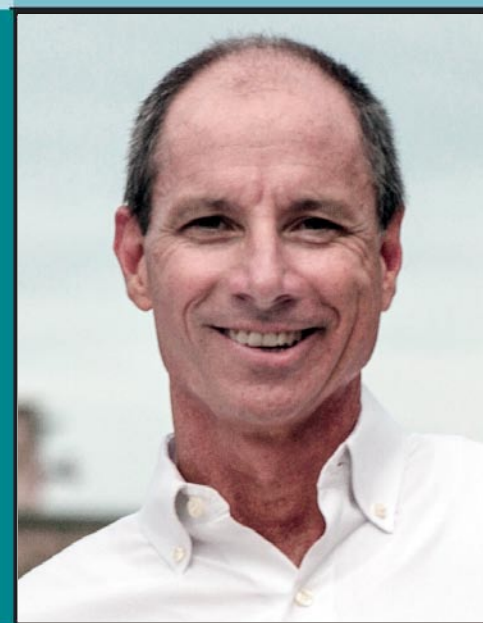


THE  
DR RUSSELL  
**BARKLEY**  
INTERVIEW  
COLLECTION



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*Excavating the Aha! Daily*



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## About the Collection

In the last decade, I have interviewed dozens of ADHD thought leaders around the globe, producing over 500 episodes of Attention Talk Radio, plus more than 300 episodes of Attention Talk Video. In that time, I have found the single greatest source of knowledge was Dr. Russell Barkley. His insights and constructs revolutionized my ability to coach those with ADHD and helped me understand the core fundamental issues that manifest in behavior for those with ADHD.

In short, ADHD is not a deficit of attention, but without Dr. Barkley's insight, it looks like it is. The reality is that ADHD is an issue of self-regulation with a working memory challenge.

In this collection, I share edited versions of my most impactful interviews with ADHD genius, Dr. Russell Barkley.

I encourage you to read and reread the content to fully absorb and digest the knowledge that can help you understand ADHD. One thing we have learned about those with ADHD is that they often know what to do, but they struggle to execute what they know to do. At DIG Coaching, we specialize in helping those with ADHD apply the principal understandings based on constructs I have developed over the years from ADHD thought leaders such as Dr. Barkley.

Warmly,

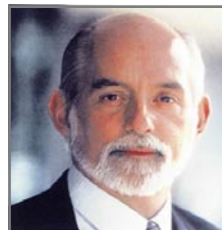
**Jeff Copper,**

*Your ADHD and Attention Coach*

## Who are Dr. Russell Barkley and Jeff Copper?

Russell A. Barkley, PhD, is a clinical professor of psychiatry at the Virginia Treatment Center for Children and Virginia Commonwealth University Medical Center. He holds a diplomate in clinical psychology, clinical child and adolescent psychology, and clinical neuropsychology. He has been featured in seven award-winning DVDs, has presented more than 800 invited addresses internationally, and has appeared on national television programs and radio programs, such as 60 Minutes, The Today Show, Good Morning America, CBS Sunday Morning, and CNN. He has received numerous awards for his contributions to ADHD research and clinical practice. His publications include 22 books, six rating scales and clinical manuals, and more than 300 scientific articles and book chapters on the nature, assessment, and treatment of ADHD.

A complete bio and other facts on Dr. Barkley's extensive credentials are also available on his website at [www.russellbarkley.org](http://www.russellbarkley.org) where his many other publications are also available.



**RUSSELL A.  
BARKLEY,  
PHD**



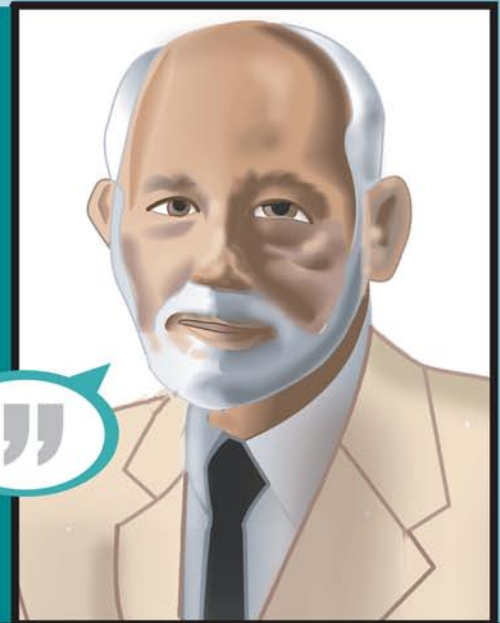
**JEFF  
COPPER**  
MBA, PCC, PCAC,  
CPCC, ACG

Jeff Copper is an attention coach and expert on attention issues, more commonly referred to as attention deficit disorder or ADD/ADHD. As founder of DIG Coaching Practice LLC and the host and founder of Attention Talk Radio ([www.attentiontalkradio.com](http://www.attentiontalkradio.com)) and Attention Talk Video ([www.attentiontalkvideo.com](http://www.attentiontalkvideo.com)), Jeff coaches individuals and entrepreneurs with ADD/ADHD symptoms who are seeking to improve their personal and business results. Jeff is a frequent speaker and thought leader in the ADHD community. He serves on the Marketing Committee of Children and Adults with Attention Deficit Hyperactivity Disorder (CHADD) and on the Editorial Advisory Board of CHADD's Attention Magazine. He is a member of the Professional Advisory Board for the Professional Association for ADHD Coaches (PAAC).

To learn more about Jeff and his coaching practice, and to access his podcasts on Attention Talk Radio and Attention Talk Video, visit his website at [www.digcoaching.com](http://www.digcoaching.com).



