

o n e



"If My Kid Is So Smart, Why Is He So Slow?"

"I can see why everyone is so frustrated with Dennis, because I'm frustrated with him too! He can't get *anything* done on time. Whether it's his homework, putting on his shoes, or taking down a phone message, he *can't* get it done! If I didn't know him so well, I'd think he just didn't care, but I know he does. In fact, he cares a lot. He just doesn't know how to get motivated or get started. His dad thinks he's just lazy, and I have to admit it does seem like that, but I know he would do things faster if he could. He has great ideas and will talk about how excited he is about writing a paper for his history class, but then when it comes time to actually *do* it, he just sits there, seemingly paralyzed with fear—or maybe just daydreaming—I don't know! If he didn't care about the work, he wouldn't be so excited about the topic, right? I try to help him get started by telling him to copy down some ideas on notecards, but it takes him forever to find the information in the book and even longer to just copy it down. It seems he's been like this since he was born. Even in first grade, when he had to just copy—only copy—his spelling words, it would take him 10 times as long as it should have. His father

thinks he's lazy, his teachers think he just doesn't care, and I'm spending my life yelling at him to get things done. How did we get into this mess?"

Some kids are naturally fast. They run, talk, draw, and do all sorts of things at a rate that seems appropriate for their age. Other kids don't, or perhaps it would be fairer to say they can't. These are kids who may have what are called *processing speed deficits*. *Information processing speed* is a term that is frequently used in the field of neuropsychology and is used increasingly in the fields of education and child development. As you'll discover in the next few chapters, it is a term that refers to a complex process and so is defined and measured in many ways. It also can't be understood in isolation from other areas of thinking, such as language, memory, or attention.

In general, though, processing speed involves one or more of the following functions: the amount of time it takes to *perceive information* (this can be through any of the senses, but usually through the visual and auditory channels), *process information*, and/or *formulate or enact a response*. Another way to define processing speed is to say it's *the time required to perform an intellectual task* or *the amount of work that can be completed with a certain period of time*. Even more simply, processing speed could be defined as *how long it takes to get stuff done*.

Because we place such a high value on doing things quickly in our culture, it can be difficult to live with a nervous system that needs more time to process information. Kids and adults who are slower at these types of processing tasks are sometimes assumed to be lacking in intelligence, but this really isn't the case. However, processing speed does interact with other areas of cognitive functioning by negatively impacting the ability to quickly come up with an answer, retrieve information from long-term memory, and remember what you're supposed to be doing at a given time. In other words, it's possible that someone with slow processing speed will, as a result, be impaired in other areas of thinking and may even score lower on tests of intelligence (more about this

area in the next chapter), but this isn't necessarily the case, since being cognitively compromised in one area isn't the same as being less intelligent overall.

For example, Dennis was actually a very intelligent kid, with a Verbal IQ in the 90th percentile of kids his age, even though his actions and thought processes seemed so slow. Dennis's slow output seems to be disconnected from his natural intellect, which creates the assumption that he's just not capable of completing even simple homework tasks such as copying his weekly spelling words.

Dennis's family has endured countless episodes where his lack of productivity has made their daily life a constant battleground. Many of the instances at home involve homework and chore completion. Often Dennis will just shrug his shoulders when he has disappointed his parents by not doing something they've asked him to do, but other times he reacts angrily and tells them they just don't "get it." "You think I can do this, but I can't!" is a frequent retort.

One mental health professional told Dennis's parents that he possibly had something called oppositional defiant disorder; another said he exhibited symptoms of attention-deficit/hyperactivity disorder (ADHD), and still another said to just "let it go" because he was just "being a boy." Dennis's teacher and the school psychologist thought it could be a "processing problem," but they never explained what that meant or how they had come to that conclusion.

Dennis's parents didn't think any of these labels or explanations fit perfectly or captured the upheaval, turmoil, and trauma created by Dennis's inability to complete work in a timely fashion. His inability to finish his homework required constant vigilance and enormous energy from his parents. The effort his parents spent trying to help him get things done created even more resentment from his siblings. His parents were constantly fighting over how to handle his difficulties. They felt angry, frustrated, overwhelmed, worn out, and hopeless—and they had no idea what to do or where to turn.

