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Glen Elliott, MD, PhD
Editor-in-Chief

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Learning Objectives

After reading these articles, you should be able to:

1. Discuss the role of executive functioning impairment in the presentation and treatment needs of children and adolescents with ADHD.
2. Identify some of the factors that may be affecting the increased rate of ADHD diagnosis in children and adolescents and their relevance for clinical practice.
3. Describe how some of the newer stimulant preparations resemble and differ from older formulations for treating ADHD in children and adolescents.

The Explosion of the ADHD Diagnosis: The Key Causes

Stephen P. Hinshaw, PhD, professor of psychology, University of California, Berkeley; Professor of Psychiatry, University of California, San Francisco

Dr. Hinshaw has disclosed that he has no relevant financial or other interests in any commercial companies pertaining to this educational activity.

Rates of ADHD have increased significantly in the U.S. over the past several years, leading to an ongoing debate about the validity of the disorder. Because you are likely to be asked by patients (or their parents) about this issue, it's helpful for you to have some background in exactly how much the prevalence has increased, and what factors may be driving this trend.

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In Summary

- According to the latest ADHD prevalence figures, 11% of children and adolescents in the U.S., or 1 in 9, have ADHD. It is likely that this high prevalence rate is artificially inflated.
- It is questionable whether or not stimulants improve cognitive function in children who haven't received a psychiatric diagnosis of ADHD.
- Factors that have inflated the apparent prevalence of ADHD include No Child Left Behind policies, the use of stimulants as "smart pills," aggressive pharmaceutical marketing of stimulants, and rushed evaluations of children for ADHD.

Q&A
With
the Expert

ADHD and Executive Functioning Disorder

Thomas E. Brown, PhD

Dr. Brown is an assistant clinical professor of psychiatry at the Yale University School of Medicine and is associate director of the Yale Clinic for Attention and Related Disorders.

Dr. Brown has disclosed that he has no relevant financial or other interests in any commercial companies pertaining to this educational activity.

CCPR: Traditionally, for diagnosing ADHD we go through the DSM-5 criteria, but we are hearing more and more about a new paradigm having to do with executive function impairment. You've been a pioneer of this concept. Executive function sounds like such a broad ability. Isn't everything I think and do a form of executive functioning?

Dr. Brown: By executive function, I mean the cluster of self-management skills that operate in large part automatically. You are doing something where the behavior is very much dictated by circumstance or habit. Think of a basketball player driving in to make a layup shot: He's not saying, "Now I move my left foot; now I move my right foot; now I drop my left shoulder." It's a seamless process where it's happening so quickly that it's not dependent on deliberate cognition. ADHD affects your ability to focus, remember what you need to and forget what you don't, keep in mind the things that are important, and prioritize them—in short, being able to take into account multiple moving pieces of life when you're trying to accomplish something.



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The Explosion of the ADHD Diagnosis: The Key Causes

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One of the key sources of information on ADHD prevalence in the U.S. is the National Survey of Children's Health (NSCH). In partnership with the Centers for Disease Control and Prevention (CDC), the NSCH methodology entails telephone surveys of randomly sampled families in all 50 states. The specific questions about ADHD include whether a health care provider ever told the

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This CME/CE activity is intended for psychiatrists, psychiatric nurses, psychologists, and other health care professionals, with an interest in the diagnosis and treatment of psychiatric disorders.

survey respondent (usually the child's parent or guardian) that the child has ADHD—and if a diagnosis was made, whether the youth is taking medication for ADHD. As you can see, the methodology isn't perfect, as there's no guarantee that the diagnosis was accurate, but it does give us a good idea about the prevalence of diagnosed ADHD as perceived by parents.

