Your Second Brain: The Thirty-Day Challenge

Many kids are struggling. ADHD diagnoses have reached epidemic levels. Our children are objectively doing worse than children just one or two generations ago. They are more allergic, spacey, hyperactive, autoimmune, tired, depressed, anxious, and physically ill than ever before. Why?

Part Three of this book, Check Your Environment, will tackle many of the environmental triggers and toxins that are directly causing ADHD symptoms and the plummeting of our children's well-being. We will examine diet, sleep, screens, nature, and how they affect your child and his behavior, health, and ability to learn. These chapters deal with specific challenges that children with ADHD symptoms may be facing.

The gut-health connection The "need to feed" is the most basic desire for any parent. It's probably also the most challenging. The kids are hungry all the time! And we are busy. Don't we want them to eat healthy, nourishing food? Sure, but we also want them fed and happy without having to sprout or ferment something, look up recipes, and use every pot and pan in the house.

A friend just sent me a quote that said,

"Who knew that the hardest part of being an adult was figuring out what to cook for dinner every night for the rest of your life?"

Isn't that the truth! When it comes to our kids with ADHD symptoms, the challenge is even greater. She's a picky eater; he tantrums when there is no pizza in the freezer. Getting these kids fed the food you always dreamed your kids would eat seems like a distant fantasy. The food negotiations are not worth the effort, you may think. He's going to get what he wants in the end anyway because you won't let him starve, and your "need to feed" suggests that if only he consumes some food (read: empty carbs), at least he will be quiet, calm, and allow you to focus on helping with his homework or succeeding at developing good habits.

In this chapter we will take a close look at diet and its connection to behavior. We will examine scientific breakthroughs that make a direct link between people's gut health and their ability to learn, remember, and focus. We will review the symptoms that your child is struggling with, and if you choose to take the thirty-day challenge, you will see that it can alleviate ADHD symptoms in a significant number of struggling children.

Common wisdom on ADHD is that a change in diet will not alter behavior. We have been conditioned to believe that only the crunchy granola, grass-eating, tree-hugging types think behavior has anything to do with the food we eat. Doctors continue to insist that ADHD is a genetic, neurodevelopmental disorder. In other words, we can eat whatever we choose, within reason, because our food does not impact our behavior.

Leading researchers disagree. Cutting-edge research suggests that our gut has everything to do with our brain functioning and therefore needs our attention and care.

Allow me to introduce two sweet children. Perhaps you will identify with parts of their stories. Their symptoms may sound familiar to you. Once we get to know these kids, we will discover all the symptoms related to gut-brain breakdown. We will take a tour through the gut, understand the risk factors, see why kids with ADHD symptoms are more vulnerable, and finally begin our Thirty-Day Challenge.

Meet Anton: Little Anton was a mess. He was in kindergarten, aged five, and the teacher was already hauling his parents in for meetings on a biweekly basis. He was bothering kids, throwing dangerous and large items around the classroom, and totally disregarding classroom rules. When I observed Anton, a beautiful brunette with large deep brown eyes, he seemed uncomfortable. He pulled at his clothes and scratched his skin. He needed instructions repeated eight times before he responded; he touched everything and had a whopper of a runny nose. He was very engaged when the teacher told a story but sitting him down to write was a nightmare. He finally wrote his name down on a school assignment after being chided repeatedly by his teacher. He never completed the assignment. Anton did not know I was in his classroom to observe him, but he came right over to chat. He asked charming questions and wanted to know everything about me and the computer I was holding. He was clearly an intelligent and engaging child.

The teacher, a talented and patient woman, was urging the parents to begin Ritalin, explaining that Anton was suffering, and he would fall way behind the class and feel terrible about himself if he had to be held back because he was not learning the skills he needed for first grade. The parents were on the verge of hysterics. This was their oldest child, and they were wary about tinkering with his young brain with stimulant drugs but could not offer any alternative solutions.

Now, meet Mika: A young couple entered my office, looking exhausted and helpless. Their daughter Mika had just begun third grade, and the teacher was demanding an evaluation for their child's out-of-control ADHD. When I had spoken to the mother on the phone, she said she did not detect any offensive behaviors at home, but once I began asking questions during our meeting, she did recall some difficult symptoms. It seems Mika had trouble listening to instructions, even simple ones. She threw wild tantrums over small unmet expectations. Her reading was also not fully fluent.