THE  
DR RUSSELL  
**BARKLEY**  
INTERVIEW  
COLLECTION



*Working Memory: Your GPS In Life*

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# Working Memory

••••• Your GPS in Life •••••

**Jeff:** *We've done several interviews with Dr. Russell Barkley in the past. Much of it focused on ADHD as a self-regulation issue, as well as emotional self-regulation among other things. A few years ago, I was with Dr. Barkley at an international conference on ADHD, talking about working memory. At that time, he related working memory to a GPS. The concept was so exciting to me that I wanted to interview him on that topic specifically, so that's what we have for you today.*

*Dr. Barkley, welcome to the show.*

**Dr. Barkley:** Thank you so much. Good to be back, Jeff.

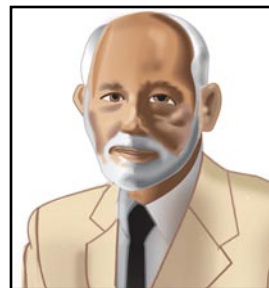
**Jeff:** *I'm thrilled to have you back.*

*Dr. Barkley and I did our first interview together on Attention Talk Radio back in 2011. At that time, he talked about ADHD as an executive functioning and self-regulation issue and how emotions were as much a part of ADHD as attention is, because it's something you need to regulate. It was a spectacular interview, and it changed the way I coach my clients.*

“There's no SPECIFIC definition of executive functioning.”

*Then a year later, we did an interview on his executive functioning deficit disorder construct, talking about ADHD as an executive functioning issue. The way he went through it was brilliant. He said, “Listen, there's really not a specific definition of executive functioning.”*

*As he worked his way through that, he explained how experts agree self-regulation is a major executive function. They agree on a definition, which is that self-regulation is the ability to direct an action back on yourself, to change your behavior, to change the future. It's a future directed act.*



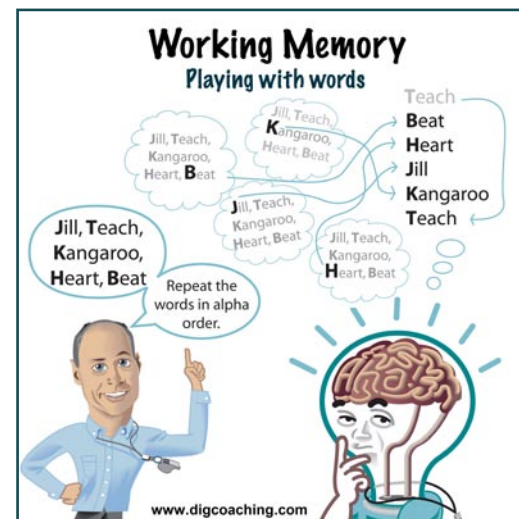
An interview with ADHD Genius,  
**DR. RUSSELL  
BARKLEY**

*Understanding that characterization forever changed my coaching, because I began to look at those with ADHD not as having a deficit of attention but, rather, a self-regulation problem. The concept was fascinating. I began to see what they always paid attention to that nobody else seemed to notice.*

*Another thing that was fascinating that I've learned over the years is how much working memory impacts those with ADHD. Dr. Barkley and I have done some videos on this, as well. In one of those videos, I described an exercise that I use when I'm coaching people where I state five words and then ask them to repeat the words back to me in alphabetical order.*

*After the exercise, I point out that they haven't learned anything new. Basically, they had to load the words in their mind, pay attention to them individually, and reorder them without forgetting them. That's an executive function, which is really working memory.*

*It's fun for me because, when we do this exercise with someone for the first time, they actually can see their working memory as a process.*





*You'd think they would be able to picture the five words... which are bumblebee, hippopotamus, kangaroo, teacher, and zebra... but it's interesting to me over the years that half the people with ADHD either get the order wrong or forget a word.*

*Another thing I do a lot is talk about ADHD being kind of like booting up your computer in the morning. If you get distracted, it's like the computer gets unplugged and then you have to go back and reboot the computer. It's really effortful to start all over. I use that analogy to help those with ADHD understand transitions a little better and then coach them around it.*

Dr. Barkley: They're both very good strategies, thanks.

Jeff: *It's a lot of fun for them to see that. But back in the last conference, you and I were talking about working memory as a GPS. It was fascinating to me because I'm taking the concepts that I'm working on, and when you started talking about GPS, new information came in. I really wanted this opportunity to give you the floor to talk about that and speak more about working memory, because more and more to me ADHD is a self-regulation issue with a working memory challenge. And I think the way you described it is perfect. So, would you just walk us through the concept of working memory from your perspective and the GPS analogy?*

Dr. Barkley: Yeah, I'd be glad to. Thank you for the opportunity to do that, Jeff. The way I think of it is, first of all, people need to understand that there are seven major executive functions that the brain has installed in it that develop over time. So, it's like pre-installed software that comes in your computer, to continue with the sort of computer metaphor here.



Of these seven, two of them involve working memory. One is non-verbal, which is often thought of as sort of a visual spatial picture-type working memory. The other is verbal working memory.

And modern day neuropsychology looks at these as kind of what I call the cognitive computer view. They're just sort of storage devices where we can hold information in mind in the storage device and even manipulate it if we need to, like you were doing with your example in order to accomplish a goal. Because after all, that's what all seven executive functions exist to do.

They exist to help you regulate your behavior, so it's self-regulation over time to accomplish the goal and to meet the future more generally. It's a future directed set of devices here that we're talking about, and this computer view of brain functioning has been very useful for the past couple of decades. But I think it's kind of maxed out now. We really haven't seen any further progress.

## THE 7 MAJOR EXECUTIVE FUNCTIONS

1. VERBAL WORKING MEMORY
2. NON-VERBAL WORKING MEMORY
3. SELF-AWARENESS
4. INHIBITION
5. EMOTIONAL SELF-REGULATION
6. SELF-MOTIVATION
7. MENTAL PLAY

*It's a future directed set of devices here that we're talking about."*

Also, it can be criticized for a number of reasons we don't need to go into here that have to do with the fact that the brain really isn't a computer, even though it's helpful at times to think of it that way. Brains have motives, they have strategies, they have an evolutionary history. They exist for very special purposes, especially social purposes in the case of humans, and computers don't involve any of that.

So, I think of the working memory types, the verbal and non-verbal, as part of this suite of mind tools we call the executive functions. Now, where my view differs, as you know, from sort of mainstream cognitive views is I look at all

the executive functions as things we actively, effortfully have to do to ourselves to manage ourselves. And while they may seem somewhat automatic, they take effort. And that's because we are using them to direct actions at ourselves to modify what we would have done automatically.

