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DOI: 10.4172/2472-1786.100074

Journal of Childhood & Developmental Disorders ISSN 2472-1786 2018

Vol.4 No.3:11

ADHD and the Case for Support through Collegiate Age: Understanding the Lifecycle of Developmental Delays in Executive Function for ADHD and its Impact on Goal Setting

Abstract

This paper discusses how executive function develops in individuals with ADHD as compared to neurotypical individuals. ADHD coaches trained in the area of executive function skills can be particularly helpful to individuals looking to strengthen their organizational and decision-making skills with supports that are unique to one's specific ADHD presentation. Coaching is a promising supplemental intervention for individuals with ADHD. Three case studies are presented.

Keywords: ADHD; Developmental delay; Executive function skills

Received: August 13, 2018; Accepted: September 05, 2018; Published: September 12, 2018

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Citation: Barrett KK (2018) ADHD and the Case for Support through Collegiate Age: Understanding the Lifecycle of Developmental Delays in Executive Function for ADHD and its Impact on Goal Setting. J Child Dev Disord. Vol.4 No.3:11

Introduction

It is well established that ADHD is a complex neurobiological disorder. Yet for all its frustrations, an alternative perspective in the understanding of how children diagnosed with ADHD develop executive functions as compared to their neurotypical peers can be liberating for those involved in their lives. When laid against the spectrum of neurotypical development for executive function, it becomes easier to conceptualize the common reference to the 3-5 year (30%) delay that exists between children with ADHD and neurotypically developing children [1]. When expectations and perspectives are adjusted accordingly for children and adolescents with ADHD, the result is often a nurturing environment that can ultimately lead to improved planning, self-regulation, emotional regulation, and overall decision-making of the child and to help develop those executive function skills. Abiding by the notion that the ADHD brain activates best when something is novel, interesting, scary, immediate, urgent, or pleasurable can help reframe an approach to difficult and long-range goals and activities that often lose novelty or may be less interesting. In addition, it presents several opportunities for support that can help foster continued development and provide an external voice for those individuals who have not yet developed this part of their cognitive function. ADHD coaching is one complimentary support service that is showing promising results in the areas of academic achievement in teens and college students, along with goal setting and goal/task completion.

Background

The concept of executive function in neurotypical persons was introduced more than 140 years ago when scientists were trying to understand the function of the prefrontal cortex [2]. Today, the two dominant models for executive function (EF) with respect to ADHD and EF Impairments stem from research by Russell A. Barkley and Thomas E. Brown. Brown best summarizes executive function as the "cognitive management system of the brain." Modern executive function can be defined as "the capacities for self-control that allow us to sustain action and problem solving toward a goal" [3]. In effect, executive function can best be described as the cognitive functions that enable goal-directed problem-solving and goal-directed persistence. Both Barkley and Brown agree that executive function deficits are consistently present in patients with diagnosed ADHD. While the neurotypical individual develops full executive function between the ages of 21 and 25 years, the typical individual with ADHD develops at a rate of 3-5 years (or 30%) behind non-ADHD peers [4]. To better understand executive function through the ADHD lens and the role it plays in everyday life, it is helpful to examine the two most common models in the field of ADHD research.

Figure 1 shows Barkley's Model of EF, which divides overall executive function into four areas. Barkley [4] breaks executive function development into five stages. The first stage is the pre-

executive function stage, which is present from birth. Responses are more automatic and reactive in nature, often exclusive of forethought or planning, and are instinctual responses to stimuli or experiences in the moment. In early childhood, the first stages of executive function develop via self-directed abilities: non-verbal working memory and internalization of speech (verbal working memory). As a child typically matures, during the elementary school years they begin to develop self-regulation of affect/motivation/ arousal; during the middle school years, they begin to practice the initial steps of planning and goal-setting. By high school, a typically developing individual is practicing the most complex stage of executive function, which Barkley [4] refers to as reconstitution (planning and forethought). This final stage is often fully developed during the early adult years or by age 21. When ADHD deficits are overlaid onto Barkley's model, it is easy to see the delays that accompany this disorder. His model focuses on highlighting the impulsivity of individuals with ADHD and their inability to delay responses, thus acting on urges without reasonable forethought to consequences. This inability to self-regulate leads to significant challenges in individuals with ADHD, creating a disorder of performance more than a disorder of knowledge or skill [5]. Barkley believes that executive function is the core dysfunction in ADHD, which can often be seen by parents and educators when the expectations of children with respect to chronological age do not match the individual's actual ability with respect to planning and goal-oriented efforts. Individuals will often get derailed when acting impulsively as they follow more desirable stimuli.



