

Self Regulation Executive Functions Definitions, Observed Behaviors, and Potential Interventions

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Executive Functions: A General Overview

Executive Functions can be thought of as a diverse group of highly specific cognitive processes collected together to direct cognition, emotion, and motor activity, including mental functions associated with the ability to engage in purposeful, organized, strategic, self-regulated, goal-directed behavior. These modules perform functions related to overseeing the use of other cognitive processes. Executive Function processes include, but are not likely limited to:

- Inhibiting reflexive, impulsive responding
- Interrupting, and returning to, ongoing activity.
- Interacting with and selectively directing attentional processes, screening out interference and sustaining attention
- Cueing the initiation of effort, judgments about the amount of effort required to complete a task and sustaining, and the sustaining of a sufficient amount of effort to effectively complete the task
- Demonstrating flexibility when shifting cognitive resources to focus on new demands or respond to new conditions or information
- Directing the efficient use of, and alternation between, pattern and detail processing.
- Monitoring and regulating speed of information processing.
- Monitoring task performance for accuracy and efficiency
- Overseeing the selection of verbal-nonverbal and abstract-concrete processing mechanisms.
- Directing motor output, altering performance based on feedback
- Directing the efficient use of fluid reasoning resources
- Directing the use of working memory resources
- Directing the efficient and fluent production of language when highly specific production demands are made
- Directing the integration of multiple abilities to produce oral or written responses or products that reflect the level of capacity of the component abilities involved
- Directing the efficient placement of information in long-term storage
- Directing the retrieval of information from long-term storage
- Regulating social behavior
- Regulating emotional control
- Enabling self-observation and self-analysis
- Making use of hindsight and foresight in the direction of current processing
- Enabling the capacity to “take the perspective of the other” in order to infer how someone is thinking or feeling at a given point in time

It is helpful to think of these functions as a loose aggregation of processing modules rather than a unified construct or unitary trait. Assessment requires a multidimensional approach to identify the specific constellations of executive function strengths and weaknesses for any given child. In this frame of reference, executive functions are not the cognitive processes we use to think and act, but rather are the cognitive processes that direct or cue the engagement and use of the processes that we use to think and act.

An overall model of executive functions proposed here involves multiple levels of executive cueing of behaviors and thoughts. At the lowest level, cues are provided for Self-activation of a state of consciousness. Self-Regulation executive functions are involved in basic self-control and impact on behavioral domains including motor functions, emotions, and cognitive functions (reasoning, language, visual perception and discrimination, memory).

Additional upper levels of executive control involve Self-Realization and Self-Determination. These executive functions direct a person's engagement with activities related to gaining an understanding of personal strengths and weaknesses and developing a personal set of goals and long-term plans that motivate and drive behavior. Beyond these upper levels of self-control, an individual can engage in directive processes that attempt to engage the self in an active exploration of self-generation and a transcending of the self to explore realms beyond self-generation to contemplate of the meaning of existence and the ultimate source of consciousness.

Focus on Self-Control through Self-Regulation

This document focuses on the Self Regulation executive functions that are a collection of self-cueing functions that prompt the engagement of cognitive abilities and processes, regulate the upper level processing and expression of emotions, and direct the use of motor skills.

This reference provides definitions of 20 Self-Regulation executive functions, descriptions of some of the observable behaviors associated with these executive functions, and some potential intervention activities most likely to produce improvements when difficulties with these executive functions are observed.

The lists of observable behaviors and possible interventions are not meant to represent an exhaustive compilation, but rather examples of behaviors and interventions in each area. Careful observation and creative problem-solving efforts are likely to identify other behaviors and interventions that can be effective. The Primary key to successful interventions for executive function difficulties is the proper framing of the executive function problem. Executive function difficulties should not be attributed to negative personal characteristics such as laziness, lack of motivation, apathy irresponsibility, or an obstinate nature. Rather, the problem should be clearly stated in behavioral terms that indicate a behavior that can then be changed. Vague, overarching terms and phrases like "poor executive functioning" or "poor organization and planning" should be avoided because they are not specific enough to generate individualized behavior change goals. Determining a good intervention should focus on identifying ways to help the child change very specific problem behaviors from negative to positive.

SELF REGULATION EXECUTIVE FUNCTIONS

Perceive – the Perceive function cues the use of sensory and perception processes to take information in from the external environment or to “tune in” to emotions and thoughts in the internal mind-body environment.