"So How Do I Know That My Child Has a Slow Processing Speed?"

Perhaps you picked up this book because you have a child like Dennis, or perhaps the idea of a child being smart but unable to keep up resonated with you. Perhaps you've sought help from mental health or school professionals, some of whom might have advised making sure your child gets enough sleep, eats a better breakfast, "comes to school ready to learn," or that you be more consistent in managing your child's behavior. Perhaps you've tried all of those suggestions. Perhaps you didn't need to because you knew it wasn't just a sleep or motivational issue but something else about your child's learning or cognitive style that had yet to be explained.

True processing speed deficits should be evaluated through a formal assessment by a professional such as a psychologist, as they are usually an indication of another underlying problem, the most common being attention problems. A diagnosis of the inattentive subtype of ADHD often comes with slow processing speed, although that's not always the case.

The second largest category of children with processing speed deficits are those with learning disabilities, such as dyslexia, nonverbal learning disabilities, language-based learning disabilities, and autism spectrum disorders (including pervasive developmental disorder and Asperger syndrome). Although processing speed deficits are not the underlying cause of the learning disability, many children with learning and developmental issues exhibit processing speed deficits as part of their cognitive profile.

Other children who may suffer from more transient processing speed deficits are those with psychological issues such as depression, anxiety, or psychosocial stressors (such as the loss of a parent). Children in this category may show processing speed problems only when their symptoms of depression are severe enough that they can't get things done or when they are so anxious that their perfectionistic tendencies make them complete work extremely slowly.

A final category of children are those who don't fall into any of these categories, but who perform poorly on all (or at least most) timed tests as compared to untimed tests. This category of children has in the past sometimes been diagnosed with something called a "learning disorder, not otherwise specified (processing speed deficits)." More recent terminology may refer to it as a learning disability with a specific impairment in reading, writing, or math fluency. In most of these cases, the diagnosis has been made by a licensed professional, most likely a psychologist, after formal testing has been completed. If your child has not had a thorough evaluation, consider the pros and cons of pursuing an evaluation that are explored in Chapter 2.

The entire first section of this book is devoted to helping you understand the importance of processing speed, what it is, and how it affects your and your child's lives. What we've found is that dealing more effectively with processing speed deficits first and foremost requires an understanding of what it is. Once you understand that it isn't always in your child's control to be the quickest one in the family—and once you have a better sense as to *why* your child behaves as she does—the strategies for helping her become clearer. In some cases, just *understanding* your child's deficits can lead to improvements in your child's life (particularly in her relationship with you) even before you try some of the strategies outlined in this book.

The middle section of the book helps you think about how processing speed deficits specifically impact your child in particular environments and what you can do to help. We'll also discuss the unfortunate emotional toll this deficit takes on kids who can't keep up and how to lessen the impact of anxiety, depression, and low self-esteem often caused by slow processing speed. In the third section, we bring it all together and show what a full evaluation looks like, using a few typical examples, and what types of recommendations might flow from a thorough assessment. We also tell you where to go for more information from websites and books that can fill in the gaps. Throughout the book you'll read about strategies that have been helpful to many of the children, families, and teachers with whom we've worked over the years.

Although processing speed may vary as a function of a child's age and underlying issue, most cases do share some common threads that contribute to difficulties at school and home, such as slow reading and writing, slow response to requests or questions (even those as simple as "What do you want for breakfast?"), poor memory recall, and slow completion of work. When these issues go untreated, it can sometimes lead a child to avoid homework or, in extreme cases, avoid school altogether. These children may appear unmotivated, sluggish, apathetic, and with low energy. Even getting started on tasks is difficult for them. When they have trouble sustaining attention at school or in meetings, they may drift into daydreams, stare blankly into space, or even sleep. They may become fidgety, tapping their pencil or foot, play with their hair or the paper clip on their desk, or ask to go to the bathroom frequently. These types of "coping mechanisms" often lead teachers to think these students don't care, when actually they have "checked out" because the pace of the environment was too quick for them to access.

Processing Speed in Daily Life

In everyday life, there is a cost to processing everything more slowly. Some jobs demand a fast pace. In fact, it would be impossible to perform certain jobs without that quick rate of response. Emergency room doctors, jet pilots, and air traffic controllers, among dozens of other careers, place a high priority on the ability to react to information and quickly perform tasks.