And the reason we're trying to modify our automatic behavior is we're trying to make our future better. We're trying to accomplish goals. We're trying to get somewhere. We're trying to improve our welfare over time so that we're basically trying to improve the rewards and maximize them for our welfare and avoid the hardships and adversities and penalties, if we can do so, that may lie in the future if we don't change our automatic behavior.



*Actions to the self, something we are doing to actively manage ourselves."*

So, I think of them as actions to the self, something we are doing to actively manage ourselves. And that's a very different view. It's more of a Vygotskian view out of Russian neuropsychology than it is an American view, which tends to be sort of computer based. So, let me just explain these two actions and then we can stop and see what questions you have.

The first one, which is non-verbal working memory, I look at as imagery to the self. You're seeing to yourself, and you're using your other senses as well, such as hearing and taste. But the most important to humans is vision, which is why there's a lot of visual imagery space put aside in the brain. So, we're holding images in our mind.

And then the second thing that develops a little bit later is we start talking to ourselves, originally out loud. But as children develop, this becomes more private speech. It becomes our mind's voice.

### **NON-VERBAL WORKING MEMORY:**

*Visual imagery.  
You seeing to  
yourself.*



### **VERBAL WORKING MEMORY:**

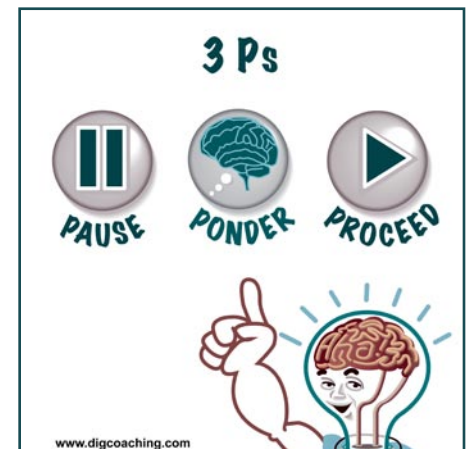
*The mind's voice.  
You talking to  
yourself.*

So, we're doing two things to ourselves to create what people call working memory. We're using visual images that we're activating in our mind and using them to guide us. Usually these are images related to what we're trying to do, and they're images of our past experiences that are relevant to what we're trying to do. And we're talking to ourselves and giving ourselves guidance and rules and directions and admonitions as we go through this. And that's where I came up with the GPS metaphor, which I can explain in a moment, but I want to stop and see if you want me to clarify something.

Jeff: *Well, I just really want to emphasize, in my experience as a coach, where you talk about the effortfulness of the thoughtful brain, you said it before. Think of the brain as a two-level system. There's the automatic brain and there's the executive functioning brain, which is really effort focused. It's got to step in and override the automatic brain. And I'm sharing that because, as a coach, I find it profound when I describe to people that you have automatic things, like habits and stuff that are really, really good, because you want to save the effort, or your fuel if you will, to use for those really difficult kinds of tasks.*

*And there's a fun exercise that I do with people particularly that don't have ADHD, where I asked them to prepare a meal, eat the meal, and clean up after the meal, using their less dominant hand. And I do that for them to actually notice how it's very effortful, because they have to stop and think about what they're doing all the way through it. And it is very, very effortful, but it's fun to listen to them struggle with it.*

*I just really want to accent that point because, if you're looking at ADHD as a self-regulation issue, it's very*



effortful. And when we start talking about working memory, particularly when you've got to get involved in something that's relatively complex, like maybe doing your taxes, it takes a lot of mental effort actually to override that urge to go do something different.

“If you're looking at ADHD as a self-regulation issue, it's very effortful.”

So, I didn't really want to do anything more than just accent that point and say from a coaching perspective, my biggest issue is trying to help people to pause and to choose what they're doing. That pause is the hardest part, but that's the part where we get the thinking brain to override the automatic. So, forgive me, but I really want to emphasize that because I like how you articulated that in the past.

Dr. Barkley: Well, Jeff, I'm glad you did because that is the initial distinction we need to make. There are two brain systems. If we want to simplify them, you've spelled them out very nicely, the automatic one, which guides about 80 to 90 percent of what we do every day.

And then there's the effortful executive brain, which is the other 10 to 20 percent that kicks in when, as you explained nicely in your exercise, you're asked to do something that's novel. It's different; it's not automatic. You've got to think about it. And you're precisely right, you can't think about it if you don't stop.

So, as your mother said, “Stop and think before you act.” And the first word there is “stop.” There ain't no thinking if there's no stopping. And the thinking is the executive part that kicks in, which is why inhibition is so crucial to all the other executive functions. Because without it, they don't stand a chance to take over and

## THE TWO-BRAIN SYSTEM

**The automatic brain,**  
*which guides 80 to 90 percent of what we do each day*

• • • • •

**The executive functioning brain,**  
*where we have to effortfully override the automatic brain and think*

help you self regulate your behavior.

“There ain't no thinking if there's no stopping.”

The other thing, I think that's a useful point to make here before I continue with the GPS metaphor is the effortfulness of this. This is why people with ADHD, when they come to our clinics, tell us that it takes them seven times more effort to do what other people find easier to do. And it's because their executive system, as you pointed out, isn't working as well and they have to really concentrate and apply effort to do the things that other people find somewhat easier and less effortful to do.

And they're exhausted. I mean, by the end of the day, they're worn out. And as you pointed out, if you're burned out and your fuel tank is low, you're going to start to have a lot of regulatory deficits and failures, because you just don't have the effort there anymore. And it's no surprise that we see people with ADHD turning to other ways of trying to cope with that, whether it's alcohol, whether it's marijuana, whether it's exercise, whether it's the Internet. They're trying to distract themselves in such a way as to give that fuel tank a chance to refuel itself. And they're not always the most useful ways. But we can get into that some other time about the role of ADHD in addiction proneness.