- When difficulties with the perceive cueing function lead to a failure to perceive stimuli, important information is not initially registered or encoded for future use.
- When difficulties with the perceive cueing function lead to a failure to access the required contextual schema for accurate perceiving, misperceptions can result.
- Difficulties with the perceive function can be sensory modality-specific, i.e., confined only to auditory cueing, visual cueing, kinesthetic cueing, etc, or more general, affecting two or more sensory modalities.
- Difficulties with cueing internal perception can lead to a failure to become aware of emotions, thoughts, and/or actions as well as sensations and perceptions.

Perceive Cueing Problems - Observable Behaviors:

- Unaware of the need to engage perceptual processes at a given moment.
- Failure to take in new information even when the need to do so seems obvious.
- Frequently “doesn’t hear” what is said.
- Frequently “doesn’t see” what occurs or what happened.
- Frequently “doesn’t know” where things are.
- Frequently “doesn’t realize” when physical contact is made or that physical sensations are present and available to be perceived.
- Confusion (misperception) about what is heard, seen, or touched.
- Unaware of emotional states.
- Unaware of thoughts.
- Unaware of own actions.

Perceive Cueing Problems - Potential Interventions:

- Cueing and prompting the child during activities involving perceiving information (“now it’s time to listen”; “now its time to watch”; “can you feel that?”).
- Helping to clarify perceptions by assisting the child in accessing effective perceptual schema (e.g.: “what does that sound like to you?”; “does that sound like anything you have ever heard?”; “what do you think that looks like?”; “have you ever seen anything else that looks like that?”; “what does that feel like to you?”; “have you ever touched anything that felt like that?”).

Initiate – The Initiate function cues oneself to begin to use cognitive abilities to process information or to begin to engage in a motor routine to provide a response.

- Lack of initiation does not reflect noncompliance or disinterest in a specific task, or a lack of ability to think about or perform a task, but rather a difficulty with beginning the process of engagement.
- It is extremely important to correctly frame the behavioral difficulties observed as problems with initiation rather than the result of being lazy, unmotivated, or irresponsible.

- It is also important to keep in mind that tasks that are inherently motivating often require less in the way of self-initiation efforts than tasks that are less motivating.
- The more immediate the demand for action (internal processing or external motor response) the more likely any difficulties with initiation will become observable.
- Parents and teachers need to monitor their own reactions to the child's lack of initiation. A natural tendency of adults is to simply do the task for the child. While this can be an effective strategy in certain situations and circumstances, it is also important to try to encourage and support independent initiation behavior to avoid learned helplessness. Efforts at helping the child self-initiate need to be carried out without reliance on constant or repeated prompting with emotional overtones (which is usually perceived as nagging by the child). Good decision-making is required to know when it is most effective to aid the child or do it for them and when to emphasize self-initiation.

Initiate Cueing Problems - Observable Behaviors:

- Slow to engage an activity after being told to do so.
- Failure to engage activities that are supposed to be self-directed.
- Lack of initiation of social contact with peers despite adequate social skills.
- Difficulties with getting out of bed in the morning despite adequate sleep.
- Initial poor performance is often followed by much better performance.

Initiate Cueing Problems - Potential Interventions:

- Increasing structure in the environment so that times when initiation will be required are known ahead of time.
- Increasing the use of daily routines that help to form habits that are performed more automatically, thereby reducing the number of novel demands for initiation.
- External prompting (additional oral directions or reminders or cues for action or light physical touches to orient the child to the fact that initiation is required).
- Working in pairs or small groups making sure that the child is paired or grouped with a child with very good initiation ability.
- Setting specific time limits on activities and clearly cuing the beginning of the time interval.
- Increasing the child's overall level of arousal or basic energy level with short motor activity breaks.
- Guiding the child through the first step in an assignment or routine to support the engagement of initiation and provide extra time for self-initiation to begin.
- Trying to allow additional time for self-engagement to occur rather than expecting immediate compliance.

Modulate Effort – The Modulate Effort function is used to accurately cue the amount of effort and the quantity and quality of the cognitive capacity required to effectively perform a task.

- Individual who do not use the Modulate Effort cue effectively frequently underestimate the effort required to perform a task, or overestimate their own ability to effectively perform the task.
- Some children who initially underestimate the difficulty of a task that progresses from easier to harder stages often improve their performance with the more difficult stages of the task even though they performed poorly on the earlier, easier stages of the same task.

As the task becomes more difficult, they realize that they underestimated what was required to perform the initial stages of the task and now that the task is becoming more difficult, they are finally able to cue the necessary cognitive capacities needed for success.

- It is extremely important to correctly frame the behavioral difficulties observed as problems with modulation rather than the result of being lazy, careless, unmotivated, or irresponsible.