This survey has been conducted three times in the past decade, yielding progressively increasing prevalence rates: 7.8% in 2003, 9.5% in 2007, and 11% in 2011–12. If the latest 11% prevalence figure is accurate, that would mean that about 6.4 million young people have ADHD in the U.S., or 1 in 9 children (Visser SN et al, *J Amer Acad Child Adolesc Psychiatry* 2014;53:34–46). Because boys are more likely to receive this diagnosis, their apparent rate is 15%, or nearly 1 in 6—and for boys of high school age, the prevalence is nearly 1 in 5.

Given that there is no objective test for ADHD, it's reasonable to wonder if the true prevalence of ADHD is rising to this extraordinary extent, or whether it is being overdiagnosed. Keep in mind that the prevalence of ADHD in other developed countries is consistently estimated in the 5%–7% range—casting further doubt on the 11% figure in the U.S. (Polanczyk et al, *Am J Psychiatry* 2007;164(6):942–948).

In order to explore this issue, my colleague Richard Scheffler (a health economist) and I have done extensive research on the possible causes of the rising rates of the disorder, and we recently published a book summarizing the relevant data (Hinshaw SP and Scheffler RM, *The ADHD Explosion: Myths, Medication, Money, and Today's Push for Performance*. New York, NY: Oxford;2014:254).

Despite the tenor of the book's title, we do not believe that ADHD is a myth. In fact, we believe that the disorder is a legitimate, debilitating condition that responds well to a variety of treatments. Nonetheless, it is also clear that the high prevalence of ADHD in the U.S. may be inflated, and in this article I will summarize some of the factors leading to

this potentially artifactual “explosion” of ADHD.

Consumer demand for stimulants for nonclinical purposes

Stimulants clearly improve both the core symptoms of ADHD and the many aspects of cognitive functioning in people with the disorder. However, their ability to improve cognitive function in children and adults without any psychiatric diagnosis is far more questionable (Smith ME and Farah MJ, *Psychol Bull* 2011;137(5):751–752). Even so, the strong perception exists that stimulants are “smart pills,” whether those benefits can be quantified in study conditions or not. This “likability” of stimulants may lead to inflated diagnoses as people without ADHD may report improved performance, real or imagined. It has also fueled high rates of “diversion”—the taking of medications by the general public, particularly college students.

Changes in disability laws

When the Individuals with Disabilities Education Act (IDEA) was reauthorized in 1991, ADHD was for the first time included specifically as a type of disability that gained patients special accommodations. At nearly the same time, Medicaid reimbursements began to include ADHD. Rates of ADHD diagnosis throughout the U.S. rose rapidly through the 1990s, presumably in part because of these legal and policy changes. Apparently, as parents and physicians learned that the ADHD label allowed more mandated services, pressures to apply that diagnosis increased.

Unintended consequences of No Child Left Behind policies

One of the more interesting sources of inflated ADHD rates is related to a series of policies designed to improve test scores and graduation rates in U.S. schools. We were led to this research by another striking ADHD prevalence finding that emerged from the NSCH. Although the main observation has been an inexorable rise in national ADHD prevalence rates, the NSCH also uncovered a huge state-by-state variation in

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The Explosion of the ADHD Diagnosis: The Key Causes

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diagnosed prevalence. The highest rates are in the South and Midwest; the lowest are in the West. Significant variations in disease rates in different states provide a “natural experiment” in the attempt to isolate factors that might lead to artificially inflated (or deflated) rates of diagnosis.

Our research method was to study in detail two highly contrasting states: North Carolina, which had a 2007 ADHD prevalence of 15.5% (and a medication rate of 74.4% of those diagnosed), vs. California, with a prevalence of only 6% (medication rate of 49%).

What explains this large difference? A small part relates to racial and ethnic diversity. For example, 49% of the CDC’s California sample was Hispanic, vs. only 9% of the North Carolina sample. Other research has shown that Hispanics are less likely to be diagnosed with ADHD than other ethnicities—so a state with a relatively large population of Hispanics might have a lower ADHD prevalence in part due to ethnic variation. However, when we statistically controlled for differences in ethnic composition, there was still a far greater prevalence in North Carolina.