The second most commonly used model is Thomas E. Brown's model for executive function impairments in ADD/ADHD. Brown [6] breaks down his Executive Function Model (Figure 2) into six "buckets:" activation, focus, effort, emotion, memory, and action. According to Brown, these buckets are operationally integrated, each one represents a cluster of actions or functions. Thus, the impact of one impairment will impact overall function. Individuals with ADHD tend to suffer multiple impairments within these clusters, which leads to attentional deficits in areas such as organizing tasks, initiating projects, sustaining effort, managing emotions, and self-regulation. Like Barkley, Brown believes that each function is a collection of skills or actions. For example, activation includes all of the forethought and activities related to getting into motion or action to perform a task, including organizing thoughts/materials needed, prioritizing actions and even choosing to delay others, and ultimately the act of getting started even when a task is undesirable. Given that a primary hurdle of ADHD is a forward action when there is a deficit of interest, it is easy to see how ADHD deficits in executive function can hinder the role of motivation when interest is low. This plays an integral part in delaying activation. Overall focus is impaired when the ability to shift from multiple activities to a single activity is hindered.

It is clear that any impairment in executive function will have an adverse effect on an individual's ability to set and meet goals, including the capacity to start, sustain, and complete a task. When one understands the basic presentation of ADHD, it is easier to overlay and comprehend the level of impairment or delay respective to an individual's age and reset caregiver expectations. For example, a typical child between the ages of 5-8 years old will master a simple 2-3 step chore such as cleaning their room or grooming and dressing themselves independently. The child with ADHD will likely master those skills independently at around age 8-10 years, requiring an extended period of parental guidance, coaching, and supervision. This particular example speaks to Level I and II Executive Functions in Barkley's model, whereas it could overlap all six functions in



Brown's model. Individuals with ADHD may therefore require extra support and care at the point of performance (where the activity is taking place) due to delays in self-regulation and selftalk that would enable them to recall the steps for an activity or goal, organize their thoughts, shift focus to the goal in mind, and both begin and sustain the activity required to reach their goal. Hassell [7] best demonstrates the complexity of executive functioning expectations in neurotypical individuals compared to individuals with ADHD (**Figure 3**).

This level of impairment relative to development presents an opportunity to deliver a framework for scaffolding and accommodations that provide both the active practice of these skills and an appropriate level of support. The result enables the child with ADHD to complete tasks that would otherwise remain difficult, if not near impossible, using the standard expectations of an individual's chronological age and neurotypical development arch. For example, a typical primary school student with ADHD is often provided accommodations such as extra time for completing assignments, which may make it easier for her to succeed in school. However, these accommodations do not focus on building executive function skills, so the child may continue to struggle to sustain attention and complete assignments as she matures. By the time the child is in secondary school, she finds that assignments are more complex and there is less time allotted to complete them. Therefore, providing skill building through coaching to help the child externalize and verbalize the act of planning and persisting in goals like of homework completion in addition to accommodations can provide the scaffolding for success in later school years.

Because an individual with ADHD tends to exhibit developmental delays in executive function by as much as 30% (respectively a 3-5 year delay in school and early adulthood) compared to peers, the role of the parent becomes critical for facilitating growth in this area. This awareness can provide caregivers and educators hope and empathy, as well as create a roadmap for developmental skill building to both support and build the delayed skills necessary for goal persistence and planning.



Setting expectations that match the appropriate developmental age of a child, as opposed to her chronological age, results in meeting the child where she is rather than place unrealistic expectations upon her. This is typically where the level of anxiety, overwhelm, or depression may increase if there are no supportive adults in the child's life such as therapists, coaches, teachers, parents, or other caregivers. At stages of increased independence and workloads, the impairment in executive function can be more visible with respect to behavior and self-determination levels of the student. This underlines the need for parental support of and involvement in the emotional and executive function skill development through education, advocacy in medical treatment and the creation of scaffolding to support the child though the academic and early adult years through one or more of the following: self-education, medical treatment, advocacy, tutoring, therapy and coaching.