Modulate Effort Cueing Problems - Observable Behaviors:

- Failure on easy tasks or easy stages of a task followed by success on harder tasks or harder stages of a task.
- Verbal and nonverbal behaviors indicating that the child thinks the task is very easy; these indicators are followed by a lack of success with the “easy” task.
- Verbal or nonverbal behaviors indicating that the child begins to realize that a task is not as easy as they thought it was; these indicators are followed by an increase in effectiveness of performance.
- Better initial performance on tasks when the immediate task demands are very difficult than when the immediate task demands are easy and only gradually build to more difficult levels.

Monitor Effort Cueing Problems - Potential Interventions:

- Providing prompts about the amount of effort that will be needed to perform a classroom assignment or take a test before the activity is begun.
- Providing an overview of the entire task or assignment, explaining that while the initial items or tasks might seem very easy and effortless, the task becomes much more difficult, requiring much more effort to perform. Providing a context for describing the amount of effort is extremely helpful (e.g., “Remember how much effort it took you to complete ____; this task is likely to be just as difficult.”).
- Showing the child some examples of their pattern of performance (when careful observation was actually done) in an attempt to help them gain awareness, e.g., pointing out how well they did on tasks where good effort was observed and how poorly they did on tasks when poor effort was observed. Such examples help the child to more clearly understand and internalize the association between effort and results.

Gauge – the Gauge function cues the accurate identification of the demands of a task and cues the activation of the mental resources needed to effectively engage the task.

- Gauge difficulties include ineffective “sizing up” of a task to realize what abilities must be cued for successful completion.
- Individuals with Gauge difficulties frequently misidentify or misunderstand task demands.

Gauge Cueing Problems – Observable Behaviors:

- Seems unaware of what is required to get a task done, even in situations where task requirements would be obvious to same-age or same-experience peers.

- Thinks about things or completes tasks in unusual, extremely inefficient and/or ineffective ways.
- Seems unaware of the “easy way” to get something accomplished.

Gauge Cueing Problems – Potential Interventions:

- Providing prompts about the kinds of cognitive resources that will be needed to perform a classroom assignment or take a test before the activity is begun.
- Providing an overview of the entire task or assignment, explaining that while the initial items or tasks might seem very easy, the task becomes much more difficult; review the kinds of cognitive abilities and skills needed to perform the more difficult stages of the task in an effort to get the child to cue the use of these abilities and skills earlier than would be the case without prompting.
- Guiding the child through the first step in an assignment or routine pointing out as much as possible the kinds of abilities and skills required to correctly perform the task.
- Showing the child some examples of their pattern of performance, pointing out how well they did on hard tasks and how poorly they did on easy tasks in order to help the child gain an awareness of the pattern. Show the child ways to correct this pattern such as going back and checking answers to the early, easy items of a test immediately after they have worked on the harder items of the test because they are now more prepared to bring the needed resources to perform the easier items.
- Using more flexible performance criteria for assessing content mastery so that the pattern of poor performance on easy tasks followed by good performance on difficult tasks does not unduly impact the overall assessment of the child’s demonstration of what she/he has learned.

Focus/Select – the Focus/Select function cues the direction of attention to the most relevant specifics of a given environment, situation, or content while downgrading or ignoring the less relevant elements.

- Focus/Select as defined here relates to where attention is directed to, or what attention is directed to, not how long the attention is sustained.
- Difficulties with focusing can result in a loss of important information needed to initially register and process the most relevant information, and/or to act in the most appropriate manner, and can negatively impact new learning as well as the demonstration of what has been learned.

Focus/Select Cueing Problems – Observable Behaviors:

Lack of attention to the information being presented or the task that is supposed to be worked on.

Focus/Select Cueing Problems – Potential Interventions:

- External prompting (additional oral directions or reminders or cues for attention focusing or light physical touches to orient the child to the fact that attention needs to be focused and where or what it needs to be focused on).
- Working in pairs or small groups, making sure that the child is paired or grouped with a child with very good focusing ability.

- Eliminating as many potential sources of distraction as possible to make it more likely that the child will focus attention where desired.
- Maintaining a structured, predictable classroom routine so that the child can more easily anticipate where the focus of attention is likely to be.
- Moving around the room when teaching or assisting with activities. Movement naturally draws attention, increasing the likelihood that the child's focus of attention is where you want it to be without specific prompting.

Shift/Flexible – the Shift/Flexible function cues the changing of focus, and/or altering of processing or responding based on new, often unanticipated, demands posed by changes in the needs of others, changes in the environment in which processing or responding is occurring, changes in the situation in which processing or responding was initiated, or sudden changes in the content of the information being processed or responded to.

- Shift/Flexible cues the ability to be flexible in response to new demands or conditions.
- Shift/Flexible cues disengagement from an ongoing activity and/or transitioning from one cognitive framework to another, altering problem-solving based on changing conditions, and switching or alternating attention.
- Difficulties with Shift/Flexible often accompany traumatic brain injury.