Here is Mika's bio: She was a miserable baby who cried nonstop for the first few months of her life. As hard as the mother tried to nurse her, she just turned away and refused to eat. Mika had harsh sensory problems as a small child, most of which have since been resolved. She still plays with her food and makes a colossal mess at every meal. She also needs a window open, no matter the temperature outdoors. She had chronic strep throat as a baby and now has strep at least once every winter. She has recurrent bouts of worms. No medication clears her system of the worms. She swings between constipation and diarrhea. She has a phobia of being in small, enclosed places, a fear of being alone, and sleeping out for the night. She gets a headache nearly daily after lunch. Mika has a family history of autoimmune conditions such as celiac, eczema/ psoriasis, allergies, and asthma. She gets rashes on her elbows that don't seem to ever go away.

These children are suffering! What is going on with them?

We are seeing a mix of behavioral/emotional/physical symptoms. As we go through this chapter, please do not feel defensive or guilty about the food you and your children have been eating for so many years. Your doctor probably has had a few hours of nutrition training at best throughout his entire medical

school education, leaving the food industry to indoctrinate us for years. The cards are stacked against us as we feed our families the S.A.D. (Standard American Diet) or M.A.D (Modern American Diet) diet. This diet is indeed making us both sad and mad, but we have not accessed the information we have needed up until now.

My journey to improving the health of my family only began with sheer desperation, as I watched one of my children become very ill with no clear understanding as to why he was suffering. After many years, many blood tests and trips to the emergency room, my little boy was finally diagnosed with celiac and is now thriving, thank God. I am grateful for my wake-up call and hope that my experience will save you from the trauma of having to face poor health and a struggling child.

Back to sweet little Anton. Let's take a fresh look at him. Here are some symptoms that may be connected to his difficulty focusing and completing tasks.

• He has a runny nose.

• He's touching everything.

• His clothes are bothering him.

• Following instructions and completing assignments is hard for him.

Now it's Mika's turn. Mika has:

• Alternating diarrhea and constipation

• Persistent intestinal worms

• Been exposed to antibiotics for much of her childhood

• Sensory processing issues

• Difficulties sitting in class and listening to simple instructions

• Daily headaches

• Anxiety

These physical symptoms should be included in the complete evaluation of Anton and Mika's health and learning abilities. Both sets of parents may be told by the doctor evaluating ADHD symptoms that their child has ADHD plus a sensory processing disorder. Anton's parents may be told they should visit an ear, nose, and throat doctor or allergist to figure out why his nose is so runny. Mika may also be treated for anxiety with psychiatric medication or an emotional intervention.

Here is what studies have found about children with ADHD symptoms:

1. **Children with ADHD symptoms are more likely to suffer with bowel issues:** According to a study conducted on seventy thousand children diagnosed with ADHD, researcher Dr. Cade Nylund found that these children were significantly more likely to suffer from chronic constipation and fecal incontinence than other children their age. These children also visited the doctor more frequently for complaints of constipation and incontinence. Taking stimulant medication did not alleviate these bowel problems (McKeown et al. 2013).

2. **Children with ADHD symptoms are more likely to suffer from upper respiratory infections, colds, asthma, and allergic rhinitis:** It has been determined that, in China, many children with ADHD also have allergic rhinitis or asthma. These children are more susceptible to the common cold or upper respiratory infections compared with normal healthy children (Zhou et al. 2017).

3. **Attention Deficit Hyperactivity Disorder may be a high inflammation and immune-associated condition**. Participants in a Chinese study of 8,201 people were identified as having ADHD symptoms. In comparison to the normative control group, the participants with ADHD had an increased prevalence of allergic diseases, including asthma, allergic rhinitis, atopic dermatitis, and urticaria. The authors of the study concluded, "Our results supported the association between ADHD and allergic/autoimmune diseases. The further studies will be required to clarify the underlying mechanisms" (Chen et al. 2013).

4. **Young children with ADHD may be at increased risk of deficits in various sensory processing abilities, over and above the core symptoms of ADHD**. In a study conducted in Israel, the researchers found that young children with ADHD symptoms were rated by parents and kindergarten teachers to have more symptoms of a sensory processing disorder than their normative peers (Yochman et al. 2014).

Why are children with ADHD symptoms struggling with these health issues?