The developmental jumps required from elementary to middle school, middle school to high school, high school to adulthood, including college (**Table 1**) are typical transitions that present greater challenges to students who possess a developmental delay in EF skills. The stress created by the perceived abilities and actual deficits further hinder progress on the part of the student. The role of emotions and stress is documented in recent genetic studies on risk factors for ADHD [8].

Brown [9] also focuses on the role of stress and emotion in ADHD and EF development. The greater the stress or negative emotion, the further impaired an individual becomes, effectively shutting down the limited executive function that they possess. Stress impacts all individuals in this area; however, those with ADHD typically struggle more given their current EF impairments. The most difficult aspect of this finding is the individuality of tolerance for each person. What may be stressful or upsetting to one person may not feel as dire to another. Different stressors exist based on experience and memory, and the reaction to stress varies based on support systems in place and individual triggers.

Parents can play a significant role in helping children through the modeling and externalization of emotional regulation and executive function skills by fostering the creation of structure and routine that reinforces the skills and lifelong strategies and supports that will encourage the development of healthy coping mechanisms and self-awareness, resilience, and achievement in goal-oriented tasks.

Methods and Findings

The role of stress is apparent in my private coaching practice. Even the slightest feelings of being "stuck" or unsuccessful are often enough to adversely impact a client's ability to complete the most basic of tasks related to their stated goal. My role as a coach is to help the client address inaction by having the client verbalize thoughts regarding inaction, reframing the scenario that is causing impairment, and working together to define the steps needed to produce forward movement through and past the current task. This approach reduces the client's degree of overwhelm and increases her level of initiative to move forward

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Table 1 Typical developmental milestones in EF development.

Age	Grade	Traits
12-24 months	N/A	Beginning flexibility; working memory, motion control, attention, task initiation, and goal persistence begin to develop through play
2-4 years	N/A	Working memory, sustained attention, and goal persistence for simple (2-3 steps) tasks. Perform 2-3 step tasks with supervision. Understanding of simple instructions and recall.
5-8 years	K-2	Independent execution of simple (2-3 step) tasks.
8-11 years	3-5	Able to complete more complex tasks, sustain attention, extend working memory, read chapter books. Develop projects requiring goal persistence (future deadlines). Increased flexibility.
11-14 years	6-8	Working memory for complex tasks; multi-step math and word problems toward the end of grade 8. Critical thinking and impulse control in environments with established rules.
14-18 years	9-12	Emotional regulation, response inhibition, goal persistence, sustained attention, metacognition, planning, organization; persisting, initiating, completing tasks; increased ability to plan and complete multi-step tasks, decrease in risky behaviors. [Disagree with this last one at this age.]
18-20 years		Task initiation; greatly refined metacognition, planning, organization, emotional regulation, goal persistence; ability to maintain multiple schedules and meet performance expectations for friends, job, school, family
21+ years		Able to sustain attention in the face of distraction, maintain several schedules; planning and goal-setting that includes the ability and forethought to seek out tools to facilitate executive functions (planners, organization strategies, minimization of distractions, calendars, to-do lists, etc.)



in action and address the challenge at the point of performance. For example, a neurotypical student with a paper due will typically mark the calendar or make a mental note of the due date and plan out the steps and work required in order to complete the paper on time, avoiding distractions along the timeline as they occur, regardless of the individual's level of interest in the topic or task required. A student with ADHD may make a note of the due date that gets lost in the distraction of other thoughts. Even if the ADHD student uses a planner to write the due date, the project is often due so far in advance that the date holds little to no urgency. It is not an immediate goal due the following day. This student likely knows the steps required to write this paper, but the act of planning out and activating each of these steps is often where he gets stuck, leading to overwhelm and possible self-deprecating thoughts when the due date approaches and no work has been completed. This task becomes even more elusive when the student does not have an interest in the topic, task, or act. The student is unable to move forward.

In a traditional coaching relationship, the student will partner with the coach to verbalize and create a concrete goal and plan of action, discuss barriers to success, develop a reward system to encourage progress and motivation, and often serve as an accountability resource who is not emotionally tied to the client. These steps of practicing the use of verbal and nonverbal working memory, organization of thoughts, activation, developing personalized strategies for sustaining focus, and motivation are all critical parts of executive function skills that are often automatic for their peers who do not have ADHD. With the help of a coach, the student may find that the planning and scheduling of time spent on this paper is less stressful, more successful, and builds a new level of confidence in the student's ability to achieve. A key aspect of ADHD coaching is building a relationship with the client so that she can identify the trigger that activates her brain, resulting in her ability to gain momentum toward the stated goal."