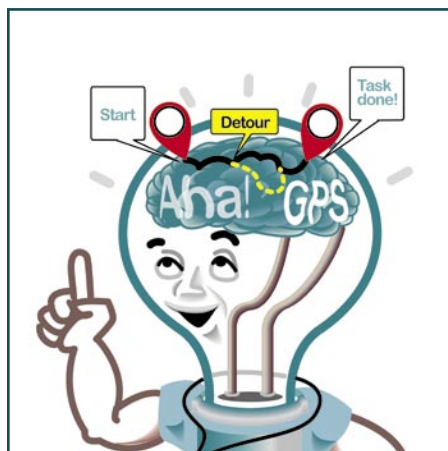
“If you're burned out and your fuel tank is low, you're going to start to have a lot of regulatory deficits and failures because you just don't have the effort there anymore.”

Jeff: I want to emphasize the effortfulness of thinking in working memory. Dr. Barkley has got a great way of describing this to us that he's going to share. As you listen to this, realize that working memory is a lot of the challenge and it does require effort and it does take a lot from those that are out there. I do a lot of coaching around how to make it easier to do that. With all that, Dr. Barkley, take it away. Share your GPS metaphor. Put it in context.

Dr. Barkley: I sure will. Thank you, Jeff. I appreciate the opportunity. The reason we're talking about this is, as you know, research shows that the executive system is about 30 to 40 percent delayed in children developing their executive system into adulthood. It tends to level off at about 30 years of age. If you haven't achieved a high functional level at that point in your executive abilities, then that tends to continue throughout the rest of your life. You remain less capable of using these executive functions, particularly working memory throughout your major life tasks.

When we sit down with patients, adults as well as families and children, to try to explain this to families, sometimes they struggle a little bit, particularly with the working memory part of it. One metaphor that struck me, largely because I was increasingly using the device when I travel, is the GPS in the car. I found it to be a perfect example of what the brain is doing when we use working memory to guide us.

As we all know, a GPS, first of all, involves putting in the address you want to get to. That's the goal. That's where you want to be in the



future. It's exactly like what we do with our executive system. We identify something, a goal, that we're trying to get to. Now, what we have to do is figure out how we're going to get there. What's the route going to be? What are the steps? What's the sequence? How much time is it going to take?

We activate that address in our GPS and it automatically

starts bringing up the relevant images of the map of the past. It's already in there, but it's just bringing up what's relevant. It's not bringing up the whole planet or the whole U.S. or the East Coast. It's just bringing up the maps, the geography and the roads between where you are now and where you want to get to later. The first thing the GPS is doing is using imagery, just like our brain does. It uses visual imagery.

*"The GPS is already in there, but it's just bringing up what's relevant."*

The second thing it's doing is it's activating only the images that are relevant to getting from where you are now to where you want to be later. Those are the steps you're going to follow.

We like to imagine them. We like to think about what those are going to involve. We can manipulate them if we need to to get to a better place or to get there more quickly, but it's imagery. That's what we're looking at on the screen of GPS, whether it's in your cell phone or built into your car or in an actual GPS device. It doesn't matter. It's images that you're using to guide yourself from Point A to Point B to accomplish that goal.

Notice the second thing that all of us rely on. Because we can't keep our eyes on the image at all times, we enhance the GPS ability with words. The GPS device is now talking to you, and that's exactly what your mind is doing. You're using self-speech, your mind's voice, to enhance these images, to give you directions, to tell you rules.

A lot of us do things as well, if not better, following verbal instructions than just visual instructions. Particularly we find many people aren't very good at spatial relationships and they tend to like to have the verbal stuff over the visual stuff, but we're doing both. We're using the verbal instructions, the self-talk, and the imagery of getting to the goal. When you combine them, you have a very powerful device for getting to the future, for setting and accomplishing your goals, for looking at the steps it takes to get from here to there, changing those steps if there's an obstacle.

*"We're using the verbal instructions, the self-talk, and the imagery of getting to the goal."*

What if there is construction? What if there's a breakdown? What if there's an accident? The GPS, particularly if you're using a program like Waze because it has real time updates, is going to divert you around the obstacle and find alternatives to still get you to that address and that goal. We do the same thing. We start to play with our imagery when we



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**You can't keep your eyes on the image at all times, so you enhance the GPS ability with words, and the GPS device can talk to you.**

encounter an obstacle because something came up we didn't expect in getting to the goal. Now we need to find a route around the obstacle and continue toward that goal. That's exactly what your mind, your brain, is doing using these two working memory devices.

To summarize, boy, did we find that connected with our patients and our families, because very few

people do not know what a GPS is and have not used it. They could immediately connect to this metaphor, to this example in understanding the power of the working memory system in helping us accomplish our goals. That's why I've gravitated to it more and more in explaining this part of the executive system to people.

*Jeff: It's such a vivid example, and this is a situation where the goal is to get somewhere, to an address or a place, and we can look at maps and stuff like that. Imagine that you're listening to this show that you're trying to basically GPS your way to a goal and it's not something that might be as visual. It might be a little bit more intangible. Imagine that this GPS, the picture of the map and the writing, that stuff is actually taking place in your brain.*

*Dr. Barkley, earlier I talked about how I would give five words to people for them to hold in their minds and to manipulate them. Often, I'll say, "What would it be like if I gave you 10 or 15?" They'd get overwhelmed pretty fast. The externalization of this to a GPS enables you to see it and relieve your mind of having to create that scenario or visualize it in your mind to go there. It takes the effort out of it by externalizing*

*this very much.*

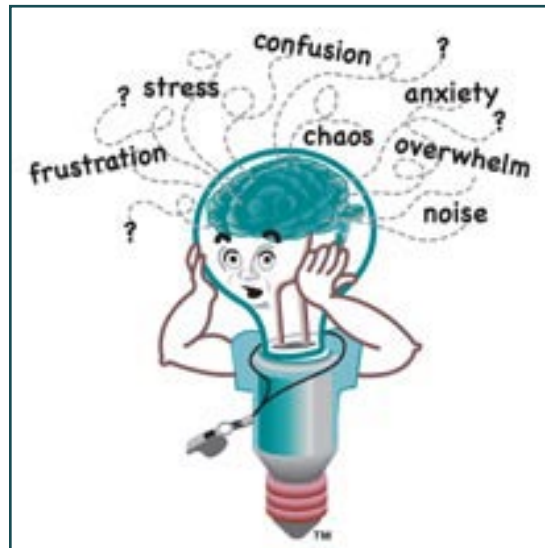
*I've also learned sometimes, when people are talking about this, they're externalizing that self-talk, which actually helps minimize the burden to their working memory. I'm not so sure I'm doing a real good job with this, but I guess my point really is that this is a visual thing. In times where it's not visual, imagine this is going on inside your head and how complicated that can be. That's where those with ADHD really struggle. Is that making sense?*

*"When people are talking about this, they're externalizing that self-talk, which actually helps minimize the burden to their working memory."*

Dr. Barkley: Yes, absolutely. I think for those people who aren't familiar with the word, Jeff and I use the word "externalizing" to mean get it out of the mind. Offload it out of your head and your brain and use props, cues, devices in the environment to help guide you. That can include talking out loud to yourself, as well as arranging a to-do list, arranging cues, putting pictures of your goal. If you're trying to buff up at the gym, maybe you put a picture of a hyper-muscular person on your refrigerator to look at periodically.