Though it might not be obvious, these sorts of skills are important in school as well. From being asked to complete "1-minute math worksheets" in second grade, to the ability to move between classes and rooms in middle and high school (while remembering to get the appropriate books and assignments from a locker in a 4-minute transition period), the ability to do things quickly is highly related to a child's success in school. Some examples of the types of problems that children with slow processing speed experience include:

- Difficulty processing spoken information fluently or automatically:
 - Problems listening to a lecture and taking in all the material presented
 - Remembering and following simple directions from a teacher
 - Listening and understanding verbal information presented in class from fellow students
- Problems writing information down on paper:
 - Writing an assignment in a notebook
 - Finishing an exam
- Slower reading fluency skills:
 - Having difficulty reading a certain passage in a given period of time during class time or during exams
 - Difficulty finishing large reading assignments
- Trouble sustaining attention to a task, not necessarily because the child has attention problems, but because the information is coming at her so quickly that her attention is “lost”
- Difficulty understanding complex directions, particularly those that are given quickly
- Trouble retrieving information quickly from long-term memory. This becomes problematic when a child is called on in class and can’t answer the question quickly enough—even though he knows the answer!
- Problems finishing almost anything (tests, assignments, activities) in an allotted period of time
- Problems with social interactions because the “social scene” moves too quickly to process (includes not just verbal information but nonverbal information that has to be processed quickly).

In addition to problems at school, slow processing speed can make life difficult for a family. When there is one person in a family who takes *forever* to do something, the rest of the family suffers.

Take the case of James, a 10-year-old boy with ADHD and extremely slow processing speed, who took three times longer than his 12-year-old sister, Jenny, to complete pretty much any daily task. From the moment James woke up in the morning, he couldn't keep up. It took him 10 minutes to find his way to the bathroom, even longer to pick out what to wear, and it often took him so long to figure out what to have for breakfast that he left for school without eating anything. Jenny, on the other hand, was quick to dress and was ready for the school bus on time, although her mornings were punctuated by her mother shouting, "James, if you don't get down here, I'm going to scream!"

Jenny was embarrassed that the bus had to wait for her brother nearly every morning. Things were worse after school, when James couldn't get his homework done without constant pleading and coaxing from one of his parents. Dinnertime took forever because James was slow to get to the table, slow to decide what he wanted to eat, and slow to actually eat his food. Jenny's relationship with her brother suffered, and she often found herself angry about these disruptions. Not surprisingly, James's parents found themselves frustrated and sad that their family life was miserable at times because they were always yelling at James or bribing him to hurry up.

James's story is very typical for children with slow processing speed. Although he demonstrated many of the characteristics mentioned above in school, his problems at home were also quite significant. Some of the more common problems that children with slow processing speed experience at home include:

- Slowness in getting out of bed in the morning and getting ready for the day
- Difficulty getting ready for bed at night, as well as difficulty falling asleep—yes, these kids are even slow to fall asleep!

- Trouble making up their minds about everyday tasks such as what they are going to wear or what they want for breakfast
- Slow at eating to an extent that mealtimes seem to take forever or their food is cold before they are finished
- Slow to complete simple tasks such as brushing their teeth or taking a shower
- Problems starting tasks such as homework
- Problems completing homework in a reasonable amount of time
- Difficulty completing chores, even simple chores like taking out the trash
- Slowness in remembering information about family matters, such as quickly remembering the name of a relative they haven't seen in a while, or remembering that the family is going on vacation next week. This can lead family members to think the child is "in his own world" or worse, that she "just doesn't care about anyone but herself."

For example, James had trouble fully taking in the following when his mom said one Saturday, "Today we're going to see the new *Harry Potter* movie at the mall, but first I need to stop at the dry cleaner's and then take you to get new shoes because we're going to Aunt Dottie's wedding next week. And, maybe we'll get you a new shirt too, while we're at it, and then when we're done with the movie, we can get ice cream." James's mom was talking quickly as she was cleaning up the breakfast dishes. So when she said, "Go get ready so we can go to the movies," James replied, "What movie? I thought you were taking me out for ice cream right now." Needless to say, his mother was aggravated because he "wasn't listening," when actually he was listening but it was too much information for him to process in the amount of time needed.