Attention management is another executive function skill that typically develops during the first years of high school or ages 14-16 years. Given the developmental delays noted by Barkley [4] and Brown [6], it is reasonable to assume that for individuals with ADHD, attention management may not fully develop until age 25. Note that the institution of proper scaffolding and supports to both advance these skills and accommodate impairments is important to the progressive development of the functions related to decision making, self-regulation, and goal setting. This is particularly significant at the point of performance, where the act of performing tasks related to task completion can most definitely impact goals. For students, the point of performance includes the classrooms in which they learn, the study areas in which they complete their homework or projects, the homes in which they are responsible for chores or grooming tasks, and the places where they socialize.

According to Roberto Olivardia, "ADD really should be called Intention Deficit Disorder, since it is a problem where someone has every intention of doing something yet find it difficult to execute the plan to achieve their goal" [10]. Stephanie Sarkis [11] calls it a "motivation disorder" and Susan Smalley [12] refers to it as a "complex trait." ADHD research clinicians Brown and Barkley often describe ADHD as the condition of being consistently inconsistent. Brown has referred to ADHD as "erectile dysfunction of the mind" [13], and the "impotence" at the point of performance is a key frustration for my clients with ADHD. It is not in the knowing what to do but more in the doing of what one knows where ADHD can often sidetrack an individual. Herein lies the most compelling argument that ADHD is strongly tied to a delay in executive function skills such that there is a challenge at the point of performance to "do what you know" when your ability to plan, execute, and complete the acts is impaired.

One way to address executive functioning impairment is through supplemental coaching. ADHD coaching was introduced in the early 1990s as an adjunct treatment for adult ADHD and has since become a strong tool for academic students in secondary and post-secondary education settings. Coaching is often a compliment to current talk therapy and cognitive behavioral therapy treatment for ADHD [14]. Coaching has been referred to as "therapy light," but it is important to distinguish between the two approaches to understand the difference and appropriate scenario for coaching success. Therapy focuses on the treatment of ADHD and the possible comorbidities including, but not limited to, depression, obsessive-compulsive disorder (OCD), and anxiety. Therapists work with patients to diagnose, heal, and treat disorders according to the definitions found in the Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (DSM-V). Coaching is a partnership between the coach and the client (patient)-led by the client-which is the key distinction from the patient/therapist relationship of therapy. The role of a coach is to partner with the client to create awareness of strengths and habit formation that leads to the client being able to set proper goals, and foster accountability and resilience in the practice of planning, organizing and taking steps to reach those goals. This forward-motion practice of getting into action, focusing on strengths, and taking guided, positive steps towards a goal fosters the development of self-determination and executive function skills that has shown to be a positive predictor of academic achievement in the later stages of formal education [15]. Once a client has an understanding of their ADHD and executive function impairments, how they present, and how they can best manage those symptoms, a coach can serve as a perfect complement to support an individual in the practice of moving forward into awareness, goal-setting, and action.

The focus of ADHD coaching is often related to motivation, challenges, and distractions at the point of performance or the physical space in which an individual must act on their goals and tasks related to achieving these goals. ADHD coaches trained in the area of executive function skills can be particularly helpful to individuals looking to bolster these organizational, decision-making skills with supports that are unique to one's specific

ADHD presentation. For example, a typical middle school student (age 10-13) develops a strength in basic planning skills as the academic demands increase in the area of self-management, time management, and work management/planning. This is about the age when students master the use of homework planners and develop the ability to visualize and plan multi-step projects and assignments independently. For a middle school student with ADHD, the ability to perform basic planning and achieve higher level time management skills, for example, may not occur until the child reaches high school. Reframing the expectations to match the appropriate developmental age for a skill can assist both the individual and the adults in their environment to meet the individual where they are on the spectrum and develop the student's skill set from the correct set-point. One would not expect a 2-year-old, for example, to know how to balance on a 2-wheel bicycle without first developing the skills required to pedal, followed by working on balance and potentially using training wheels over time. This developmental perspective offers greater understanding in the struggles often associated with academic expectations when a student with developmental delays in planning and organization is expected to perform complex tasks and sustain focus on goal-driven objectives. It also provides a framework for the development or scaffolding to support the student, coupled by the discovery of their individual motivators, interests, or triggers. The content may not be the actual difficulty faced by an individual student, but the ability to access the content and demonstrate knowledge, given the delays in executive function present in ADHD combined with individual wiring for specific interests, present a hurdle to success when compared to work levels of their peers. Parents can further support their students with ADHD by serving as emotional and external moderators by taking a coach approach to parenting, helping students to process and externalize stressors and deep emotions that often hinder executive function performance.

