

EXECUTIVE FUNCTION DISORDER

Your Brain's GPS Is Glitchy: Why Working Memory Fails and How to Bolster It

Verbal and non-verbal working memory are two of your seven executive functions. They are also the essential batteries powering what Dr. Russell Barkley calls your brain's GPS system — the one that keeps you on track, on time, and in control. Here, learn why ADHD brains so frequently struggle in these areas and what you can do to lighten your cognitive load.

BY STEPHANIE ALEXANDER

Many experts today argue that attention deficit disorder ([ADHD or ADD](#)) is not, at its core, an attention problem, but rather a self-regulation problem exacerbated by weak [working memory](#).

Our brains comprise two systems: the automatic and the executive. The automatic system guides 80 to 90% of our activities every single day; the executive system guides the remaining 10 to 20% and requires purposeful, regulatory effort. As many with ADHD know, this system of [executive functioning](#) can be exhausting; it requires frequent mental pauses and ceaseless self-regulation.

Executive function is so taxing, in part, because it comprises seven distinct brain activities — two of which are verbal working memory and non-verbal working memory (which hinges on visual and spatial acumen). Both types of [working memory](#) influence the amount of effort and type of actions required to modify what our brains would do automatically. The stronger your working memory, the less work your brain must take on with each new challenge.

The importance of working memory is growing within the study of attention deficit disorder (ADHD or ADD), according to [Dr. Russell Barkley](#), author and clinical professor of psychiatry at [Virginia Commonwealth University Medical Center](#). He calls working memory your brain's GPS — an essential system that guides and directs actions, and which is commonly weak in people with ADHD. Dr. Barkley explained this GPS theory in depth in a joint presentation with [ADHD coach Jeff Copper](#) during an [Attention Talk Radio podcast](#) earlier this year. During their talk, Barkley and Copper shared strategies for offloading working memory stresses in the ADHD brain.

How Working Memory Powers Executive Function

Like a GPS booting up for a new voyage, the brain begins any new task by referring to its maps — those sensory images logged and stored in non-verbal working memory, Barkley says. It next tunes in to its instructions, the verbal commands and “inner voice” stored in verbal working memory. The visual images of the non-verbal working memory help the brain to act, and the verbal working memory becomes its guidance system.

[Self-Test: Do You Have a Working Memory Deficit?]

When a brain is storing and synthesizing both types of working memory effectively, it begins to work a lot like Waze or Google Maps — determining the relevance of new information as it arrives and altering the plan in real time to get us to our destination better or faster. It becomes a more powerful tool for self-regulation, for [goal-setting](#) and for working around obstacles in our paths. But to an already overwhelmed brain, all of this working memory can be a lot to process. Because of that, Barkley suggests a strategy called “externalizing” that gets the information out of the brain and into an external environment by transforming both the sensory and the verbal working memory into a physical manifestation. This helps the brain to become less taxed.

Below, Barkley and Copper offer five strategies for strengthening your working memory and externalizing information so that your brain can effectively [plan](#) and coordinate tasks without expending the extra effort.

Digital isn’t always the best solution.

To lessen the burden on your working memory, begin by simply writing things down with pen and paper. Yes, your phone is often nearby, but using technology for all such memory tasks is “... misguided for ADHD in many ways,” Barkley says. Smart phones, tablets, and smart watches – which may be lost, drained of battery life, and not synced – may lead to more stress than they relieve. Instead, Barkley says, “Let’s go low tech. Let’s go back to paper and pencil.” Use an [ADHD-friendly notebook](#) as the external storage device for your working memory. Use imagery, not just language; make [to-do lists](#); keep your schedule; make goals – but do it on paper.

When you do use tech, use it wisely.

For example, Copper suggests snapping a photo of the outfit you’ve laid out for an upcoming trip so that you can recall it quickly from your offloaded, externalized working memory – now in the form of a photo – while balancing other priorities during your trip.

[Is Your Disorganization Out of Control?]

Map it out.

Returning to the GPS metaphor, Barkley suggests creating a [work \(or mind\) map](#). This works well for those who achieve better results with visual cues – particularly when working on longer written projects or reports. Creating an image of something can be easier and faster to retrieve because it can be instantly imagined. For example, sticky notes can make great low-tech systems, because they can be moved around as we think through an assignment, allowing for quick categorization, scheduling, detailing, and rearranging without expending more mental energy. Sometimes, a picture really is worth a thousand words.

Simplify your workspace.

When it comes to controlling distractibility and impulses, working memory is often fragile. Barkley recommends limiting your workspace to only what’s involved in the project at hand. He even suggests that some students and professionals benefit from using two computers – one with games, social media and the web, and one that is stripped down, for work only. A software application that blocks browsing is another tactic that can limit online distractions and keep projects – and working memory – on track.

Take time to discover what's right for you.

We can't all commit to the same systems and expect powerful, individualized results – one size does not fit all. According to Barkley, research shows that, in the average ADHD brain, verbal working memory is twice as strong as visual working memory. For some, however, this isn't the case. Artists, architects, and others who are visually inclined generally find that the opposite is true. (Some even find that their tactile, auditory, and olfactory senses may be harnessed to lighten the load on working memory.)

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