Shift/Flexible Cueing Problems - Observable Behaviors:

- Slow to stop one activity and begin another after being told to do so.
- Tendency to stay with one plan or strategy even when the desired results are not being obtained.
- Perseveration and insistence on performing a routine even though there is no longer a need to do so.
- Insistence on maintaining a plan of action even though circumstances have changed and made it necessary to develop a new plan of action.
- Refusal to consider new information, insisting on its irrelevance to the present situation.
- Rigid adherence to daily/periodic routines no matter what the circumstances.
- Rigid adherence to the sequential performance of steps in a routine with little tolerance for changing the order or substituting other behavior.
- A strong need to do one, and only one, task at a time; a lack of ability to shift back and forth between different tasks when necessary to do so.

Shift/Flexible Cueing Problems - Potential Interventions:

- Building one or two optional or alternate activities into structured routines as a form of “built-in” flexibility.
- Announcing changes in routines early enough that children can anticipate the changes and have more time to adjust to them.
- Modeling, teaching, and encouraging the use of flexible problem-solving thought routines which enable the child to consider viable alternatives to an original plan or course of action.
- Providing advance warning of impending shifts or changes in activities and review what will need to be done when the shift occurs.

- Seeking out additional sources of information about how to deal with inflexible behavior, such as Ross Greene's book "The Explosive Child."

Stop/Interrupt – the Stop/Interrupt function cues the sudden, immediate discontinuation of processing or responding.

- The Stop/Interrupt cue always precedes the Shift/Flexible cue when altering problem-solving based on changing conditions, and switching or alternating attention.
- Difficulties with stop/interrupt often accompany traumatic brain injury.

Stop/Interrupt Cueing Problems - Observable Behaviors:

- Slow to stop one activity and begin another after being told to do so.
- Failure to discontinue an activity after being told to do so.
- Slow or complete lack of discontinuance of a mental process or an activity (can't stop looking, can't stop feeling, can't stop thinking about, and/or can't stop doing) without external prompting even though the child is fully aware of the need to discontinue.

Stop/Interrupt Cueing Problems - Potential Interventions:

- Providing concrete prompts when stopping or interrupting is necessary (e.g., saying "Stop now!"; placing a hand on the child's hand to stop writing; holding the child in place to stop motor activity).
- Modifying the environment to facilitate stopping or interrupting (e.g., turning off the television or computer when it is time to leave).
- Providing advance warning of impending stopping or interrupting of activities and review what will need to be done when to stop or interrupt what they are doing.
- Seeking out additional sources of information about how to deal with children who are unable to stop or interrupt behavior, such as Ross Greene's book "The Explosive Child."

Inhibit – the Inhibit function cues resistance to acting on first impulse or cues the suppression of the engagement of a specific mental process or behavior (don't look at that, don't feel that way, don't think that, and/or don't do that) when it would be advantageous or appropriate not to engage that process or behavior.

- Difficulties with inhibition often accompany brain injury and are a core deficit in ADHD.
- Difficulties with inhibition increase the likelihood of "disruptive behavior" and often reduce the quality of information processing efforts or the quality of behavior.

Inhibit Cueing Problems - Observable Behaviors:

- Seems to "act without thinking."
- Interrupts others with little or no waiting.
- Often acts wild or out of control.
- Reactions and responses seem excessive for the situation.
- Gets out of control more than other children.
- Often out of seat in the classroom.
- Quickly pursues desires with no consideration of consequences.
- Often "blurts things out."

- Does or says things that would embarrass other children the same age.

Inhibition Cueing Problems - Potential Interventions:

- Increasing structure in the environment to reduce the likelihood that the child will lose control.
- Cueing the child ahead of time when it is known that inhibition will be required in a specific situation.
- Modeling, teaching, and practicing mental routines encouraging the child to stop and think before acting (Stop! Think. Good choice? Bad choice?)
- Rehearsing or reviewing ahead of time the behavior desired during a set period of time or during a special event.
- Anticipating when impulsive behavior is likely to be a problem and prompting or cueing the child that inhibition will be required.
- Examining situations and environments in an effort to identify antecedent conditions that are likely to trigger disinhibited behavior and altering those conditions to make the unwanted behavior less likely.
- Explicitly informing the child of the limits of acceptable behavior. Class rules should be posted and referred to frequently.
- Providing set routines with steps written out and instruct the child in checking the routine and the steps before completing and handing in an assignment or test.
- Engaging the child in smaller group activities with children that exhibit good inhibition.