I want to explore an answer to this question with you, which depends on the intimate connection between the gut and the brain. We will see that when the gut is not getting what it needs to thrive, the effects are noticeable throughout the person's body and behavior. Below is a list of symptoms your child may be suffering, which would indicate that her gut is calling out for help. I have included a brief explanation of the gut-brain connection that is causing each symptom, but if you want to understand them fully, see the deeper explanations later in the chapter:

• The child may be anxious or depressed because the gut neurotransmitters are not communicating with the brain through the vagus nerve. In addition, harmful bacteria in the gut can alone increase anxiety, according to a study at McMaster University in Ontario by gastroenterologist Premysl Bercik. He also found that good bacteria reduce anxiety (Carpenter 2012).

• The child may develop learning problems through leakage of lipopolysaccharides (LPS) into his bloodstream and across the blood-brain barrier. When our gut leaks, the LPS penetrates the blood-brain barrier and creates a vulnerable brain.

• She might struggle with concentration because her unhealthy gut produces less dopamine, the neurotransmitter that gets us going by stimulating the reward center and boosting our mood.

• His serotonin production becomes limited, thereby affecting his sleep quality, memory, and cognition. This may be why kids with ADHD often struggle with sleep. Sleep problems are not just one of the symptoms of ADHD!

• She may have an imbalance in her gut hormones, the ones that control appetite, leading to unhealthy weight gain and binge eating.

• You know that picky eater you have? His gut is demanding all those cookies and candies. His bad gut bacteria dictate what kind of food he would like to be fed.

• She may develop food allergies. When the gut gets leaky, food particles slip out into the bloodstream. The immune system sees these unharmful foods as an enemy and destroys them. From that time on, the food is marked as a dangerous substance, leading the body to overreact when the food is ingested. Food allergies can be deadly.

• A child's sensory system could be destabilized, affecting how comfortable he is in his clothing, when in contact with others, and his tolerance for being in any environment. Children with sensory processing challenges are also picky eaters and may gag on food that is intolerable to them.

• He may suffer from more infections and illness. Runny nose and strep and ear infections become common. He can also experience joint pain and acne.

• Children with sensory processing challenges are at higher risk of developing autoimmunity disorders. When a substance leaks through the gut lining, the body will identify and destroy it, commit the particle to its memory, and mark it as dangerous. The body sometimes goes one step further. It does something called molecular mimicry, meaning the substance may have a similar structure to one of the organs in our body. If this is the case, our own immune system will identify this organ as dangerous and begin to attack it. Examples of autoimmune conditions that are on the rise in children are celiac, asthma, and eczema.

• Our gut produces our vitamins. When the gut is not functioning correctly, the child does not get the vital nutrients her brain needs to function sharply.

• A child may get stomach and head pain and have low energy.

• Finally, children with sensory processing challenges may develop ADHD symptoms such as inattention, distractibility, hyperactivity, and social challenges.

We will now go a little deeper to understand the science behind these symptoms and behaviors. Many years ago, Hippocrates, the father of modern medicine, stated, **"All disease begins in the gut."** This was way back in the third century BC. Centuries later, the nineteenth-century Russian biologist Elie Mechnikov made a direct link between human health and longevity and a healthy balance of bacteria in the body. He famously said, **"Death begins in the gut."** Something was indeed brewing in the gut, but modern medicine did not discover it for many long years. Phillipe Pinel, a psychiatrist who treated mental patients for many years, concluded in 1807: **"The primary seat of insanity generally is in the region of the stomach and intestines"** (Williams 2010).

Only recently did the gut come back into fashion. We are fortunate to have been born into a generation of explosive discovery relating to the power of the gut. David Perlmutter, MD, a leader in the field of functional neurology, wrote an eye-opening book called *Brain Maker: The Power of Gut Microbes to Heal and Protect Your Brain* (Little, Brown and Company, 2015). Dr. Perlmutter, along with many of his colleagues, has contributed to our understanding of the gut and its vital role in keeping us healthy and sane. This is a book well worth owning. Dr. Perlmutter shares a list of environmental risk factors that, if present, indicate a person's gut needs repair immediately. As you read through the list, mark off what insults to your gut you may have suffered throughout your life.