Those are all ways of using images and words, lists, self-talk, images, pictures, cues, they're all ways that we enhance our GPS, our working memory, by using external devices, rather than relying on just the mental devices that may be as Jeff pointed out, very weak, inconsistent, not always effective, easily disrupted by distractions. That's going to be a lot more powerful if you use external devices.

That's what the word "externalizing" means to your viewers in case they're not familiar with it. Get it out of the brain, make it physical, and put it in the external environment. The power of external information devices as stimuli is much greater than mental content is at guiding behavior. Thanks for pointing that out.



*“Get it out of the brain, make it physical, and put it in the external environment.”*

Jeff: *In the exercise I do where I give people the five words, when I'm giving them the instructions, I say, “Number one, I don't want you to write it down.” If they wrote it down on index cards, then they no longer have to remember the words and they could order them on the table. The other thing I do is I tell them, “If you feel the urge to repeat the word after I say it, please don't.” Then I go through the exercise.*

*I think I heard this at the CHADD conference, how you talked about three-year-olds. When they're playing, they're often doing something; they're talking that self-talk. They're talking to themselves, the building, but the cool part developmentally is that we can hear them. They are actually verbalizing. They're talking out loud.*

*Somewhere between ages three and five, if I remember correctly, that public conversation that they have with themselves becomes privatized. It moves into the prefrontal cortex, which is the self-talk. In a similar fashion, I understand play happens the same way. You begin to visualize and simulate it.*

*What I've learned in working with people with ADHD, is that, when they're talking a lot, I begin to listen to the function. I find a lot of times that their working memory is not powerful enough and so they do a lot of talking out loud or bouncing their logic off somebody or just swirl it around. It's funny because often people tell them to get to the point. But I'll say, “No, just talk out loud for a minute or two.” It's amazing to me how they relax, and they can think a lot quicker, a lot faster because they're externalizing that, and their working memory is a little less taxed. Did I represent that correctly?*

*“The person with ADHD really should be encouraged to externalize, to talk to themselves, out loud if necessary.”*

Dr. Barkley: Absolutely. That external speech, although it's a sign that you're going back in development to use something that other people had used earlier and now have moved into using a mental function. They talk

in their mind rather than out loud. The person with ADHD really should be encouraged to externalize, to talk to themselves, out loud if necessary. You'll often find that when they're talking too much, that's usually what they're trying to do is to use this external language, to guide them through time. They can do it better than they do, as you know, they often don't get to the point as quickly as others. You can help facilitate self-talk by making it more efficient in writing it down or getting to the key points.

This idea of making language external, just as we talked about making pictures external, is very important. It's very powerful. It's a great piece of scaffolding, as I call it, of external structure that people with ADHD can use to augment the weaker internal functions of the working memory system. These are very good points. There are some other things that they can do as well. I'm sure you have some suggestions and so do I.

*“The idea of making language external, just as we talked about making pictures external, is very important.”*

Jeff: *Dr. Barkley, one of the things that I've learned and found fascinating working with people with ADHD is the need to externalize things so that their working memory is a little less taxed. So, they put things out as visual reminders because out of sight is OUT OF MIND. Often when they're working on a project, they leave things out as visual reminders of where they left off to help them. It helps them boot up their working memory and pick up where they left off.*

*I know for me, when I'm coaching people each individual is like a project. Every time I get on the phone with somebody, that booting up of my computer, the recalling the history and the conversation that I had with them last week, is so difficult from scratch. What I do is, every time I coach somebody, when I'm done, I look at my notes and I dictate a stream of consciousness.*

*And I call it a stream of consciousness, but I just look at the words on the page and the buzzwords and it's transcribed. Then, right before I meet with them again, literally like a minute before, I skim through my dictated notes, the stream of consciousness. And what that does is it loads my working memory. As I described, I don't have to reboot my computer. It just pulls it out of hibernation and then I'm present. I can remember what we were talking about last time in a really efficient manner.*

*And the same way sometimes I see they put projects out and there's visual reminders of where they were when they last left the project so they can get back into it a little bit quicker. And with that, it's fascinating when I do this. Often, I find they have a lot of stuff out because they have the visual reminders of different things, but at some point, it becomes overwhelming.*

*So, in one sense they leave things out as visual cues to aid their working memory. On the other hand, if they have too many things out, it can be a hindrance and becomes overwhelming. In such instances I've actually coached people to cover things so they can't see them but remove the cover at scheduled times so they can see the cues. What are your thoughts on that related to working memory? Would you agree with that?*

Dr. Barkley: Absolutely. And that's why many people, coaches and clinicians included, have realized the value for some people, particularly if they're working at home, to have people come in who are workspace organizers or other people who specialize in time-and-motion types of studies to just take a quick look at your workspace. And it's helpful to have somebody else do it. You can do it yourself, too, but having somebody else do it can also be beneficial.

And look at how you have your workspace organized. Is it the most effective for the purposes that you've just talked about? Would it be better if you simply kept the work to be done on a different desk and then simply went there, picked one up, walked to your workspace desk, and that's where you work on one project at a time while keeping the other ones in some kind of sequence in priority?