The presence of a strong and supportive relationship between teachers and students has also shown to be effective in the success of students with ADHD. With the help of a strong ally at the point of performance, an individual can practice and develop the planning and organizational skills required to succeed. When such environments are not present, individuals often turn to a coach to foster a support structure and help students develop systems that bolster strengths in order to create a successful path to attaining goals or realizing academic achievement. I have found in my own experiences, both professional and personal, that teachers who take a coach approach in the classroom may find that their students feel more secure in taking intellectual risks and referring to the teacher for feedback, support, and encouragement. Students who do not have a strong relationship with their teachers may find that ADHD education for the teacher is a first step in opening the door to improved communication, empathy, and reframing. In schools where professional development coaches are present, coaching a teacher is often easy to propose and well received. In scenarios where professional development coaching is not a part of the professional learning community (PLC) or culture, coaches may run into the scenario where a teacher is not receptive to being coached. I have found in my personal practice that most teachers are naturally curious and open to professional and personal growth opportunities that often lead to adjustments for the entire classroom. The biggest challenge may be in scheduling precious time for coaching or ADHD education.

Of particular relevance to the coaching model during the academic years of development is the JST Coaching Model Cycle of Action and consequent Cycle of Success [16]. Many academic students come to coaching with a history of failures or less than successful achievement with respect to perceived academic potential. Motivation is often a key component of success in academics. Inaction is often due to one or more factors, including overwhelm, procrastination, poor planning, or lack of stamina. Action is the key to developing a successful academic regimen [17]. With individuals who are challenged by ADHD, action is often tested most readily at the point of performance [5]. For example, at the desk where homework is done, in the room testing is taken, at the school desk where notes are taken, in the foyer where backpacks are placed/collected. Utilizing the understanding of executive function, the role of a coach is often to help create an external voice for the client to process the steps of executive functions in order to create goals, plan and organize action steps, sustain attention and effort, and self-regulate throughout the process through reflective conversation.

In the coaching relationship, there is a focus on the awareness of what gets in the way of performance, what it looks like to set an ideal stage for work to be done, developing steps and rewards to sustain effort, and promote excitement around task completion and goal attainment. Each piece of the puzzle helps the individual create a personal blueprint for successful completion of tasks and goals. Starting with a goal in mind, the coach and client partner to create action steps for each goal - practicing the planning and organizational executive function skills that create a base for all future planning. This work includes breaking a goal into actionable steps and working through the decisions that are made in relation to the goal - including supplies, environment, distractions, and backup plans. Next, is the development of rewards or carrots for the completion of these steps. Given the history of many individuals with ADHD, the reward system may feel out of character. However, once an individual understands that igniting the reward center of the brain is key for sustaining effort during difficult tasks, the development of reward systems offer a successful basis to develop motivation and satisfaction in mundane or even painful tasks. Rewards can be as simple as 5 extra minutes of screen time, a walking break, a social activity or a material object (tokens, desired objects such as a new game or a treat). Rewarding the completion of the desired task as opposed to discouraging an undesired task with a punishment is essential to the ADHD wiring in the brain and counterintuitive to many systems in modern society [18,19]. When individuals are wired for pleasure, as the stress level increases, decision making becomes harder to facilitate [20]. Building positive synapse connections over time develops greater self-confidence, self-determination, and self-regulation. With each successful completion of actionable steps, the cycle of successful goal achievement builds.

As Sleeper-Triplett's [21] Cycle of Action shows, the feelings of success are often the fire that fuels motivation (**Figure 4**). As motivation increases, so does an individual's efforts and hence progress toward their goals. Further progress begets more success, and the cycle perpetuates. The main role of a coach in this process is to help the client reflect on their efforts, help the client determine the ideal support at the point of performance, and to ask powerful questions to help an individual client develop meaningful goals that align with their values, strengths, and interests. This cycle of success creates a strong base for self-determination, which is an important component of academic achievement in the college years [22].

