



“Devon” – age 12

Program Hours: 75 hours

Program Goals: To improve executive functioning (i.e., self-monitoring, planning, organizing, prioritizing, impulse control, etc.) by strengthening automatic processing skills

Devon’s mother sought a COGx program for Devon due to issues at home and in school, primarily surrounding her executive functioning skills and a negative attitude towards learning that stemmed from years of struggle.

Devon was easily frustrated if she provided responses inaccurately and indicated that she does not like “getting things wrongs.” Concurrently, her self-ratings of her own performance, confidence, level of effort and cooperation were typically a 5 (i.e., on a rating scale of 1-5) even if her answers were inaccurate or her effort/cooperation was poor. To confirm that Devon interpreted the rating scale appropriately, we switched roles (i.e., Devon pretended to be the trainer and I pretended to be the student). When asked to rate my level of performance on certain tasks, she did so accurately confirming that her inaccurate self-ratings were a result of low self-awareness. Discrepancies were regularly used as teaching moments (i.e., “*Why do you think my rating doesn’t match yours?*”). Through constant drill and practice, Devon’s self-reported ratings have become more in lined with her actual performance. Additionally, by placing an emphasis on Devon’s effort (e.g., assigning small rewards such as a game for the effort placed on completing an exercise with *fewer errors*), she was able to recognize that the primary focus is progress, not perfection. This shift allowed Devon to feel more comfortable completing exercises of high intensity and sharing her thoughts regarding personal areas of difficulty (e.g., “*I forget to write things down and take books home. Staying organized is hard*” - Devon).

To further monitor her mood, Devon was asked to specify how she was feeling (i.e., based on a worksheet of feeling words), at the start of each session. On days where Devon endorsed feeling tired, annoyed, or frustrated she frequently demonstrated irritability and required redirecting whereas, on days where Devon endorsed feeling calm/happy, she required minimal to no prompting during the session. When negative emotions were endorsed, I dedicated a few minutes of session to a short game of her choice or a brief opportunity to discuss why she was upset or frustrated. Allocating this time to an activity of preference helped increase engagement throughout our sessions. Long-term rewards were also implemented to increase motivation (i.e., earning points toward a gift card based on level of effort, cooperation, and performance); however, Devon appeared to respond better to immediate rewards (e.g., playing a short game of her choice after meeting a designated goal on a task).

Devon learned how to implement strategies such as visualization or visual aids to assist in holding onto information in memory. Now, Devon is able to hold greater quantities of visually and verbally presented information without assistance (e.g., visual aids). Since Devon no longer relies on rote memorization to hold information, impulsivity in providing her responses declined. Similarly, with improvement on working memory tasks, her responses became more prompt on tasks that target executive function. With improvement in her automatic processing skills, we were able to target executive function more directly.

When presented with tasks that target organization and planning, Devon demonstrated resistance toward sharing information regarding her homework, school assignments, and chores. To indirectly target organization, I introduced several scheduling worksheets, during session, which listed a set of assignments, chores, and activities of a pretend student. Devon’s task was to prioritize and organize the



assignments/tasks into a scheduling grid based on the amount of time allocated per item. Initially, Devon demonstrated significant difficulty interpreting a scheduling grid and following the instructions of the task, even after reviewing the assignment together. Several modifications were made to accommodate these difficulties. First, I broke down the instructions into smaller steps. I then included a checkbox next to each step that was to be checked off once she had thoroughly read through that step (i.e., following a linear, checklist format). Since Devon had notable difficulty with linear thinking (i.e., referring to or organizing information in appropriate sequence), these simple modifications demonstrated large outcomes as Devon began completing the assignments in appropriate sequence, at a faster rate, and with greater accuracy. After completing several versions of this exercise, Devon was able to appropriately prioritize and time manage her own school assignments/activities, independently, using a scheduling grid.