Types of Processing Speed

Processing speed isn't a one-dimensional concept. It's not just about how fast we see, or how fast we write, or how fast we can process what we've heard. It's really a combination of all of those factors. In fact, processing speed deficits can be observed in *visual processing*, *verbal processing*, and *motor speed*. Problems in one or more of these areas can manifest in problems with *academic fluency* and *general difficulties*. However, it is rare to be slow at all of the above. For example, a child with a language-based learning disability may be quite slow to interpret spoken language, but she might be very quick on the soccer field because she has quicker visual processing abilities. In that case, her problems with auditory processing speed may get in the way of her athletic skills when she is required to put into practice the coach's directions quickly. In another example, a child might understand spoken language at an age-appropriate pace, but she may not have the motor speed to put her thoughts on paper at a pace that is typical of her peers. While speed is central to all of these processing abilities, they do, of course, vary considerably in how they are manifested in daily life and on more formal measures of processing speed.

VISUAL PROCESSING

Visual processing relates to how quickly our eyes perceive information and relay it to the brain. In its simplest form, it can be measured as to how quickly our eyes dilate to light or how quickly we respond to a visual stimulus. It's related to almost anything we do. Drivers with slower visual processing have slower visual reaction times and get into more accidents. Studies have shown that individuals with slower visual processing have difficulties with tasks such as looking up phone numbers, reading directions, counting out change, and finding an item on a crowded shelf.

VERBAL PROCESSING

Verbal processing, not surprisingly, relates to how quickly we hear a stimulus and react to it. "Reacting" may include a simple motor

reaction (such as expressive surprise or moving when something is startling) or more complex problem solving such as making meaning from what someone has said and then reacting to it by providing a cogent verbal response. Research has shown that problems with verbal processing speed are related to problems with nearly all aspects of verbal memory and comprehending instructions.

MOTOR SPEED

Within the field that studies processing speed, *motor speed* generally relates to fine motor agility, such as how fast we can copy something or put pegs in a board, rather than to how fast someone can run, for example. This is one of the areas of processing speed that's been studied the most, primarily because it's relatively easy to study. Some methods of testing processing speed include timed tests that measure the speed at which someone can place pegs in a grooved board (motor speed), copy a series of numbers (visual and motor processing speed), or read a paragraph (visual and verbal speed processing). In all of these examples, visual processing plays a role in how quickly these tasks can be completed. Thus, when we talk about *academic fluency*, such as how quickly it takes to complete a math worksheet, write a paragraph, or copy something from a blackboard, we're really talking about a complex interaction of visual and motor skills (often referred to as *visual-motor skills*). Depending on the task, verbal processing may also play a role. For example, taking notes in class depends on a person's ability to quickly *hear and understand* what someone is saying, *visually process* what a teacher has written on the chalkboard, and use *motor speed* in writing the information in a notebook.

EFFECTS ON GENERAL FUNCTIONING

Processing speed deficits in one or more areas often lead to deficits in *general areas of functioning*. It can mean that a child needs more time to complete many—if not most—tasks. A child may

often look confused or appear absentminded because he is unable to process information at the rate it's being delivered. Some children may actually avoid engaging in difficult tasks altogether or not get started on new tasks because they are aware they cannot get the job done in the amount of time allotted, and therefore feel defeated before they even begin. Conversely some kids cope with these deficits by rushing through their work; they may finish a test quickly and turn it in even though they haven't answered each question thoroughly. The work might not be completed correctly, but the student feels a sense of accomplishment because he wasn't the last one done.

Maturation of Processing Speed during Childhood (or, "Will My Kid Ever Get Any Faster?")