The more important difference between the two states, by far, turns out to relate to school improvement initiatives such as the No Child Left Behind Act (NCLB). Such policies differ in specifics, but their common feature is their provision of financial incentives for schools to improve student performance (usually measured by test scores), as well as financial sanctions for schools that do poorly.

How might such policies lead to

inflated rates of ADHD? There are at least two mechanisms. First, in some regions, the test scores of children with ADHD were not included in the test score averages that schools must report to their state. Thus, if low-scoring students can get an ADHD diagnosis, a school enriches its pool of test-taking students with high scorers—leading potentially to rewards to the school for performance improvement. Second, even in school districts that do count test scores of ADHD students, there is still an incentive to encourage diagnosis. Recall that the 1991 IDEA law enabled kids with ADHD to be eligible for special educational accommodations, such as more time for test-taking. If such accommodations help to improve test scores, then schools would have a strong incentive to ensure that ADHD diagnoses are not missed.

To see whether NCLB policies had the unintended effect of increasing ADHD diagnoses, we compared prevalence rates before and after NCLB was implemented. We found that, as predicted, NCLB had a profound effect on rates of ADHD—but only for youth near or below the federal poverty level (the law targets Title I schools with many low-income students). From 2003 (when NCLB was implemented) to 2007, rates of ADHD for impoverished youth increased from 10% to 15.3% in those states where NCLB was new—an increase of over 50%. In states that already had implemented their own versions of NCLB before 2003, however, there was no corresponding increase in ADHD rates, which makes sense, because the diagnosis inflation effect of

the policy would have already occurred in such states (for more detail, see Fulton BF et al, *Psychiatric Services* 2015;66(10):1074–1082).

Other factors

In our book, we discuss other factors that may contribute to inflated ADHD rates, but are less easy to quantify. One of these is the increasing aggressiveness of pharmaceutical marketing practices, including direct-to-consumer advertising and industry-funded direct promotion to doctors. Another potential factor is that clinicians do not always follow gold-standard guidelines for careful diagnostic evaluations, which, although time-consuming, can often find that apparent ADHD symptoms are actually caused by other problems, such as poor family environments or comorbid conditions. Finally, ADHD is often diagnosed by busy primary care physicians who may not have the time or the expertise to delve into the nuances of diagnosis.

In sum, while ADHD is a legitimate and disabling condition for many people, a number of social, political, and economic factors have combined to artificially inflate its reported prevalence in the U.S. The unfortunate consequence is that, at least in some quarters, ADHD has acquired a reputation of being a trivial and possibly manufactured disorder—potentially fueling its stigmatization. Being more cautious in our policy decisions and in our diagnostic practices will help to improve the public’s confidence in our field.

Expert Interview

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CCPR: So, if executive function problems are present, how much does that complicate the task of diagnosing ADHD? Does it mean that we should not be so reliant on the *DSM*?

Dr. Brown: In my view, it shouldn’t change the way we actually do a diagnosis much at all. The idea of ADHD as a developmental impairment of executive function does not require that we should dump *DSM* criteria; most work reasonably well. They certainly pick up a syndrome of impairments that occur in a lot of people and that are sometimes obvious in early childhood, sometimes not until middle childhood, sometimes during adolescence, and sometimes later still.

CCPR: So what do you recommend as far as tools for assessing executive function?

Dr. Brown: The most effective way to assess executive function is a good clinical interview with the patient about how daily life operates in various settings, and using the *DSM-5* criteria for that plus a normed rating scale. (Check out a range of scales covering preschoolers through adults, both copyrighted and public domain, here: <http://www.neurotransmitter.net/adhdscscales.html>.)

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It's important to get a good history of how much difficulty the person is having not just with distraction, focus, and organization but also with procrastination and prioritization. And this can vary when you are talking about kids, preteens, and older adolescents. Although *DSM-5* says at least some of the symptoms must have been present and noticeable before age 12 for a diagnosis of ADHD, I don't think that age of onset matters as much as the issues themselves when we're talking about problems with executive function.