• Mother taking antibiotics or steroids or acetaminophen while pregnant "We found that using acetaminophen for 29 days or more during pregnancy gave a 220 percent increase in risk for ADHD in

the child," Eivind Ystrom, a researcher at the Norwegian Institute of Public Health and the lead author of the study, told CNN. "This was after taking medical conditions and risk for ADHD in the family into account" (Tousignant 2017).

- Child born by C-section
- Child not breastfed for at least one month
- Child suffering from frequent ear infections or strep
- Child needing ear tubes
- Tonsils removed
- Child treated with steroid medication even for one week
- Child prescribed antibiotics once every two or three years
- Child prescribed acid-blocking drugs for reflux or digestion issues
- Gluten sensitivity
- Food allergies
- Sensitive to chemicals found in everyday products
- Child diagnosed with an autoimmune condition
- Type 2 diabetes
- Being more than twenty pounds overweight
- IBS (irritable bowel syndrome)
- Diarrhea or loose stools at least once a month
- Depression
- Sensory integration disorder.
- Constipation (having a bowel movement less than twice a day)

"It's now undeniable that our intestinal organisms (the roughly one hundred trillion bacterial creatures in us and on our skin) participate in a wide variety of physiologic actions, including immune system functioning, detoxification, inflammation, neurotransmitter and vitamin production, nutrient absorption, signaling being hungry or full, and utilizing carbohydrates as fats. All of these processes factor mightily into whether or not we experience allergies, asthma, ADHD, cancer, diabetes, or dementia". (Perlmutter 2015, 9).

If we can understand how a healthy gut functions, we will immediately understand the devastating impact of a sick gut. Let's get to know the gut a little better. The gut is a closed system connecting our mouth and anus in one long, sealed tube. The surface is uneven, has many ridges and villi (fingerlike projections), and is nine meters in length. It has a surface area equivalent to two tennis courts, allowing

for maximum absorption of food. We understand why the gut is important in digestion and vitamin production.

We get that the gut can be out of sorts and cause a tummy ache, gas, or reflux. But what does all of this have to do with brain function? Michael D. Gershon, MD, famously called the gut our "second brain." How does the organ that is responsible for the "dirty work" of the body get such an elevated status? The special status of the gut comes from its inhabitants. Large numbers of gut bacteria cling to the gut wall or float free. To put the numbers of gut bacteria inside of us in perspective, we have ten trillion human cells, and ten times that number of bacterial cells, which are significantly smaller than human cells. In total, the bacteria weigh between two and three kilograms (roughly six pounds). The bacteria keep us healthy, and we reward them by feeding them the food they love most.

Our gut bug friends:

• Provide us with our daily energy

• Support detoxification in our body

• Keep chronic inflammation at bay. The source of all disease is chronic inflammation.

• Help protect our blood-brain barrier, keeping our brain safe from invaders

• Are responsible for healthy sensory functioning

• Direct our thoughts and feelings by producing the neurotransmitters used in our brain

• Communicate directly with the brain.

The gut and brain work together to promote our physical and mental health. Looking at this impressive list, we can see what Hippocrates meant when he said that the gut is fully responsible for keeping us healthy.

How is a healthy gut created and maintained?

The first few years of life are critical to developing an optimal bacterial ecosystem in the gut, which is one that is inhabited by many diverse and healthy bacteria. The environment a child grows up in will determine the make-up of her gut bacteria. Here are the guidelines for nurturing a healthy gut:

• Mom transmits bacteria to her child through the placenta during pregnancy and in the birth canal during labor and delivery. Mom transmits some microbes to her unborn child through the placenta. But the motherload (pun intended) is gifted to her child at birth. When our little ones are born by vaginal birth, Mom's birth canal bacteria immediately begin populating the baby's gut. What a great gift we give our children even before we meet them! When a baby is born by C-section (a procedure which is sometimes unavoidable and can save the lives of both mother and child), the baby's first bacterial exposure is to the skin of the doctor, hospital staff, and parent.

• The environment the child is born into contributes to the colonization of the gut. Premature birth affects the healthy colonization of gut bacteria. When a child is born early, he cannot fully benefit from the bacterial exposure during pregnancy. Home birth versus hospital birth will impact the population of the gut because each environment has different bacteria. If a child requires intensive care shortly after birth, once again, she will be exposed to hospital bacteria, medication, and stress. Adrenaline in the gut

is produced in response to stress, which affects the balance and viability of the bacteria. Surgery is a stressful experience that can also alter the gut population.