*Keep one computer to play games, surf social media, and browse the Internet. Use a second computer for work. It has no games on it. You can even install software to help with your self-control.*

Because you're absolutely right. The penchant for distractibility, the poor impulse control that goes with that distractibility, the weak working memory that can shatter so easily like thin glass when there's a distraction for somebody with ADHD. And then there's nothing in working memory because it gets erased after that, and now you're off task and you've lost your goal and you don't know what you're doing. All of that comes into play for kids and adults with ADHD.

So, this idea of keeping the workspace limited to simply what is involved in that project is so crucial. It even goes so far as to tell people to have two computers. You keep one computer where you play your games, you surf your social media, and get on the Internet.

The other computer is for work and it has no games on it. And you can even put in software applications like Self Control and others that block your browser from going to particular websites you're fond of frequenting. But there are various ways of keeping one computer for work and the other for games that play right into your recommendation of how to organize my workspace and my life more generally so that I can accomplish my goals with less distraction. And those are wonderful ideas.

Jeff: *Yes, I'm really glad you brought this up, because this brings up another issue that I'm really interested in your thoughts on. We're talking about working memory. We've described it and I often see it. In fact, my son has this issue. He goes to school and because everything is online now, what will happen is, he's reading something on his computer screen and maybe he's holding something in mind that he needs to compare to something else. Now, he's got to read it, he's got to hold it in mind, then he has to follow instructions to click on another browser window maybe, scroll down the page, looking for what he needs.*

While he's remembering that original thing, these instructions are coming and they're taxing his working memory. Then he's searching for something, and often he's forgotten what he was originally holding in his mind.

The reason I bring this up is because I find that people with ADHD, when they're on the computer and they're having to click and scroll around, it's exceptionally taxing to their working memory. Whereas in the old days when I grew up, we would just print it off. And if you had two pages on a table right next to each other, your eyes just dart from one side to another and you can actually highlight it and you can absorb that information. And so, sometimes, high tech for ADHD is low tech by printing on paper, because it's less taxing to the working memory. And more and more I'm finding society pushing people to these electronic devices that are making it more difficult for those with ADHD because of their working memory. So, can you share your thoughts on this?



*Sometimes, high tech for ADHD is low tech by printing on paper, because it's less taxing to the working memory."*

Dr. Barkley: Yeah, precisely. I tell this exact same thing to audiences, to professionals, to conferences. I was just in Israel lecturing at a highly successful conference. It was one of the points I made in describing how to help people with ADHD is that this drift toward a sort of a glamorization of high tech as the way to go for everything I think is misguided for ADHD in many ways. It doesn't mean it can't help some people, but this idea that this is all going to get resolved by developing apps and using smartphones and tablets and smart watches and other ways, that this is going to be the way to resolve ADHD issues.



*The drift toward a glamorization of high tech as the way to go for everything I think is misguided for ADHD in many ways."*

I think we know it doesn't work very well, and you and I both know why. They have to charge up the device, which they may or may not do. They have to upload the information in the device to begin with, which, of course, they're probably not going to do or not do well, and somebody else is going to have to do that. They have to remember where they put the device. "Where the heck is my cell phone?" "Where is that digital memory stick? Is it in my car? Is it under the seat?"

These are people who have trouble finding their car keys. You can imagine how often they lose their technology and smartphones. So high tech, although it has a glamorousness to it these days, I think for ADHD it's probably not going to be very good. And if you're going to use it, at least augment it with your suggestion. Let's go low tech. Let's go back to paper and pencil.



*"Let's go low tech.  
Let's go back to paper and pencil."*

Here are two things that we tell adults with ADHD to do, and even families as their children move into late childhood, early adolescence. Two strategies they can use. Number one, let's get a journal, let's get some blank paper. You need to be carrying around a blank notebook with you into which you write everything you agree to do and everything you are told to do. That becomes your working memory. You're offloading your verbal working memory into that notebook. And that notebook goes with you everywhere.

I don't care if you're naked or not, this thing is chained to you. Because this is your external storage device for your working memory. So, let's go back to low tech paper and pencil. Let's go back to to-do lists and journals. Even week-at-a-glance calendars, those beautiful little paper calendars that everybody used to use before they got Outlook and other calendar devices. So, go low tech.

The second thing is to use imagery, not just language, because for many people, an image is worth a thousand words. So, let's say that you've been asked to do something. All right, at the bottom of the paper write the goal. Now start at the top of the paper, this is where you are. Now start to draw some lines between the top and the bottom. "You are here," you can put that



at the top of the paper, and this is where you need to get.

What are the things that you need to do to get from the top to the bottom? And you can literally start to draw a map like your GPS does. Draw a line to the left for the first step that you think needs to be done. And either in a couple of words or with a picture, some people prefer to draw a little hieroglyph, a little reminder, a doodle, if you will. It doesn't matter what it is, choose your preference. And start to see if you can't think out the sequence.

And maybe you have to reorganize it. Maybe you need to draw the lines between the top and these intermediate steps differently because they have to be done in a different sequence. But make a map, make an external map like your brain would have done with a mental map, and use the visual part of the GPS, not just the verbal part of the GPS.

And when you use them in combination, it works very well. Many people talk about the verbal part, the to-do list, the talking out loud, the calendars, and that sort of thing, and the auditory reminders that come with using your calendar.

That's all really great, but schools have learned that when projects have to be done, like written projects or reports or things like that, it helps to also create the map for many people with ADHD. Because I'm telling you, once you have that map and that stays in front of you, that's more compelling than your language is. Remember, language is ephemeral. Once you say it, it disappears in reality, unless you've written it down, whereas the image is always there. So, do both. We need to do both, and I think you'll find it's a more powerful combination.