CCPR: Can you give an example?

Dr. Brown: One of my specialties is high-IQ kids, many of whom did extremely well in elementary school. Things often began to get a little bit shaky in middle school or high school, when they needed to manage things more independently and keep track of multiple classes and assignments. Many of these kids also had a lot of scaffolding; they were doing pretty well as long as they were living at home with support from parents or teachers. Then you'd see the bottom fall out when they went off to college because they were unable to organize themselves and stay on top of what was due and when, and structure their work. And for some people, these problems don't emerge until after they get out of college.

CCPR: That's very interesting. Getting back to normed rating scales, what information are you looking for with these measures?

Dr. Brown: With normed rating scales, you are going to be able to get some sense of how a patient's answers fit with what most people in the general population who don't have ADHD say, and how they compare with those who have ADHD, all in about 10 minutes.

CCPR: Are you referring to the questionnaires that parents or patients fill out, or do you recommend that practitioners do the rating scale as part of the interview process?

Dr. Brown: Well, some clinicians still do the former, but I've found that with kids it helps a lot if you present orally. The benefit is that, even though you are getting 0, 1, 2, 3 responses, you have a chance to be sure that the patient or parent understands them and can clarify if someone seems confused. A number of scales are available for assessing both general behavioral issues and specific signs and symptoms of ADHD or problems with executive scales. Some are in the public domain, while others are copyrighted.

CCPR: In your book on executive functioning, you talk about the 6 domains: activation, focus, effort, emotion, memory, and action. Some of these domains, such as "focus," are symptoms that we traditionally assess in ADHD, but others less so. What does "activation" mean, for example?

Dr. Brown: It means getting started. Someone with ADHD has a problem with getting the brain moving in order to do what has to get done. A lot of times these kids will tell you, "I know I've got to do it, but I can't get it going until the very last minute."

CCPR: And how is this different from the "effort" domain?

Dr. Brown: Effort includes regulating alertness, sustaining a task, and processing speed. Many kids with ADHD can finish a short-term project but have problems maintaining the effort required to complete longer ones. But within the effort domain we include regulating alertness, which can mean problems turning alertness off when needed. It's common for these kids to have a lot of difficulty falling asleep at night because they can't shut their thoughts off; they keep thinking. The older kids especially will stay up really late surfing the net or reading or watching TV, until they can fall asleep.

CCPR: You also have a domain called "action." I'm assuming this maps in some way to what we normally think of as hyperactivity?

Dr. Brown: It's monitoring and self-regulating action, which doesn't simply mean being hyper; sometimes patients are impulsive in that they jump to conclusions or have trouble being able to fit their actions into the context of a situation.

CCPR: Can you give us an example of this?

Dr. Brown: Yes. Patients doing things way too slowly when they've got to be fast and, conversely, going way too fast when they ought to go slower. Like racing through a test rather than taking the time to read it. ADHD kids will often have difficulty in social situations where they're not tuned into how people are reacting to what they're saying or doing and don't adjust their behaviors accordingly. They may start blabbering or go on talking forever without picking up that their audience is bored or just being polite.

CCPR: It's an interesting and more subtle take on the behavioral issues we see in ADHD. It's not just being hyperactive, it's difficulty regulating your words or your behavior in certain contexts, which does sound more like a problem with executive function.

Dr. Brown: Yes. And keep in mind that it wasn't until 1980 that *DSM-III* finally added the term "attention-deficit" to the name of the disorder. Up until then, it was all about disruptive behavior—the little kids who couldn't sit still, wouldn't shut up, and were driving everybody nuts. In the past, if all you were watching was the hyper, which often does get better as you get older,

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“One of the biggest problems with [ADHD] is that it looks for all the world like it's a problem with willpower: You can do it here, why can't you do it there? In fact, it's not a problem with willpower; the problem is with the dynamics of the chemistry of the brain.”