• Antibiotic use alters gut balance. Avoiding antibiotic use (which is not always possible) keeps our gut well balanced and strong. Unfortunately, western countries medicate with antibiotics far too frequently. Children who have a lot of ear infections and take antibiotics to treat the infections have been shown to have a higher risk of developing ADHD symptoms (Brody 2011). To add insult to injury, the meat we eat is loaded with antibiotics, excreted antibiotics get into our groundwater, and antibiotics in the form of pesticides and herbicides (i.e., RoundUp) are used in agriculture. Food coloring, food additives, and preservatives wreak havoc on our gut bacteria. Antibiotics significantly reduce the diversity and health of our gut bacteria. Chlorine in municipal water also reduces the diversity in our gut.

A link between antibiotic exposure and altered brain function is well evidenced by the psychiatric side-effects of antibiotics, which range from anxiety and panic to major depression, psychosis and delirium. A recent large population study reported that treatment with a single antibiotic course was associated with an increased risk for depression and anxiety, rising with multiple exposures (Rogers et al. 2016).

• The way a child eats after birth continues to dictate how his gut will be colonized. Breastfed babies develop a much healthier microbiome than bottle-fed babies. Breast milk is loaded with prebiotics, the food our microbial friends eat, and the baby continues to receive his mother's bacteria from her milk and skin. Dr. Laura J. Stevens of Perdue University found that children who were breastfed were less likely to develop ADHD (Burgess et al. 2000).

• Exposure to animals and nature matters to your gut. Do you have a pet? Do you go to the petting zoo, out on hikes, or spend significant time in nature? We often think pets are great for kids because pets calm our children and teach them responsibility. What we didn't realize until recently was that we get so much more than that from our four-legged friends. It turns out that animal and nature exposure are key ingredients in vibrant gut health. We breathe in the microbes in the air, drink down microbes in natural water sources, and gain exposure to various healthy bacteria through our skin when we are out in nature. More nature and animal exposure directly leads to a more diverse and healthier microbiome. City dwellers have a less varied microbiome than the folks who live in the suburbs and on farms (Tun and Konya 2017).

• The sterility of our environment reduces "food" for our gut. Doctors Erica and Justin Sonnenberg explain that there is an incompatibility between our human DNA and that of our microbiome because our DNA has remained the same throughout the generations, but due to our poor western diet, our gut microbiome has changed. We no longer eat the foods that fuel our bacteria and are not exposed to healthy bacteria in our environment (dirt). We are "starving our microbiome self" (Sonnenberg and Sonnenberg 2014).

• Diversifying our diet promotes a healthy, varied gut. The more different types and colors of fresh vegetables and fruit in their original form we eat, meaning a whole food diet, the healthier our gut will be (Heiman and Greenway 2016).

• What we eat affects the population of our gut. The food choices we make also affect our gut bacteria's diversity. A plant-based diet, rich in colorful organic fruits, vegetables, and fibers, high-quality protein and complex (non-glutinous) carbohydrates guarantees a varied robust microbiome. Eating naturally

ripened foods in season promotes diversity of our diet. Highly processed foods, sugars, simple carbohydrates, preservatives, and food coloring reduce the good bacteria in our gut and promote colonization of bad bacteria, thereby causing inflammation and illness. This bad bacteria makes us fat. When rural Africans who eat a mainly plant-based diet and have a very diverse microbiome migrate to western countries, their gut bugs are the first to suffer. Very soon after the relocation, diversity is replaced by a gut microbe monoculture (Davis 2016).

• Stress affects our microbiome. People who are exposed to more stress, abuse, or trauma have a less diverse microbiome (Karl et al. 2018).

• Consistency and frequency of bowel movements affect our overall health. Our body eliminates toxins through bowel movements. If a person has less than two bowel movements a day, the toxins his body is attempting to eliminate reduce health.

How many of us in the western world reach the age of three with a well-nurtured gut?

Almost none of us. If we did have a well-populated sealed gut, we could expect to have flawless communication between our gut and brain. But instead, ADHD is on the rise, as are autism, autoimmunity disorders, and other psychiatric conditions in children. American children are not genetically different to any significant degree from children of other nations where ADHD is rarely seen. No one is asking the obvious billion-dollar question: why are children in Western cultures having such an issue [sic] as attention deficit, learning disabilities and impulsivity control problems? Obviously, what's going on here is something environmental (Perlmutter 2015, 90).