To target chores and assignments at home, Devon was introduced to a daily checklist. She was asked to organize her homework, chores, and activities in this format, during each session. To hold Devon accountable, she was asked to seek parent's signature and feedback to insure that she was referencing the list at home and completing the tasks that were checked off. Devon demonstrated full capacity to independently create a checklist and organize the items, appropriately (e.g., listing school tasks then in-home tasks). When planning for long-term assignments, Devon implemented a similar format—a weekly checklist. In session, Devon was provided with a pretend long-term assignment that was supposedly due at the end of the week. Devon was required to seek the information needed to complete the assignments and plan her week, accordingly. She was typically given a broadly stated assignment (e.g., you have a science project due on Friday and you need to include a poster). Without prompting, Devon asks a sufficient amount of questions to gain the information needed to complete the task (e.g. What is the topic? Do I need to include a report?). She breaks down the assignment into steps and efficiently organizes each step in appropriate sequence throughout the week (e.g., On Monday - buy supplies that I don't have at home, Tuesday - refer to my book and make an outline, etc.). Devon has demonstrated full capacity to effectively and efficiently plan for long-term assignments, independently.

(Of note, most mock assignments applied to these exercises were formulated were based on Devon's current subjects, their level of difficulty, and typical assignments she receives in each class.) Through constant drill and practice, Devon has learned how to implement numerous strategies that target planning and organization. With increased self-awareness, Devon can articulate her personal areas of difficulty and appropriately specify the strategies/techniques that most effectively target those difficulties.

Thank you for all that you've done for Devon and teaching her skills she can use in the future - Parent



“Amy” – age 13

Program Hours: 80 hours

Program Goals: Strengthen processing skills (i.e. attention, processing speed, & working memory); improve memory through the drilling and mastery of techniques and strategies; improve executive functioning

Upon the start of the program, Amy demonstrated a tendency to underestimate her performance. She frequently provided low confidence ratings (i.e., “On scale of 1-5, how confident do you feel that you completed the task without error?”) even when her responses were 100% accurate. When the intensity of exercises was increased (i.e., incorporating the metronome or adding a complex rule), Amy appeared anxious and sometimes frustrated (e.g., “There is no way I can do that. I’ll try but I know I’m going to get it wrong. This is so hard”) which interfered with her performance (i.e., increased distractibility). Amy requested for aids (e.g., visual aids) to minimize the level of difficulty on certain tasks even if she had previously demonstrated full capacity to complete them without assistance. New challenges were viewed as intimidating opposed to positive signs of progress.

To target self-monitoring and increase self-confidence, a chart system was incorporated whereby Amy set definitive goals for herself (i.e., indicating a specific exercise, an increase in intensity, and the specific date she wishes to achieve the goal). Through the use verbal encouragement and constantly referencing her progress, Amy began demonstrating greater confidence as evidenced by her excitement toward meeting and exceeding her goals (e.g., “Wow. I did really good”). Her performance and confidence ratings began to align, and she started to appear motivated by new challenges rather than intimidated.

In regards to processing skills, Amy initially demonstrated difficulty attending to verbally presented stimuli (i.e., auditory processing), alternating/shifting her attention (i.e., cognitive flexibility), and selectively attending while ignoring competing stimuli (i.e., selective attention). To target auditory processing, verbal information was paired with visual aids (e.g., allowing her to view the deck of logic cards before applying a list of verbally presented prompts to the deck). To improve cognitive flexibility and selective attention, Amy was directed to focus on the accuracy over her responses over her speed (i.e., regulating her pace through the use of the metronome).

Over time, Amy was able to hold and manipulate (working memory) larger quantities of verbal information without assistance (i.e., visual aids). Similarly, Amy demonstrated significant improvement in her ability to alternate her attention back and forth while ignoring competing stimuli (i.e., cognitive flexibility and selective attention). When completing these exercises, not only did her accuracy improve, but so did her processing speed (i.e., the rate in which she provides her responses).

With improvement in executive function and high intensity exercises that target automatic processing skills, Amy exhibited excitement toward setting goals regarding the amount of information she can commit to memory. Amy has more than doubled her capacity to store information in short-term memory and has learned several long-term memory techniques. Through the application of these techniques, Amy has committed parts of the Gettysburg Address, all 118 elements of the periodic table, 46 world capitals, 24 digits of pi, and the Bill of Rights to memory. Amy’s ability to effectively apply these techniques is evidence by her quick retrieval of the information stored. Amy recognizes when it is most opportune to utilize each technique and is able to effectively implement them independently.

Amy had a fantastic school year with her trainer. – Parent