Sustain – the Sustain function cues continued attending to, initially registering, manipulating, storing, retrieving, or otherwise processing information for a prolonged period of time as well as the ability to continue to perform a motor act for a prolonged period of time.

- Difficulties with the Sustain cue usually result in inconsistent registration and processing of information, and/or inconsistent performing over periods of time longer than a few seconds.

Sustain Cueing Problems - Observable Behaviors:

- Attention is focused briefly but not maintained for the period of time needed.
- Good initial performance followed by a steady decrease in, or frequent changes in, consistency as time passes.

Sustain Cueing Problems - Potential Interventions:

- Frequent prompting during task performance to help maintain a consistent level of attention or engagement.
- Recruiting verbal rehearsal to support repetitious motor activities (have the child verbally repeat the steps of the motor routine to him or herself as they are performing the motor routine).
- If possible, reducing the length of the time period that sustained attention or engagement is required, or breaking longer sessions into multiple shorter sessions.
- Working in pairs or small groups making sure that the child is paired or grouped with others who have very good ability to sustain attention and engagement.

- Setting specific time limits on activities so that the child has a sense of how long sustained attention and engagement is going to be required.
- Providing sources of motivation (external rewards) for sustained engagement and attention, but apply these carefully and only when they consistently produce the desired effect. Providing external rewards that are never, or only infrequently, obtained will have a counterproductive effect. Also, keep in mind that reward programs do not teach the child how to perform the desired behavior, they assume the child can perform the behavior and reward only for successful performance, regardless of how motivated the child might be to successfully perform the desired behavior.

Hold – the Hold function cues activation of the necessary cognitive processes required to maintain information in working memory and continues cueing these processes until the information is manipulated, stored, or acted on as desired.

- Difficulties with the hold function result in loss of important information and/or inconsistencies or inefficiencies in working with and acting on information.
- Although Hold and Manipulate are separate cueing functions, the Hold cue must precede any Manipulate cue in order for effective manipulation of information to occur; a child cannot manipulate information if it has not been held. A child can hold information, however, and not manipulate it.
- Hold difficulties are suspected when inconsistencies or inefficiencies in working memory use are observed even though it is known that the child has good working memory processes and consistently cues these working memory processes to manipulate information.

Hold Cueing Problems - Observable Behaviors:

- Frequent requests for repetition of directions or information.
- Failure to complete all the steps when given multi-step directions or assignments.
- Vague, inaccurate responses to questions about information that is being held and manipulated.
- Inconsistent demonstration of the capacity to hold information, sometimes holding information very well and sometimes holding information very poorly.

Hold Cueing Problems - Potential Interventions:

- Shortening multi-step directions or providing directions one step at a time.
- Asking the child to repeat the multi-step directions before attempting to carry them out.
- Writing multi-step directions on the board or posting them in the room.
- Providing visual aids including diagrams, pictures, or written summaries of information that the child needs to work with.
- Cueing the child ahead of time when longer statements are going to be made or multi-step directions are going to be given, and prompting the child to listen carefully to “hold” all the information, or to listen until all the directions have been given.
- Talking with the child about what has to happen in the child’s mind when longer directions are given or longer information presentations are provided, that is,

ways to “visualize” or “see” information in the “mind’s eye” and/or taking notes to remember important points.

Manipulate – the Manipulate function cues the use of working memory or other cognitive processes for the manipulation of information that is being held in mind or being continually accessed in the environment.

- Difficulties with the Manipulate function can result in a lack of active use of information that is currently available or could be made available if working memory processes were engaged.
- The distinction between the Manipulate cueing executive function and working memory processes is an important one. A child can have good working memory resources to draw upon, but fail to use them because of a lack of effective cueing of their use. In these instances, it does not occur to the child to cue the working memory capacities that they possess.

Manipulate Cueing Problems - Observable Behaviors:

- Frequent requests for repetition of directions or information even though adequate cueing and capacity for holding information have been observed.
- Failure to complete all the steps when given multi-step directions or assignments even though adequate cueing and capacity for holding information have been observed.
- Vague, inaccurate responses to questions about information that is being held and thought to be manipulated even though adequate cueing and capacity for holding information have been observed.
- Inconsistent performance of working memory tasks, sometimes doing quite well with such tasks and sometimes doing quite poorly.

Manipulate Cueing Problems - Potential Interventions:

- Cueing the child ahead of time that working memory abilities are going to need to be used to complete the upcoming task.
- Providing prompts (verbal and nonverbal) to cue the child to “work it out in your mind.”
- Modeling, teaching, and practicing the use of a routine that encourages the child to monitor situations and environments to help determine when manipulation of information is likely to be required.