The challenge in coaching students with ADHD is often related to harnessing personal interest and motivation, two key factors grossly impacting a student's ability to get into action. Creating lasting, impactful change for a population of students that is wired for novelty, interest, urgency and pleasure often requires a longer timeline that that of a neurotypical student or client. Motivation and action are tied to specific, individual preferences that can often change or lose interest for a client. This is why it is critical to create that cycle of success to further motivate and excite the client with ADHD. Creating awareness and a "plan B" for obstacles, practicing externalization and self-regulation, and finding catalysts that ignite the production of dopamine may be common goals among clients with ADHD, but they are highly individualized for each person. It is this unique wiring for each client that necessitates a high level of vulnerability and trust between coach and client in order to build skills, resilience, and make progress toward a goal. Given the challenge of delayed externalization of goal-setting and self-regulation, helping a client create a plan of action at the point of performance can present challenges given that a common struggle for students with ADHD is doing what they know in the moment and at the point of performance. It is this exact challenge that I would argue makes coaching clients with ADHD such a fascinating and rewarding practice.

The power in this partnership is fueled by a lack of judgment and the increased accountability through check-ins with the coach to support the client in the process of their action steps. As seen in the UNC Chapel Hill study on Coaching and College Success [23], coaching is a promising intervention for individuals with ADHD and suggests there may be an opportunity to increase retention and graduation rates among this population of students when coaching is introduced to the students entering a university setting.

Case Study – Two 7th Grade Students

My coaching experience has presented many opportunities to assist and study clients in the area of executive function deficits and skill building. I have observed myriad levels of executive function and symptoms related to clients with ADHD and offer a case comparison of two 7th grade students who came to coaching with their parents, each leaving with very different approaches and directions. Bill* was a very bright, intuitive, and enterprising 12-year-old student at a local private prep school. Bill and I began working together mid-semester. His goal was simply to survive 7th grade, particularly his least favorite class, foreign language. For Bill, the school was an institution that seemed to consistently provide negative feedback highlighting his shortcomings. He liked his teachers well enough, but he had no particularly close relationship with any of them to encourage quality mentoring or a feeling of emotional or academic support. When school assignments were nonrestrictive and allowed freedom to demonstrate mastery using any preferred method, Bill soared in his execution of projects through preferred mediums.

Bill's grades indicated that he was bright and nearly always started out strong in school, but he fizzled when the workload went beyond his ability to plan, organize, and sustain effort. Playing to his interests and preference for novelty, we established workflows for his assignments and strategies to build fun and rewards into his efforts. Together, we devised a system for capturing important information that was novel, flexible, and visual. The non-permanence of the sticky notes, for example, was liberating and avoided the common reminder of failure to meet a short-term deadline. At weekly meetings, Bill provided updates as to how he was managing his assignments, and we brainstormed ways to infuse more enjoyment into the demanding workloads.

Working with his parents, the focus shifted from grades to effort sustained and the quality of the work that he was putting out during these periods of study. In addition, I provided a baseline for education on executive function development relative to ADHD, introducing a previously unconsidered perspective into their son's maturation process. Instead of his parents constantly asking him the status of work or staying up until midnight to complete an assignment, the modus operandi shifted to helping Bill find a healthy balance. The focus shifted to relieving stress, diminishing workloads, and finding ways to support the development of Bill's executive function skills. His relationship with his parents became less antagonistic, increasingly supportive, with an eye on his strengths and accomplishments instead of his perceived shortcomings. Bill's home life provided him the structure he needed to find success at home and an opportunity for empathy and support when his academic environment was overwhelming. More important, his relationship with his parents improved and encompassed a healthy partnership in brainstorming and problem-solving that centered on a curiosity regarding challenges and assessing developmental readiness versus chronological age expectations.