Thomas E. Brown, PhD

Expert Interview
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then you weren't seeing the attention problems, which certainly do not magically go away when a child turns 14. So I think it is a matter of trying to help people understand that the bigger problem is: 1) a lot of people had ADHD problems but never had significant behavioral issues, and 2) for those who have, that's usually the least of it; it's the attention difficulties that cause the most problems in the long run.

CCPR: In some of your writings, you talk about the “central mystery” of ADHD. Tell us more about that.

Dr. Brown: I think it is really important for clinicians to have this kind of paradox in mind when they're evaluating kids. In the thousands of patients with ADHD that I've seen and in all different age groups, every single one of them has a few activities in which focus is not a problem. During these activities, they can exercise all their executive functions extremely well or at least adequately, even though they have enormous difficulty with doing that for anything else.

CCPR: For instance?

Dr. Brown: I will use a sports example, but keep in mind the activity could very well be video games, art, music, etc. Let's say we have a smart 16-year-old kid who is a goalie for his high school's ice hockey team; this kid tests way high up in the superior range cognitively, wants to get good grades and go on to medical school. His parents have brought him in because his teachers are complaining that he is losing focus in class: looking out the window, staring at the ceiling, acting half asleep. And the question they kept asking him is, “If you can focus so well when you're playing hockey, how come you can't pay attention when you're in class?” His parents also speak to his focus during hockey—that he knows where the puck is every second of a fast game, totally on top of it.

CCPR: So why is it that he can focus so well during sports?

Dr. Brown: He will tell you, “If it's something I'm really interested in, I can pay attention; if not, I just can't.”

CCPR: So, that is kind of a mystery. How do you explain it?

Dr. Brown: Well, the way I think of it is pretty simple. If you're faced with a task in which you have strong personal interest or if you feel like you have a gun to your head, it changes the chemistry of the brain instantly; the problem is, it's not under voluntary control. One of the biggest problems with this disorder is it looks for all the world like it's a problem with willpower: You can do it here, why can't you do it there? In fact, it's not a problem with willpower; the problem is with the dynamics of the chemistry of the brain.

CCPR: So we are back to executive function, a neurodevelopmental problem of some sort. And, just because patients may be able to overcome that in certain situations where they have a lot of interest, it doesn't mean that they don't still have a problem, right?

Dr. Brown: Exactly. And keep in mind that the patient's appraisal of a situation is key. It's not like the parents saying, “If you can take care of this right now, you will improve your grade by the end of the semester.” It's when they themselves feel like something very unpleasant is going to be happening very quickly if they don't take care of something right here, right now. In those circumstances, they can do it.

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The 6 Executive Functions Impaired in ADD/ADHD			
Function	Definition	Challenge	Example
1. Activation	Organizing, prioritizing, and activating to work	Trouble starting or completing a task unless it is urgent. Poor reading comprehension, failing to grasp key concepts on first reading.	Cramming for an exam the night before instead of studying throughout the semester.
2. Focus	Focusing, sustaining, and shifting attention to tasks	Distraction and loss of focus not only by surrounding stimuli, but also by thoughts.	Poor attention in class or meetings; being easily diverted from one task to another.
3. Effort	Regulating alertness, sustaining effort, and processing speed	Sustaining effort over long term vs. short term as well as completing tasks on time. Chronic difficulty regulating sleep and alertness.	Staying up too late at night because you can't stop thinking about the events of the day and then being late for work after hitting the snooze button multiple times.
4. Emotion	Managing frustration and modulating emotions	Managing frustration, anger, worry, disappointment, desire, and other emotions.	Not putting a disagreement in perspective and perseverating on the emotions instead of tackling the to-do list for the day.
5. Memory	Utilizing working memory and accessing recall	Remembering where something was put, what was just said, or what you were about to say.	Inability to remember what time you told friends to meet for the evening study group; having to re-contact and confirm what you initiated.
6. Action	Monitoring and self-regulating action	Impulsivity in speech, thought, and action. Inappropriate slowing and/or speeding up for specific tasks. Monitoring the context in which you are interacting.	Failing to notice that a friend is hurt by a joke you made and assuming that everyone else thought it was funny as well.