Organize – the Organize function cues the use of organizing routines for purposes of integration of information, sequencing of information, enhancement of meaning, or efficiency of performance as novel information is being initially registered, held, manipulated, stored, retrieved, or acted on.

- Difficulties with the Organize function result in inefficient, fragmented, and/or ineffective encoding, processing, and acting.
- Difficulties with the organize function can result in the lack of the use of sequencing abilities when they are necessary for success, even though the child has demonstrated the ability to effectively sequence information when initially registering, manipulating, storing, retrieving and/or acting.

Organize Cueing Problems - Observable Behaviors:

- A person's responses or actions are fragmented, out of sequence, and otherwise disorganized or incoherent.
- In many instances, no response or action occurs, as the person is unable to cue the generation of an adequate plan for producing a response or action.

Organize Cueing Problems - Potential Interventions:

- Providing prompts (verbal and nonverbal) that direct the child to reflect on whether organization is required for effective processing of information and what kind of organization strategy might be the most effective in the present situation.
- Modeling, teaching, and practicing the use of routines that encourage the child to monitor situations and environments to help determine when organization of information or organization of actions is required.
- For more severe organization difficulties, it might be necessary to provide the child with a written list of the steps for completing common, frequently occurring tasks or activities.

Foresee/Plan (Short-term) – the Foresee/Plan function cues the engagement of resources required to determine the most effective way to initially register, manipulate, store or retrieve information or carry out a motor act based on the information available and the anticipation of future conditions or events.

- Difficulties with Foresee/Plan often result in disorganized, haphazard and ineffective registering, manipulating, storing, or retrieving of information or poorly conceived and ineffective and/or inefficient approaches to novel problem-solving and/or routine activities.

Foresee/Plan Cueing Problems - Observable Behaviors:

- Approaches to tasks and problems seem very haphazard and lacking in forethought.
- Immediately starts working before all the needed information has been taken into account. An observable lack of time for reflection about how to approach the task.
- Frequently has to change course of action or strategy because of mistakes that reflect a lack of awareness of all aspects of the task or situation.
- Stated plans for action miss many important steps or emphasize only the most obvious or only the initial steps in task completion.
- Final product reflects a lack of forethought or reflects a haphazard chaining of actions with little prior consideration of the likely end result.
- Does not think about the future, remains absorbed in the immediate moment even when situations require forethought.

Foresee/Plan Cueing Problems – Potential Interventions:

- Modeling, teaching, and practicing the use of planning prior to engaging in task performance (Just a minute, let me think; what would be the best way to get this done? If you do that, what do you think will happen?).

- Initially focusing modeling, teaching and practicing on tasks that have only require planning a few steps, then gradually increasing the complexity of the kinds of plans that are required.
- Cueing and prompting the child to reflect on the task at hand and develop a plan of action rather than jumping in and getting started without a plan of action.
- Engaging the child in games that require the use of well-thought out strategies for success; show the child how to play the game effectively using planning to develop strategies such as thinking ahead several moves and considering the possible outcomes of these moves.
- Have the child verbally state the plan they intend to use to complete a task; help the child reflect on the proposed plan in order to correct errors or improve effectiveness.
- For severe planning difficulties, it might be necessary to provide the child with written guidelines for the steps in planning common, frequently occurring tasks or activities.

Generate/Associate – the Generate/Associate function cues the realization that fluid problem-solving efforts are required and cues the activation of the resources needed to carry out problem-solving routines.

- Difficulties with the Generate/Associate function result in problem-solving difficulties or failures even when superior problem-solving abilities have been demonstrated under conditions where the cueing of the use of such problem-solving abilities was provided by an external source.

Generate/Associate Cueing Problems – Observable Behaviors:

- A person seems not to realize when “thinking” (reasoning or problem-solving skills) is required even in cases where it would seem obvious to persons the same age.

Generate/Associate Cueing Problems – Potential Interventions:

- Providing prompts (verbal and nonverbal) to cue the child to “think.” (e.g., in Kindergarten: “It’s time to put our thinking caps on.” For older students: “You’ll need to figure this out for yourself” “You’ll need to find the connection yourself.”).
- Modeling, teaching, and practicing the use of a routine that encourages the child to monitor situations and environments to help determine when thinking or problem-solving is required.

Store – the Store function cues the movement of information from the present moment mental processing environment into “storage” for possible retrieval at a later time.

- Difficulties with the store function can result in inaccessibility or loss of needed information.
- Because storage cannot be observed or directly assessed, storage difficulties are inferred when retrieval difficulties are present but retrieval problems and lack of exposure to information have been ruled out as sources for the poor retrieval.

