Everything You Never Knew About the ADHD Brain

Imagine hundreds of cars approaching an intersection that has no traffic light or stop sign. This is what happens to the ADHD brain every day where the prefrontal cortex (the intersection) is unable to properly regulate your various thoughts and feelings (the various cars approaching the intersection). Learn more about the "Intersection Model" for ADHD.

BY ALISON KRAVIT, PSY.D., AAC

Misinformation about attention deficit disorder (ADHD or ADD) abounds among the patients at my busy practice. Many think medication alone will control their symptoms. Others believe that ADHD will not affect their lives once they have graduated from college. And almost none fully understand the way the ADHD brain works to produce the symptoms they experience. To help, I have developed the Intersection Model — a framework that can be used throughout an individual's life to make sense of behaviors, impulses, and emotions, and to create strategies to manage them.

ADHD and the Prefrontal Cortex

At the center of the intersection model is the prefrontal cortex (PFC). It is responsible for thinking, thought analysis, and regulating behavior. This includes mediating conflicting thoughts, making choices between right and wrong, and predicting the probable outcomes of actions or events. This vital region of the brain regulates short-term and long-term decision-making. In addition, the PFC helps to focus thoughts, enabling people to pay attention, learn, and concentrate on goals.

In my model, the PFC is the intersection through which attention, behavior, judgment, and emotional responses run (I call them cars or messages). A person with ADHD will likely react to

whatever is in his focus at that moment — in other words, the faster car or stronger message. For people with ADHD, the PFC is unregulated; there are no traffic lights or stop signs controlling which message (car) gets through first. You could be the smartest, most motivated student ever, but if the teacher says "This species of dog…" and your thought switches to "I wonder what my dog is doing right now?" you get distracted.

ADHD and Fickle Focus

This unregulated intersection may explain why your attention wanders. Say you're in the kitchen cleaning up and find something that belongs upstairs. You take it toward the stairs, but get distracted by the unfolded laundry you see in the living room as you walk by. You may think, "I forgot to do that," and jump to folding laundry, forgetting that you were heading upstairs (not to mention cleaning up the kitchen).

People with ADHD get distracted because whatever is in their focus in the moment cuts off other, weaker messages. This can happen in mid-conversation, when a word triggers a thought that leads a person to another subject entirely.

ADHD and Time Management

Judgment runs through the PFC, as well. When you say, "That'll take me five minutes to finish," that's a judgment call. "I'll be there in a half hour" is a judgment call, too. We can't see time or feel it.Understanding time, conceptualizing time, isn't as strong a message in the ADHD brain as the emotion behind a looming deadline or an unfinished task.

A person with ADHD might freak out about a deadline, saying, "Don't talk to me, I have all these things to do and no time to do them!" Or the person says to himself, "This task is going to take forever," and then uses that as a reason to procrastinate. If the person would just get started, the task would take maybe 10 minutes. In this case, the fastest car in the intersection is the emotion behind the judgment of how long it will take to meet the deadline.

ADHD and Emotional Regulation

Emotions run through the intersection of the PFC, bringing quick mood changes. "I won the lottery 10 minutes ago. Isn't that great? But now my sink is overflowing. OMG, why does this always happen to me?" Impulsive anger (or sadness, or excitement, or worry) seems to come from nowhere, when actually the emotion is a quick reaction to an event that just occurred (in this case, the sink debacle). That is what is dominating the person's focus at that moment.

In the ADHD brain, whichever emotion is in focus at the moment becomes the faster car. This is why those with ADHD express emotions more intensely than may be justified for a given situation. In females with ADHD, this emotionality is often misdiagnosed as a mood disorder.

ADHD and Behavior/Impulsivity

Adults with ADHD self-medicate or spend too much money on unnecessary items, looking for quick gratification instead of bigger, more sustaining rewards. They may cling to a strategy even after it's proven ineffective, and rush through tasks, making errors in haste. This mindset leads to negative feedback from the world around them, interpersonal difficulties, and job or school troubles. Such inflexibility and impulsivity have a cumulative demoralizing and isolating effect.

In response, the individual with ADHD develops a mindset that focuses on the negatives, which exacerbates the situation. When we say, "Nothing is getting better, so it's pointless to try" or "They're not going to like me anyway, so why try to be friends?" it can lead us to stop trying because we perceive the situation as something that will only end in failure.

The faster car metaphor plays into being chronically late. If you are on your way out the door to go to work, and say, "I have 15 minutes left, I can just do this one thing," you make yourself late to work. If you didn't have ADHD, you would stop and think, "Oh, I have 15 minutes, but that's not enough time to do this thing, or I'll be late to work like last time." If you have ADHD, the stronger message isn't that you were late for work last time, but the desire to play a video game for a couple of minutes or phone a friend about going out on the weekend right now. And you are late for work — again. You keep doing the same things over and over because past experiences are being cut off by what is in your focus at the moment.