Source: Thomas Brown: ADD/ADHD and impaired executive function in clinical practice. *Current Psychiatry Reports* 2008;10(5):407–411

Newer Stimulant Preparations: Are They Worth the Cost?

Longtime readers of *CCPR* will know that we are generally skeptical of the utility of newly approved stimulant preparations, unless they are actually new molecules. Over the last few years, several of these variations on older themes have been introduced; here is a handy table for your perusal should you be curious. Caution: While some of these formulations have minor convenience advantages, side effects usually include depletion of your patients' copay budgets.

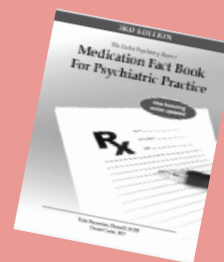
Newer Preparations of Stimulant Medications				
Brand name (Generic) Year FDA approved	Formulation/ available strengths	Usual dosage range in peds (starting-max) (mg)	Duration of action (hours)	Potential advantages over existing formulation
Methylphenidates				
Aptensio XR ¹ (methylphenidate) 2015	Capsules, delayed release 10, 15, 20, 30, 40, 50, 60 mg	10–60 QAM	8–12	Similar to generic Metadate CD ¹ . Both come in capsule form with a smaller proportion of IR ² released in the morning and the rest released 2½–3 hours later: 30/70 for Metadate and 40/60 for Aptensio. Aptensio also has a few more dosage options.
Quillichew ER ¹ (methylphenidate) 2015	Chewable tablets 20, 30, 40 mg	20–60 QAM	8–12	Chewable; may be a useful alternative for those who will not swallow pills, capsules, or suspensions
Quillivant XR ¹ (methylphenidate) 2012	Liquid suspension 25 mg/5 mL	20–60 QAM	8–12	Delayed-release version similar to Ritalin LA ¹ but offered as a liquid suspension; allows for finer dosage control than tablets or capsules, since given by oral syringe
Amphetamines				
Adzenys XR-ODT (d-,l-amphetamine sulfate) 2016	Tablets, extended release, orally disintegrating 3.1, 6.3, 9.4, 12.5, 15.7, 18.8	6.3–18.8 QAM	8–12	Orally disintegrating XR ² tablets for those unable to swallow, chew, or take liquid; 50% IR ² /50% DR ¹ ; 18.8 mg roughly equivalent to 30 mg Adderall XR
Evekeo (d-,l-amphetamine sulfate) 2012	Tablets 5, 10 mg	2.5 QAM–20 BID	3–5	Similar to IR ² Adderall (now generic) except in tablet form, which can be split, making small dose adjustments easier; also, is not a mixture of salts
ProCentra (d-amphetamine sulfate) 2008	Liquid suspension 5 mg/5 mL	2.5 QAM–20 BID	3–5	Bubblegum-flavored liquid, similar to IR ² Dexedrine, for those who do not swallow pills
Zenzedi (d-amphetamine sulfate) 2013	Tablets 2.5, 5, 7.5, 10, 15, 20, 30 mg	2.5 QAM–20 BID	3–5	An alternative dextroamphetamine branded product to Dexedrine, though it offers more dosing options than the 5 mg and 10 mg of Dexedrine
Dyanavel XR ¹ (amphetamine) 2015	Liquid suspension 2.5 mg/mL	2.5–20 QAM	10–14	Only long-acting liquid amphetamine. Similar to Adderall XR ¹ but is a base rather than a mixture of salts: 2.5 mg Dyanavel XR ¹ equivalent to 4 mg Adderall XR ¹ ; delayed-release based on resin, which is not metabolized.