Store Cueing Problems – Observable Behaviors:

- Difficulties with the retrieval and effective use of information are observed even though the person has shown the capacity for storing and retrieving information at other times and adequate exposure to the content has been confirmed.
- Inconsistent retrieval and/or ineffective use of information thought to be stored, sometimes doing quite well with such tasks and sometimes doing quite poorly.

Store Cueing Problems – Potential Interventions:

- Cueing the child ahead of time that the information being presented will need to be accessed and used at later times.
- Providing prompts (verbal and nonverbal) to cue the child to engage routines for active storing of information.
- Modeling, teaching, and practicing the use of a routine that encourages the child to monitor situations and environments to help determine when storage of information is likely to be required.

Retrieve – the Retrieve function cues the activation of cognitive processes responsible for finding and retrieving previously stored information. The more specific the demands or constraints placed on the retrieval task, the greater the requirements for precision of retrieval cues.

- Difficulties with the Retrieve function can result in an inability to respond to highly specific demands to make information accessible in a timely and efficient manner.

Retrieve Cueing Problems – Observable Behaviors:

- Difficulties with the retrieval of information are observed even though it is well-known that the child has stored the information.
- Difficulties retrieving information under one set of highly specific retrieval demands, but no difficulties retrieving the same information when retrieval demands are less specific.

Retrieve Cueing Problems – Potential Interventions:

- Altering the retrieval demands so that they require less in the way of highly specific retrieval cues.
- Providing cues or hints that help lead the child to the information that is being requested.
- Providing the child with multiple options and formats for demonstrating knowledge of stored information.

Balance – the Balance function cues the activation of pattern and detail processing neural circuits in the right mix, or cues the regulation of the trade-off between speed and accuracy, to enable effective initial registration, manipulation, storage, or retrieval of information or to carry out motor acts in an efficient and effective manner to produce as high a quality of response as possible.

- Difficulties with the balancing of pattern and detail elements of perception, emotion, thought or action can result in 1) an overfocusing on details of information being perceived, organized, stored, retrieved or acted upon, along with a lack of consideration of the big picture or the overall organization of the information, or 2) an overfocusing on

the overall organization or the big picture along with a lack of consideration of, or underutilization of, the details.

Balance Cueing Problems – Observable Behaviors:

- Final products are strong on the big picture or main points, but weak in supporting details.
- Final products are full of details but lack a coherent theme or direction with few main points.

Balancing Cueing Problems – Potential Interventions:

- Modeling, teaching, and practicing how to recognize when details are being overemphasized or when the larger pattern is being overemphasized.
- Providing prompts (verbal and nonverbal) to cue the child to “balance” their thinking; providing prompts to cue the child when details are being overemphasized and patterns should be given more consideration; providing prompts to cue the child when a pattern or patterns are being overemphasized and details should be given more consideration.
- Modeling, teaching, and practicing the use of a routine that encourages the child to monitor situations and environments to help determine when information processing efforts are likely to require a balance between detail and pattern processing, when details might need to be emphasized over patterns, and when patterns might need to be emphasized over details.
- Having the child identify the pattern and detail elements of a task and how they could achieve a balance between the two when taking in, manipulating, storing, retrieving, or acting on the information.

Time – the Time function cues the monitoring of the passage of time (e.g., cueing the engagement of the mental functions that enable a person to have an internal sense of how long they have been working) or cues the use of time estimation routines (e.g., cueing the engagement of mental functions that enable a person to have an internal sense of how long something will take to complete, or how much time is still left in a specific period of time).

- Difficulties with the time function involve forgetting to keep track of time and not remembering to take time estimates into account, or not realizing, even in the presence of many external contextual clues, that a time estimate or time check would be beneficial.

Time Cueing Problems – Observable Behaviors:

- Very little work accomplished during a specified period of time.
- Assignments handed in late.
- Requires much more time than typical to complete work or run errands.
- Often arrives late for activities or events.
- Needs to be reminded to “hurry up” so as not to be late.

Time Cueing Problems – Potential Interventions:

- Providing, or encouraging the use of, timing devices including wrist watches, alarm clocks, stop watches, and timers to inform the child of how much time is left for an activity.

- Prompting the child to be aware of time through actions such as checking the time during an activity, noting the starting or ending time of events, pointing out how much time an activity required.
- Reviewing with the child ahead of time the timelines for an activity pointing out the time by which certain steps or actions need to be completed, and reviewing with the child a strategy for checking the time in order to stay on track.
- Encouraging the child to engage in estimating or accurately stating time requirements for various activities.
- Prompting the child to ask him or herself time-related questions, such as “Do I have enough time to get that done?” “How long will this take?”

Pace – the Pace function cues awareness of and regulation of rate of performance of mental or physical acts.