*"Once you say it, it disappears in reality, unless you've written it down, whereas the image is always there. So, do both. We need to do both, and I think you'll find it's a more powerful combination."*

Jeff: *Yeah. I want to take exactly what you said and just take it to another level for people to visualize. Dr. Barkley talks all the time about point of performance. And the reason you keep that notebook with you is that,*

*when you have that idea, you've got literally like a second and a half to externalize it or it's not going to happen. So, it's absolutely brilliant.*

*One of the things that I've learned over the years is if you can walk around with Post-it Notes, it's really, really good. Because when you have an idea with a Post-it, you can actually put it on a page, and you can move it around. Because if you have a list and then you're having to rewrite that list, number one, it taxes your working memory because you have to pay attention and it makes it more difficult to self-regulate. But if you've got a Post-it, you can move it from one sheet of paper as a list to another.*

*Another thing I've learned over the years is, like Dr. Barkley said, to map things out, but if you put a bunch of ideas on Post-it Notes and put them on a poster board, you can rearrange them relatively easy and categorize them without doing it in your mind. You're doing it on the board where you can see it. And the cool thing about a poster board is that you can roll it all up with a rubber band around it so that it's not out all the time. Then you can roll it out and see your maps on a regular basis.*

*Something else I've learned, Dr. Barkley, is that I was coaching a client and we were talking about the idea of drawing a picture for her to-do list. I suggested it as a homework exercise, and she came back to me and she said, "You know, it's amazing to me, I never really realized. It worked."*

*She said, "A letter is a symbol. And when I look at the symbols of a word, I put the word together and that's a symbol, and in a sentence, I assemble the words, which are symbols, and I build a picture in my mind what that task is. I would go off and do that task, but I would get distracted and it would evaporate. And I would have to go back and reassemble the picture effortfully later."*

*Going back to our conversation earlier, she said, "After a while I just wouldn't go through the effort." Whereas by drawing the picture, she didn't have to go through the cognitive work of building that picture in her mind.*

*And it's funny because I've worked with some people before who were literally organizationally challenged. If you have a binder and it's labeled, "Bank of America,"*

*it's invisible because you've got to assemble it and associate it. But if you have the logo of Bank of America, there's that association and it speeds up that whole process.*

*I'm sharing this with everybody, which sounds like I'm all over the place, but this is the type of stuff from a metacognition perspective when you begin to witness what's going on. You're not just doing the prescribed list. You're taking a look and saying, "How can I make this thing work for me?" And as I described, the Post-it Note thing I found to be very, very helpful because you can move it all over the place and you don't have to rewrite it all out, which is taxing and makes it more difficult for a person to self-regulate. So anyway, Dr. Barkley, anything you want to add to that?*

Dr. Barkley: Well, absolutely brilliant. I wish I'd put some of that in my last book, *When an Adult You Love Has ADHD*, and my book for adults, *Taking Charge of ADHD*. Both of those, I could have added a few more of these. So, don't be surprised, Jeff, if I pirate some of this for the second and third editions of these books. But I think this is a wonderful idea. I think the Post-it Notes are a brilliant idea because, unlike a static picture, you can move the components around very quickly without erasing and redrawing and that sort of thing. You can take it with you. And then you can even put the Post-it Note at the point of performance.

*Post-it Notes are a brilliant idea because, unlike a static picture, you can move the components around very quickly without erasing and redrawing and that sort of thing. You can take it with you. And then you can even put the Post-it Note at the point of performance."*

I once got in a car with a drug rep who had ADHD, and she had 30 Post-it Notes on her dashboard, but that was the point of performance. And they were in sequence as to whom she needed to visit at what time, where, and she even had key little notes on there about what she needed to emphasize in that next meeting with that doctor.

And it was absolutely brilliant. The only thing that scared me is she

covered up the speedometer. So oftentimes she didn't quite know how fast she was going. As you know, adults with ADHD have a propensity to speed anyway. But it exemplifies that brilliant point about the value of sticky notes or Post-it Notes. A hat tip to 3M there for creating the product. But that's great.

And then I think, let's come back to this point. If you can create an image of something, it is far easier and faster to retrieve that because you can just imagine it instantly. And within the image are all of the pieces of information that you would have had to reconstruct verbally, and now you don't have to. Which is why back in the days before we had paper and pencil, like in the Greek and Roman times, people used to teach this device as a way to remember very complex sets of information.

*If you can create an image of something, it is far easier and faster to retrieve that because you can just imagine it instantly."*

And by the way, waiters and waitresses know to use this memory strategy when they're in the restaurant business taking orders from six people at a table. They create a room in their mind, that's a picture, and then they put things in the room in the sequence they need to remember it. And now all they have to do is remember the picture of the room, and they can follow everything out in the sequence they needed to. So those are absolutely great strategies that even typical people can use for enhancing their self-regulation and goal directed behavior.

Jeff: *So just playing off of what you're saying is, when people with ADHD have to pack for a trip, often they have to visually imagine themselves walking their way through the trip, which can be very, very effortful for them. And sometimes where they procrastinate, they go do other things and they wait till the last minute. This is all just working memory based. But rather than having to construct or simulate your vision of what the future is, do this.*



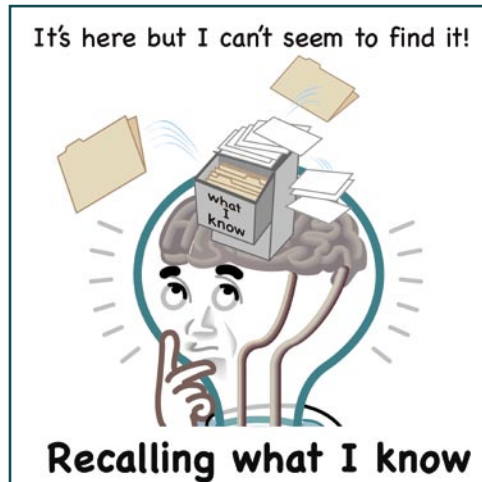
*When people with ADHD have to pack for a trip, often they have to visually imagine themselves walking their way through the trip, which can be very effortful for them.”*

*My son and I used to do a lot of Boy Scout backpacking and camping. I was a high adventure scout master. One day he and I made a list of literally every piece of camping equipment we had in the house. And when we were going camping, we’d print off two lists, one for him and one for me.*

*And the first thing we would do, if we were backpacking, we would cross off the list everything that was for car camping that we wouldn’t need. And then what was left, we would put it in our backpacks. And I’m saying this because it relieved the need for me to go through the visual imagery to imagine what I had. I had documented it, and it was a lot easier to cross the stuff off. It made it really, really simple.*

*Again, we’re taking a look at working memory and we’re trying to make it less taxing so that we can perform. And I’m just sharing that because when you talk about that imagery, sometimes it’s very effortful for that person to imagine, to walk their way through that. And if you can reduce some of the dependence or even have somebody talk to you while you’re doing it, these are the types of strategies that can really benefit those with ADHD.*

Dr. Barkley: They sure do. And let’s remember, one of the things that’s coming out here is that there are individual differences even among people with ADHD, in which of these two capacities is stronger. For some people, it



is going to be the verbal side and the listing. In fact, research shows that verbal working memory is twice as good as visual working memory in the average person with ADHD. Or to put it differently, the visual system of working memory is twice as bad as the verbal system for most people, but not all of them. There are these differences.