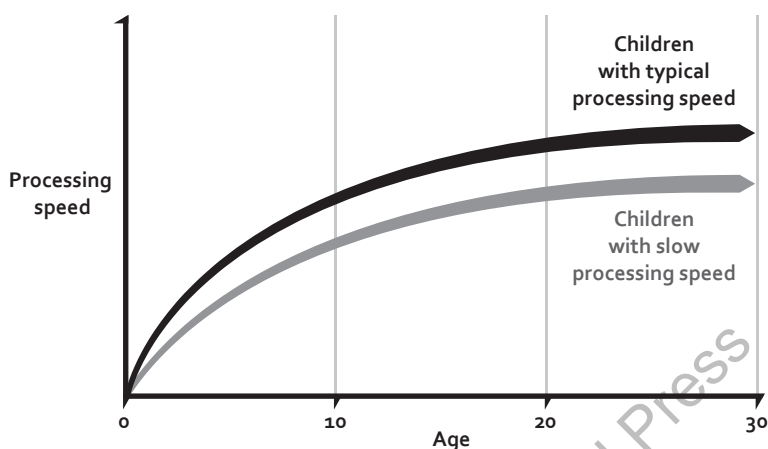
The million-dollar question that we get asked almost on a daily basis is "Will this ever get better?" It is one of the toughest questions to answer, and more about this will be said in Chapter 3 (which explores the science of processing speed). The short answer is *yes*. Nearly every child will be faster at age 10 than she was at age 5—and even faster at age 15. The problem is that everyone else is getting faster too, and processing speed is relative. So even though a child is faster than she was before, it's possible (or even likely) that she'll still be slower when compared to peers. However, a child's processing speed does change dramatically over time, and a number of different factors contribute to these changes.

First, the changes are likely related to the impact of practice and experience. Since young children are relatively inexperienced at nearly all tasks (even simple ones like brushing their teeth and deciding what to wear), their lack of experience leads to slower processing. Research on processing speed has shown that the more times someone repeats a task, the more automatic—and thus quicker—the response becomes. This is why even kids with slow processing speed are quicker than their parents on tasks such as video games and texting on a cell phone.

Second, the speed increases are also due to structural changes to the brain that happen naturally as it develops during childhood. So, for example, just as changes in computers have "grown" over the years to produce faster central processing, so does growth in the brain result in faster cognitive processing times. These changes include more connections in the central nervous system, brain growth, and changes in something called *myelination*. The *myelin sheath* is a layer of fatty cells that insulates the brain's nerve cells and helps speed the brain's impulses. Just as electrical current needs to be insulated, so do the brain's electrical impulses. During childhood, that insulation develops (this is the process of *myelination*), and it allows the brain to work more efficiently and quickly because the electrical impulses that form the base of the functioning of the brain can travel faster and more effectively—all of which culminates in the ability to literally *think faster*.

These two factors—experience and brain growth—are crucial in increasing processing speed during the childhood and adolescent years. Do most kids speed up? With the exception of children who have significant brain trauma, nearly every child will become faster at most things. The problem is that you, as a parent, might not reap the benefits as the process continues into young adulthood. By the time your child is ready to go to college, he will probably be ready to make up his mind about what to have for breakfast quickly enough to get to class, though he might still be the last one in the family out the door. Soon after that, he'll be off to college or a job and those maturing—and faster—processing speed skills won't be as apparent to his parents as they will to his roommates, professors, or employers.

As the graph on the next page shows, very often the gap with peers never shrinks. In other words, although your child will be faster than he was several years ago, she'll likely never be *faster than her peers*. The key to dealing with this issue is explored later in the book, but suffice it to say here that in adult life deficits in processing are often not a problem because we generally choose vocations and avocations that are well suited to us. For example, a child with a slower processing speed who also has superior ver-



bal skills might be better off as a philosophy professor than a trial lawyer. Although this is a gross generalization to illustrate a point, the issue going forward in life is to keep expectations for growth realistic while maximizing the child's potential. Not every career demands quickness—in fact, for some careers it is a hindrance. Knowing what to expect is key—but more about that in future chapters.

A Quick Assessment of Processing Speed

If you're reading this book, you likely already suspect that your child has slow processing speed. Perhaps she has had formal testing that indicated a deficit, or perhaps you just *know* that your child's natural pace is slower than that of her peers. In the next chapter, we'll talk about formally assessing processing speed, but as an informal assessment, the checklist on pages 17–18 is a good guide. The items on the checklist are broken down into specific areas:

1. Verbal Processing (that is, “Listening”)
2. Visual Processing
3. Motoric Processing



The Processing Speed Checklist for Parents

Does your child exhibit problems in the following areas?