Why People with ADHD Feel So Anxious

As ADHD expert William Dodson, M.D., writes: "The vast majority of adults with an ADHD nervous system are not overtly hyperactive. They are hyperactive internally. Most people with unmedicated ADHD have four or five things going on in their minds at once."

The current thought regarding individuals with undiagnosed/untreated ADHD is that they tend to overcompensate for their difficulties with an anxiety-like response, such as racing thoughts, sleep difficulties, nervousness, and excessive worry. This overcompensation might look like this: You start heading to work and think, "Did the garage door actually close? I don't remember seeing it close. What if I kicked something, which tripped the sensor and the garage door is open? A thief is going to see that there aren't any cars in the garage and that no one is home. He's going to come in and take all my stuff. And when he leaves, he's going to let the cats out. I'm never going to see them again. I love them and I can't live without them. I have to go back and check. But I'll be late for work. What am I going to tell my boss?"

As I've said, people with ADHD often forget things that aren't in their focus, so these anxious thoughts are an attempt to keep these items (cars) in the intersection, so that the person doesn't forget about them. Holding many things in your mind creates a lot of tension, a traffic jam of sorts. Whenever too many things — thoughts or emotions — try to pass through the intersection at the same time, you're apt to feel anxiously overwhelmed and shut down. For instance, when trying to clean a cluttered room, with many items demanding your attention and none of them sticking out as more important than the other, you don't know what to do first, so you don't do anything.

It's frustrating when you go to the store for paper towels — and come back with everything but paper towels. Buying paper towels is the fastest car when you enter the store, but when you see the delicious looking pasta salad or the shiny red apples, they become the faster cars and overtake the paper towels — unless you've written down "buy paper towels" on a to-do list and read it.

ADHD and Regulating Emotion, Maintaining Motivation and Performance

Everybody likes to do things that are important and interesting, and that they're good at. We don't like things that are boring, frustrating, and not important. The problem is that those definitions change.

Let's say school is important to you. You spend all your time in the library studying, on your way to a 4.0. You have one more exam left, but you studied, so you should be fine. The test, and the motivation to do well, is the fastest car in the intersection. Right before you walk into the exam room, however, you get into a fight with your best friend — and you get a C on the exam. You studied and you tried your hardest, but the fight was the stronger message during the test.

"You could do this yesterday, so why can't you do it today?" The individual with ADHD hears this a lot during his lifetime.

ADHD, Mood Disorders, and Low Self-Esteem

In addition to having variable moods, individuals with ADHD tend to have difficulty staying happy or satisfied. If you keep reacting to everyday bad experiences (remember the overflowing sink?) and don't realize that those things are daily stressors — you've handled things like this before, you will have to handle things like this again — it will be hard to feel happy. In the ADHD brain, negative messages cut off positive messages. We don't think, "Well, I have my health" and pull that thought out during stressful times. Some with ADHD go from one negative experience to another, and are never satisfied with their performance.

Every person's ADHD affects him or her differently, but symptoms and behaviors can be explained through the Intersection Model. You can use this understanding of your ADHD brain to your advantage. You can find ways to erect a few stop signs or traffic lights, to make positive messages stronger and keep them in your focus longer, and improve your overall functioning and sense of self.

[Free Webinar: What Neuroscience Reveals About the ADHD Brain]

"Are You Criticizing Me, Again?"

The intersection model affects our relationship with partners. Here's an example from my life:

Every Tuesday night, I come home and ask my husband if the garbage is ready, because it gets collected on Wednesday morning. Every Tuesday night, he gets defensive: "I did this and that,

and this…what do you expect?" For him, the stronger message is "I am being criticized again." Those with ADHD are more likely to hear criticism when their partner merely asks a question.

Think of how many negative messages a child with ADHD receives throughout his life: 20,000 more criticisms by sixth grade than his non-ADHD counterparts. My husband was diagnosed with ADHD in grade school, so he's always heard, "You can do this, why can't you do that?" "Sit down," "Be quiet." His nickname in high school was Slacker.

I can change my tone of voice, jump up and down, remind him that we have this fight every single week, but it doesn't matter. He's still defensive. I ask him: "Do you think I'm criticizing you for not taking out the garbage?"

"Yeah."

"Nope! I'm just wondering if it's done, because, if not, I'll go do it myself."

"Oh…OK! How was your day?"

My husband and I have lived together for 13 years, and this happens once a week. Because if I don't ask that second question, we're not talking about the same thing. I'm wondering if the garbage is ready to be collected, and he thinks he is hearing the same childhood criticisms again; he thinks he is having something he didn't do pointed out to him again. In his brain, that is one of those fast cars likely to cut off any other car with a different interpretation of the situation.