Artists and other people find their visual system is better than their verbal system, and so do many other people who are visually inclined anyway, even without ADHD, such as architects and mathematicians and physicists and other people who deal with mechanical things and visual things. So, let’s keep in mind, what Jeff and I are talking about is, you need to discover which of these strategies seems to be the more powerful for you and not necessarily rely on what was working for somebody else.

So please try them both, see which one works. As Jeff pointed out, for him and his son for camping, the list was better. I’ve had other people say, “Look, once I’ve laid out on my bed all the things I need for an upcoming trip, I take a cell phone picture of it. And now from that point on I have a picture in my smartphone of what I need to take on the next trip. And then I can certainly supplement that with whatever’s needed for this specific trip, but there’s everything visually.”

You can also make a list of it, as well, but try to discover for yourself which of these is probably the more powerful for you. You’re probably already going to know, because you tend to fall back on these things automatically if you’re doing things, whether you prefer images or words or words and images.

Some people would rather ask somebody for directions than boot up their GPS. Other people, like me, love the GPS because it has both the verbal and the visual image in it, but there are people who still like to follow verbal directions, and that’s because their verbal system’s stronger. So, discover that for yourself. It’s a lot about everything else. We’re all individuals, and not everything that works for one works for the other.

Discover which strategy seems to be the most powerful for you.

*There are individual differences even among people with ADHD.”*

Jeff: We need to pull this thing together, and so, Dr. Barkley, we talked earlier that I have this exercise where I'll tell a person, "I'm going to say the words teacher, hippopotamus, bumblebee, zebra, kangaroo," and I'll ask them to repeat them back to me. And so often what I do is I'll ask them how they remembered the words or the things I said. And, again, my point here really is the individual differences. Some people say, "I could hear the echo of your voice in my mind and that's what helped me remember what the word was."

Dr. Barkley: Right. So, they're repeating the words to themselves. Right.

Jeff: Yeah. "I could visualize the words." All the words I said they actually visualized. One woman told me, "I imagined a teacher with a bumblebee flying around her head and a hippopotamus, zebra, and a kangaroo sitting in the chairs." Another person actually said that they remembered it based off of smell.

*What's going on inside your head, only you can witness it. Nobody else can, and so you can't witness anybody else."*

And my point really is that what's going on inside your head, only you can witness it. Nobody else can, and so you can't witness anybody else. You have nothing to compare it to.

And I know, Dr. Barkley, one of the things that I do when I'm listening to people, I'm trying to get out of my head what works, I'm trying to help them. I watch their behavior and what they instinctively go to for clues to mirror back to them. And I actually have worked with people before where their to-do list was smell-based. Believe it or not, crayons have a smell to them. We were using those because that, for whatever reason, caught their attention, they could remember things off of it.

*You can read the books, but just because it works for somebody else doesn't mean it will work for you."*

And so, what you said about individual differences in witnessing as a coach I found to be most powerful. Because you can read the books, but just because it works for somebody else doesn't mean it will work for you. I've actually coached people where I said, "You're forbidden to read any more books because it's self-observation and about what works for you."

So, forgive me for getting on that soapbox, but just so often it's about stopping, and your brain works differently in witnessing it, because what works for you might not work for everybody else.

Dr. Barkley: Yeah, and don't forget, we overlook the tactile part of this as well. Remember, all the senses come into play, even though many people are either visual or verbal auditory. There are people, as you pointed out, whose strength is their sense of smell, but for others it's taste; for many people it's touch. They remember things by the feel of it. And whatever works for you, I think the key word here is to enhance that. Try to make something physical that reminds you of that to augment this weak capacity within the brain. And you'll be doing what we tell people to do. You'll be offloading your working memory onto other devices and strategies to try to be more effective in your daily life. And you can't do any better than that.

Jeff: Absolutely, absolutely. So, we could go on for another hour. Unfortunately, we need to wrap this up. I think the key for me over the years is understanding that ADHD is really very much a challenge of self-regulation, and working memory is very challenging. And today you did a great job of trying to help people understand what it is almost visually or tactically, and actually acknowledge it's difficult. And the more you can offload that, the better, and there's a variety of different strategies. With that being said, any last comments before we close it out?





*Understanding ADHD is really very much a challenge of self-regulation, and working memory is very challenging.”*

Dr. Barkley: Well, let's just remember what the other five are so that people understand that there are seven executive functions. The first is self-awareness. If you don't monitor yourself, there's nothing to stop. You're just on automatic pilot all day and you're getting in trouble. The second is inhibition, which Jeff talked about. You need to build in some stopping so the other six executive functions have a chance to help guide you. So, stop when you're in the middle of doing something; periodically just stop what you're doing, use your self-awareness, kind of like radar. Monitor that. We talked about verbal and nonverbal working memory, so that gets us to four.

So, what are the other three? The other three are self-regulating emotions, which Jeff and I talked about in an earlier podcast. The next is self-motivation, which I think we ought to do another podcast on, because that's a real deficit for ADHD children and adults. And then the last one is mental play, the planning and problem solving, which we've gotten at a little bit here in talking about how we manipulate images and words as part of our planning toward our goals. So those are your seven, and we'll come back perhaps in the future and talk more about the motivational component.

Jeff: *Absolutely, absolutely. So, for our audience out there, go learn more about Dr. Russell Barkley. Really, all you have to do is Google “Russell Barkley.” He’s all over the place. Go to his website at [russellbarkley.org](http://russellbarkley.org). And with that, Dr. Barkley, thanks for coming on the show.*

Dr. Barkley: My pleasure, Jeff, thanks so much for having me. Great work.