Vincent* and his parents came to coaching at a similar age. Academically, he was being provided a significant amount of support, including afterschool tutoring for his homework at his school. His parents wanted Vincent to work on his life skills at home and school with respect to consistency in grooming, organization, impulsivity and sustaining effort for tasks like chores. Vincent's executive function skills were more delayed than Bill's, despite the similar chronological age. However, Vincent received significant support from his school and, unlike Bill, had a home life that was less structured than he presently required. We first began by establishing a reward system for the household that included his younger brother, focusing on one skill at a time with a few easy tasks to build success and motivation. The motivation existed so long as the rewards were immediate, meaningful, and included visible tokens. Taking care to break expectations down to a level that met Vincent where he was developmentally, we created fun cues such as a colorful sign to "Clean Up" placed at the point of performance in the stairwell coming up from the rec room. When a reminder lost its novelty, it was relocated or a new one was created in a different color. In our meetings, we focused on what felt hard about certain tasks and what might make it more rewarding or fun. Vincent was able to express the challenge of avoiding distractions, including the desire to keep playing with his friends often outweighing the perceived punishment for avoiding the clean-up chore. From this, we changed the language and practiced his new external self-talk from "I have to clean up" to "Before we all leave, we need to clean up the basement!" Enlisting the help of friends infused fun and energy into an often-boring task and created a desire to practice the new habit, particularly with a house full of body doubles to complete the task alongside him.

Basic grooming was also a point of contention for Vincent and his parents. Discussing again where the obstacles existed, we created a system of visual reminders at the point of performance (his bathroom and his bedroom doorway). Because Vincent's internal self-regulation was not as mature as his peers, these reminders served as an externalization of his verbal working memory. "When I enter my bathroom, I will brush my teeth" became the internal self-talk when he saw the small reminder on his mirror that said "teeth." Eventually, he created a landing spot in his bathroom that included his toothbrush, toothpaste, deodorant, and a brush to visually bundle these tasks into one complete list of actions. Each of these actions was included in his reward chart to further reinforce the success/reward cycle. The reward chart provided his parents an opportunity practice shifting their focus from his shortcomings and refocus on his accomplishments.

Each week we would explore options for goals and tasks that eluded him. His honesty and cheerful attitude always led us down a path of discovering true obstacles and creating authentic strategies and supports for his goals. It was evident that the stress from fear of disappointing his parents was an obstacle to accessing desired decision-making skills. Providing structure around routines at home was one step that created comfort for Vincent, and small and immediate rewards were motivating when building new skills and habits at home. Using rewards such as extra reading time and outdoor time, coupled with the reward chart managed by his parents, Vincent made progress each week that was on par with his developmentally adjusted arch. Given his significant executive function deficits, the majority of his success still required heavy supervision by his parents. Knowing that they were not as consistent as Vincent required, they ultimately designed an academic solution that led to his enrollment in a boarding school that would provide him with the structure needed for his personal and academic success. Both

Vincent and his family are excited about his next stage, and they have seen a decrease in family stress related to both academic and life performance.

Both students were of similar age and in different stages of executive function maturity, even though chronologically they would be expected to perform beyond their current developmental abilities. Each student presented varying degrees of executive function deficits that were unique, illustrating the wide variance of skills and deficits within students with ADHD of similar chronological age. The stress to perform above their developmental capacity further inhibited their ability to access planning and decision-making skills with ease. Both clients experienced less frustration in the environment in which supports and strategies were implemented; their individual successes emerged through small actionable items achieved incrementally. Yet each student posed a unique set of challenges and strengths, highlighting the further difficulty in providing a one-size-fits-all approach to supports.

The challenges of coaching younger students like Bill and Vincent lie in the variances in parenting supports and structure in the home, academic supports and structures in school, executive function maturity, specific symptoms of ADHD, and personal interests. The younger the student, the more likely that parental or family coaching will also be a component in the whole-child approach to coaching.

Case Study – College Student

My coaching practice includes older students as well, and as seen in studies on coaching effectiveness, coaching can often have a dramatic impact on college students' academic success. Craig* came to coaching with a history of procrastination that left him crippled with anxiety and negative self-talk with respect to his ability to succeed. Even though Craig knew he was intellectually capable of achieving high marks in college, his recent track record painted a picture of a student struggling to manage deadlines, relationships, and workloads. We began coaching mid-way through the spring semester, with Craig significantly behind in four courses. The work itself was not difficult for him, and he had navigated the disability services accommodations to receive the extensions on the previous semester and extensions on the current classes in which he was struggling to stay on top of his workload. Grades for completed tests and assignments were high Bs and As, including the classes that were incomplete. What remained were several incompletes that threatened to derail his academic goals. The issue was not course content but rather his ability to manage and complete the work – predominantly in the areas of managing distractions, sustaining attention and goalsetting. Like many students with ADHD, Craig was not prone to giving himself credit for small successes such as creating a plan, perseverance, and ingenuity when it came to problem-solving his way out of a jam. The sense of urgency activated his brain into action. However, the stress of operating in the red 24/7 was starting to wear on him and his ability to plan his way out of the next predicament was becoming increasingly more difficult and complex.

