome, learning disorders, attention deficit hyperactivity disorder
- Disturbances in attention control, behavior selection, behavior shifting, behavioral sequencing, behavioral inhibition, behavioral fluency, and working memory have been found to be critically correlated with limited or poor functioning in children and adolescents

Exploring Executive Functions

- Scientific efforts in youth psychopathology has emphasized exploration of:
 - Attention control
 - Cognitive flexibility
 - Inhibitory control
 - Behavior fluency and efficiency
 - Planning
 - Working memory

Executive Function & Youth Anxiety Research

- Attention control has been explored
 - Selective attention –
 - Sustained attention
 - Respond to target stimuli while ignoring previously important stimuli – suppressing prepotent responses
- Cognitive flexibility has been explored
- Inhibition has been explored
- Information processing and carrying out motor sequences have been explored
 - Fluency
 - Efficiency
 - Speed
- Working memory has been explored
 - Hold and manipulate information in short-term memory

Problems with Research to Date

- There is no consistency across research labs



Problems with Research to Date

- There is no consistency across research labs
 - They use varied definitions of executive functioning
 - They evaluate varied aspects of executive functioning
 - They use varied measures of executive functioning
 - They use varied measure of anxiety
 - They include youth with varied levels of anxiety
 - Clinical and non-clinical populations

Despite problems, here are the hints

- Attention control and cognitive flexibility
 - Children with anxiety are not different in their ability to shift focus on tasks that contain non-emotional stimuli
 - However, they are different when emotional stimuli are used – they provide too much attention to angry faces
- Inhibition
 - Children who have demonstrated early behavioral inhibition (in infancy), are more likely to show social anxiety when their inhibitory control develops rapidly during their childhood
- Planning
 - Children with elevated anxiety demonstrate highly effective planning on neutral tasks
 - However, children with behaviorally inhibited temperaments engage in reactive control strategies more often than proactive control strategies
- Working Memory
 - Children with elevated anxiety shows hints of less effective working memory in general
- Youth with anxiety disorders report themselves as having more problems with executive functions than children who are free of anxiety
 - Observers of children may consider them to be well organized and cautious, but they see themselves as not terribly effective

Implications

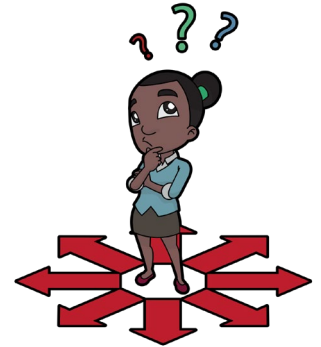
- The executive functions seem to play a part in differentiating children with elevated anxiety from children with typical levels of anxiety
- A child with an anxious temperament can get stuck on emotionally charged reactions of people and get “attentionally” stuck
- In some cases, positive executive functioning on tests and tasks may in fact reflect a problem
 - The rapid development of inhibitory control contributes to increased likelihood of social anxiety in children with inhibited temperaments
 - A temperamentally inhibited child may be harmed by becoming “too good” at being careful
 - Children with elevated anxiety may be better at neutral planning tasks when they tasks require slow action, but when tasks are faced-paced, they are more reactive and demonstrate a deficiency in preparation and planning
- Youth with anxiety disorders perceive themselves as weak in executing tasks, this may reflect self-impressions that they are not flexible and effective in responding to problems

Practical Suggestions for Practitioners and Parents

Assessment:

Add measures of Executive Functioning to the battery
Concerns

- commercially available measures have limits
- rating scales do not tap EF in both emotionally-laden and neutral situations
- in effect the practical measures have not kept pace with the science



Practical Suggestions for Practitioners and Parents

Intervention:

Beyond graduated exposure to social interactions and verbal interactions with reinforcement, add in:

More challenging situations – upset people who are not so pleasant, simulated and in-vivo

Speeding up responses in emotionally-laden situations

Experiencing making choices with a shorter latency and exposing to making mistakes in a variety of situations

Continue to emphasize flexible responding when experiencing varied emotions

Enhancing problem solving skills



Practical Suggestions for Practitioners and Parents



- Demonstrate effective use of executive functions:
 - Verbally describe your thoughts and actions when completing some tasks
 - Tell about the goal, what you will and are paying attention to, what steps you will include in your plan, what actions you will use and what actions you will suppress, and discuss the pace at which you will carry out your actions
 - Be careful about recommending that your children be careful
 - Encourage taking chances and responding to mistakes in a reasonable fashion
 - In non-harmful situations, take quick action and encourage your children to do the same
 - Help advance problem solving skills so that children are flexible in neutral as well as emotionally-challenging situations
 - Modulate demands – gradually increase demands so that children are neither overwhelmed or excessively protected



Thank you



Richard Gallagher, Ph.D.

Associate Professor of

Child and Adolescent Psychiatry and Psychiatry

Richard.Gallagher@nyulangone.org



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