¹CD, ER, LA, XR = Extended Release ²IR = Immediate Release

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Below are the questions for this month's CME post-test. This page is intended as a study guide. Please complete the test online at www.TheCarlatChildReport.com. Note: Learning objectives are listed on p. 1.

1. According to the National Survey of Children's Health, what is the prevalence of ADHD in boys of high school age in the U.S.? (Learning Objective #2)
 a. Nearly 1 in 4 b. Nearly 1 in 5 c. Nearly 1 in 7 d. Nearly 1 in 8
2. According to Dr. Brown, which of the 6 domains of executive functioning relates to regulating alertness, sustaining a task, and processing speed? (LO #1)
 a. Focus b. Memory c. Effort d. Action
3. Which of the following stimulants, similar to Adderall, would be the best choice for patients who need split tablets in order to make incremental dosing adjustments? (LO #3)
 a. Zenzedi b. Quillivant XR c. Dyanavel XR d. Evekeo
4. The highest rates of ADHD are found in which areas in the U.S.? (LO #2)
 a. The North and West b. The South and Midwest
 c. The North and Midwest d. The South and West
5. According to Dr. Brown, which behavior would be an example of a patient having trouble fitting his or her actions into the context of a situation? (LO #1)
 a. Staying up late watching TV until he or she feels tired enough to sleep
 b. Jumping to a conclusion and taking action without evaluating the facts
 c. Noticing that another person is growing bored with the conversation and asking a question that gives that person a chance to speak
 d. Carefully reviewing answers on a test after completing it with time to spare

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Expert Interview
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CCPR: One of the common things we hear from patients is that when they take stimulants, their mind clears and they are able to focus. But what you're saying is that an effective treatment is not just going to be about focus; it's going to be about all these other executive functions.

Dr. Brown: Right. It's not just focus; it's being able to keep one thing in mind while doing something else, and being able to prioritize more effectively.

CCPR: From the standpoint of executive function impairment, any suggestions for clinicians for how to ascertain correct medication dosage? There's always the fear of dosing kids too much.

Dr. Brown: It is important for clinicians to know that when you're prescribing stimulants, milligram/kilogram formulas do not work adequately. The amount of stimulant medication a patient needs has no systematic correlation with age, weight, or symptom severity; it's a matter of how sensitive someone's body chemistry is to it. Most of the little kids I see are taking very small doses, but there are a few kids—not a lot, but a few—where I've got to get to the top of the adult dosing range to touch them, because their bodies aren't as responsive. My recommendation is to start with a baby-size dose for everybody. For example, if you're doing Vyvanse, start with the new 10 mg size. If you're doing Adderall, you might start with 5 mg. Once in a while the medication works at that low dose, so it's a good idea to try and give someone a chance to get used to it, and then you stair-step it up maybe every 3–5 days or at least once a week until you get to a dose that works or you run into unacceptable adverse effects.

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CCPR: What about duration? Isn't the duration of action variable dependent on what medication you're prescribing?

Dr. Brown: Yes, it's important that clinicians really understand the duration of action of these medications. For example, if you're using immediate-release methylphenidate or dextroamphetamine, it's going to kick in within 30 minutes. But if you're looking at Concerta or Vyvanse, they take anywhere from 45 to 90 minutes to work. And these so-called "all-day" medications do not always last all day. I'd say that many patients who are on Concerta or Vyvanse, which is supposed to last for 10–12 hours, find that they need a booster dose of a short-acting stimulant to cover the late afternoon/early evening because the medicine wears off too soon, especially as the patient moves into adolescence and adulthood. So, when I'm asking a patient about how they're doing, I usually will time-frame and say, "On a scale of 0–10 where 0 means you're totally out to lunch and 10 means you're on top of your game, where are you at 10 o'clock in the morning? Where are you at 2 o'clock in the afternoon? At 5 o'clock?" That gives me some sense of how the medication is or is not alleviating symptoms during those different time intervals, which can make a big difference.

CCPR: That is very helpful. Thank you, Dr. Brown.

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