Craig's goals were to complete the two classes from the fall and catch up on all of his classes this semester. His "reach" goal was to create a system that enabled him to get ahead of the class so that he could come to class with the material already previewed before the lecture. As an older student, his maturity showed in his willingness and ability to navigate different options for support to help him achieve academic success. What was less developed were his executive functions related to activating, focusing, and sustaining effort. These three facets were exacerbated by the struggle to self-regulate in times of stress. Over the course of the semester, we worked on understanding what was getting in his way (stress, distractions, time blindness) and developing a plan of action to tackle each subject through a more visual management of his schedule. Creating a schedule to manage his workload, Craig learned that he thrived on a structure that enabled him a little flexibility to move things around if the day got complicated by personal obligations or poor time estimates of his workload. His desire to jam-pack his schedule with studies initially left him with little time to relax or provide a little selfcare through exercise, sleep, and an occasional break. Talking out his weekly plan, verbalizing what obstacles might present themselves, creating a "Plan B" in the event that something went wrong with Plan A, and creating the habit of a daily email check-in with his coach created a level of accountability that was supportive and enabled him to reflect daily on the progress, success, or roadblocks that emerged from these accounts. It also created a concrete record over time of his efforts, increased productivity, and his path to catching up and achieving all As and Bs in the courses he was completing. The act of externalizing these goals with his coach created a healthy habit to support his needs for sustainable goal-setting and planning. We investigated several technological resources available through his computer and Craig was able to use an electronic whiteboard to plan out his academic calendar and assignments as well as structure his day based on anticipated energy levels, distractions, and even location. He achieved better results at the point of performance by practicing the forward vision of "what-if," internally reviewing possible scenarios when he struggled to initiate school work, and by using natural breaks as rewards for his efforts. When efforts were stalled or weekly goals were missed, we reflected on the barriers, brainstorming alternative solutions or scenarios should those arise again in the future. Within a few months, much of our work had become habit for Craig, and his success in achieving high marks in all of his classes created great motivation for his summer course load.

Despite his mature age, the challenge in coaching college students can often be the negotiation that ensues at the point of performance for a student with ADHD. Often much of the coaching work in this population centers around the same action steps seen with younger students, but it is sometimes coupled with an ingrained habit of negotiation that can hinder the best of intentions. Often there is a period or relearning and building new habits that can be longer than the habit formation period for younger students. Regardless, playing to the uniqueness of the client and building upon successes to increase resilience and motivation is foremost in the process of coaching a client with ADHD [5,13,24].

Conclusion

Given the degree of impairment that exists for adolescents with ADHD, it is clear that a level of support is necessary to accommodate these delays in order to build self-confidence, foster self-determination, and provide the developmentally appropriate scaffolding for the individual at each stage. ADHD coaching shows promise as an active, complimentary support for individuals with ADHD who are lagging in executive function skills as compared to their peers. It is widely known that medication and therapy such as CBT are strong arms in the treatment plan for ADHD; however, the growing body of research around the role of stress and emotions on executive function suggests additional supports such as coaching may be an ideal complement to other interventions for ADHD. The expectation of performance is skewed by the misperception of intent and the challenge in planning and organizational skill due to delays in executive function. The role of a coach can offer an individual the opportunity to practice and develop these skills, building selfdetermination and motivation through supported successes and practice facilitated within a coaching partnership.

Although the bulk of the current research on executive functioning in individuals with ADHD focuses on high schoolers or college-age students, further investigation into the earlier developmental milestones would benefit parents and educators alike as they explore the possibilities of coaching as an avenue for developmental support. The main goal for all concerned is to bring the younger child with ADHD into adulthood with the best coping skills to ensure a lifetime of success.

*All names have been changed to protect the identity and privacy of the subject.

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