- Difficulties with the pace function involve a lack of cueing oneself to check to see if thoughts or actions are being carried out too slowly or too quickly for effective performance.
- Difficulties with the pace cueing function can result in 1) an overemphasis on speed with an accompanying loss of accuracy, or 2) an overemphasis on accuracy with an accompanying loss of speed.

Pacing Cueing Problems – Observable Behaviors:

- The child works very slowly even when aware of time constraints.
- The child works too quickly when aware of time constraints, and often works quickly even in the absence of any time constraints.

Pacing Cueing Problems – Potential Interventions:

- Modeling, teaching and practicing the use of mental routines that help the child develop an awareness of when pacing is necessary and how to be sure to cue oneself to monitor and maintain a good pace-not too fast and not too slow.
- Prompting the child to check the time and assess the situation when slow pacing is a problem.
- Prompting the child to slow down and improve quality of work when fast pacing is a problem.
- Reviewing with the child ahead of time the timelines for an activity pointing out the time by which certain steps or actions need to be completed, and reviewing with the child a strategy for checking the time in order to adjust the pace as needed.

Execute – the Execute function cues the performance of automated mental or physical routines based on the demands of the situation, orchestrating the proper “syntax” (processing steps involved in sensing/perceiving, feeling, thinking, acting) of the routine in the manner required for successful responding and performance.

- Difficulties with the Execute function involve a lack of realization that a cue for syntax of a response or action is required or would be advantageous at that point in time, resulting in a lack of an adequate response.

- The Execute cue is distinct from the Initiate cue; Initiate cues the start of mental and physical activity; Execute cues the specific mental and behavioral routines in their proper sequence (syntax) until the desired outcome is obtained or a Stop/Interrupt cue occurs.
- The Execute cue is distinct from the Organize cue; the Organize cue is used in situations where novel experiences and information must be ordered in some way; the Execute cue is used to engage previously-learned, frequently automated routines. The Organize cue is used in the initial stages of learning how to create an automated routine; the Execute cue is used to engage a routine once it has been organized, learned, and automated.

Execute Cueing Problems – Observable Behaviors

- The person seems not to realize when specific mental and/or behavioral routines are required even in cases where it would seem obvious to persons the same age.
- The person does not effectively complete automated routines, or routines that are typically automated for most persons.

Execute Cueing Problems – Potential Interventions:

- Providing prompts (verbal and nonverbal) to cue the child to “act.”
- Modeling, teaching, and practicing the use of a routine that encourages the child to monitor situations and environments to help determine when action is required.

Monitor – the Monitor function cues the activation of appropriate routines for checking the accuracy of initially registering, manipulating, storing, and/or retrieving information (sensations/perceptions, emotions, thoughts) or the performance of, or final product of, a motor routine.

- Difficulties with the monitor function often result in careless errors due to a lack of adequate checking of information processing or work products.

Monitor Cueing Problems – Observable Behaviors:

- “Careless” errors are present in work assignment final products or tests.
- Routines in place for checking work are not used; the child is often done early with assignments and tests because checking for errors did not take place.

Monitor Cueing Problems – Potential Interventions:

- Modeling, teaching, and practicing the use of monitoring routines.
- Prompting the child to engage monitoring routines if they fail to self-cue.
- Providing opportunities for guided practice of monitoring routines; guide the child through the routine; actively assist the child in performing the motor movements necessary to complete a monitoring routine if the child seems unable to perform the motor movements needed for monitoring on their own.
- Reviewing with the child situations where monitoring routines would most likely be required and helping the child to develop ways to cue themselves to engage monitoring routines in those situations.

Correct – the Correct function cues the use of appropriate routines for correcting errors or altering performance based on feedback from other executive functions.

- Difficulties with the Correct cue result in failure to correct errors or alter performance despite the fact that the errors or inadequacies of performance are identified and acknowledged.

Correct Cueing Problems – Observable Behaviors:

- “Careless” errors are present in work assignment final products or tests despite the fact that monitoring was cued and engaged, checking for errors was done, and errors were identified.
- Motor routines continue to be performed inaccurately or inefficiently even after the need for correction of the routine has been brought to the person’s attention and/or the person has been shown where the difficulties were occurring and was shown how to correct them.

Correct Problems – Potential Interventions:

- Modeling, teaching, and practicing the use of correcting routines.
- Prompting the child to engage correcting routines if they fail to self-cue.
- Providing opportunities for guided practice of correcting routines; guide the child through the routine; actively assist the child in performing the motor movements necessary to complete a correcting routine if the child seems unable to perform the motor movements needed for correcting on their own.
- Reviewing with the child situations where correcting routines would most likely be required and helping the child to develop ways to cue themselves to engage correcting routines in those situations.

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