1. *Verbal Processing*

- Appears not to listen to others
- Doesn't seem to understand directions
- Can't seem to follow instructions
- Becomes overwhelmed with too much verbal information
- Needs more time to answer questions
- Even when he knows the right answer, is hesitant to give it
- Answers questions with short responses
- Does not participate in class discussions
- Has trouble retrieving factual information from memory
- Can't keep up with the pace of lectures
- Makes grammatical errors in writing
- Has problems sustaining focused attention during social activities
- Needs additional time to respond in conversations

2. *Visual Processing*

- Doesn't pay close attention to details
- Has difficulty proofreading work
- Makes careless errors
- Doesn't grasp the subtle, visual cues of social relationships
- Stares off into space instead
- Neglects to look at important visual information
- Omits phrases or words in writing

3. *Motoric Processing*

- Seems tired, even after a good night's sleep
- Seems lazy or unmotivated

(cont.)

The Processing Speed Checklist for Parents *(cont.)*

- Moves slowly on fine motor (for example, writing) or gross motor (for example, catching a ball) tasks
- Is reluctant to start tasks
- Can *do* the assignments, but not in the time allotted
- Is slow at the physical aspects of writing

4. *Academic Processing*

- Is a slow reader
- Is slow to recall basic math facts (for example, times tables)
- Has difficulty taking notes in class
- Has trouble formulating and expressing ideas in writing
- Exhibits inconsistent academic performance
- Lacks fluency when reading aloud
- Becomes distracted during academic tasks
- Makes punctuation and capitalization errors
- Makes spelling errors in writing, despite otherwise being a good speller

5. *General Problems with Processing Speed*

- Often looks confused
 - Frequently seems absentminded
 - Lacks persistence in completing any type of task
 - Avoids tasks that require sustained attention or focus
 - Generally seems to be "slow" much of the time
 - Needs extra time to complete tasks
 - Forgets information that he learned just yesterday
 - Frequently responds, "What?"
 - Starts out strong but then wanders off-task or "tunes out"
 - Impulsively rushes through tasks
 - Is hesitant to participate in social situations or conversations
-

4. Academic Processing
5. General Problems with Processing Speed

Record your answers here to compare with scores on a similar checklist in Chapter 4. In that chapter, which discusses how parents and kids “fit” in terms of their processing speed, you’ll get a chance to rate yourself in these areas. It might also be useful to complete the checklist below for *all* of the children in your family, so that you can get a sense of the match between the siblings. If you’d like to do that, feel free to photocopy the checklist or download and print extra copies from www.guilford.com/braaten3-forms.

You might find that your child exhibits problems in only a couple of areas or in most areas. The child might vary in how frequently and pervasively she exhibits these problems. Overall, though, as you might have guessed, more “yes” responses are indicative of more significant problems with processing speed.

What We Don't Know about Processing Speed Is More Than What We Do Know

Don't let this statement discourage you. Processing speed has become an increasingly important topic in the field of child development and child psychology; however, we know less about it than we do about almost any other area of cognition—but that doesn't mean we don't know anything about it. Processing speed is a multidimensional variable; it is complex and it is yet to be determined how best to define and measure it. Although we know it has an effect on social, emotional, and academic functioning, we don't yet know *all* that we should to assess it and treat it fully. That being said, we do have some ideas on how to best compensate and remediate impairments in this area. Researchers have started to understand how processing speed is related to other areas of brain functioning, what the possible causes of difficulties are, and how other disorders such as ADHD and learning disabilities contribute to weaknesses in processing speed.

If you are a parent of a child who is frequently described as

always behind, never able to keep up, this book may restore some optimism to your family and help you feel that you can cope with these difficulties more confidently and competently because you understand them better. If you are reading this book because you have a niece, nephew, or grandchild with these issues, or if you're a teacher or therapist, our hope is that this book will provide the knowledge you need. Although there is no magic bullet that will solve a child's deficits, we do highlight the steps to take to help your child reach his full potential. There is good reason for hope because this is a new and exciting field in the area of cognitive research, and more is being discovered every day.

Copyright © 2014 The Guilford Press