There are three major ways in which our gut can be injured. All injuries are environmentally caused, and all can be reversed.

1. Gut dysbiosis: The gut can have a very narrow gut bacterial population, or bad bacteria can overpopulate.

2. Leaky gut: The gut lining can begin to leak.

3. Gut microbes can be starved because we are not providing them with the food they need to thrive.

How do these problems develop?

Dr. Zach Bush explains that leaky gut is due to the opening of tight junctions in the gut lining (Vermette 2018). Tight junctions are like Velcro and are responsible for keeping things in and out of the gut. Dr. Bush explains that the loosening of these junctions has happened over time, as a result of factory farming and changes in the American diet since World War II.

Firstly, the use of excess jet fuel in synthetic fertilizer destroyed the bacteria in the soil, the same bacteria that enriches the human microbiome. When the bacteria in the soil died out, we lost some vital nutrients we once got from our food. As an example, tomatoes used to have lycopene, which is a powerful cancer fighting nutrient. Now tomatoes have nearly none of this nutrient.

In addition, our processed diet consists mainly of soy and corn. These two products are loaded into our meats, bread, baked goods, etc. Also, animals eat corn and become processing plants for this exceptionally low-nutrient-dense vegetable. This has dramatically reduced the diversity of our microbiome. The less variety we eat, the fewer bugs we need to process our food. As a result, our gut

becomes populated with a narrow selection of bacteria, mainly the kind that digests processed food and simple carbohydrates (think white pasta and processed cheese).

The next hit to our health came in the 1970s. Our gut had already become less diverse, and now the tight junctions in the gut lining came under attack from glyphosate, which was introduced to the farming market as a herbicide. It was considered a first-rate herbicide because it could be sprayed on plants and only kill weeds, leaving the plant intact. For this reason, it was a best seller because we finally had a herbicide that would not hurt the plant and that seemed safe for human beings. But while glyphosate was indeed killing the weeds, it was also causing the destruction of our gut microbes. Researchers have suggested that glyphosate can cause dysbiosis, which is an imbalance between beneficial and pathogenic microorganisms. While it wipes out beneficial bacteria, the overgrowth of harmful bacteria generates high levels of noxious metabolites in the brain, which can contribute to the development of neurological deviations.

Dr. Perlmutter explains that good gut bacteria are responsible for producing important brain chemicals like GABA and BDNF (brain-derived neurotrophic factor). The level of these essential brain chemicals is directly linked to the health of our brain. If we want to maintain a healthy brain, our gut must be treated well (Rueda-Ruzafa et al. 2019, 51).

Gluten was the next hit to our gut. I feel the eyeballs rolling already. We are all quite cynical about gluten these days because it seems that everyone is “sensitive” to it. How can an entire generation be intolerant to gluten when our grandparents ate gluten happily with no apparent adverse effects? Although I would agree that the gluten-sensitivity scare is overstated, we must focus on the population that seems to have a clear gut injury.

Dr. Alessio Fasano, MD, conducted research at Harvard University and published a paper showing that gluten in wheat causes permeability of the intestines of every human being. “Increased intestinal permeability after gliadin [gluten] exposure occurs in all individuals” (Holon et al. 2015).

Does this mean that most people should stop eating gluten? Absolutely not. Our gut lining can heal quickly, and in many cases, despite momentary permeability and inflammation, the person will not suffer long-term negative effects from gluten. There is no need for gluten-free hysteria for most of the population. When people go gluten-free but replace their bread with the gluten-free processed alternatives available now in every supermarket, they have done their gut no favors. As a matter of fact, the highly processed nonfood gluten-free alternatives may be causing more harm to our health than gluten itself.

The intestinal wall is our gatekeeper. We know from Dr. Fasano that gluten permeates this lining. Zonulin is a protein that regulates the tight junctions of the small intestine. When zonulin is released in the intestines, the tight junctions open slightly and allow larger particles to pass through the intestinal wall. Gluten activates zonulin, leading to a cascade of gut leakage and a brain deprived of essential nutrients and vital neurotransmitters and the many difficult symptoms we have been discussing. Unfortunately, the gut bacteria that would have protected our body from zonulin leakage have already been destroyed thanks to factory farming, explains Dr. Bush. He adds that the breakdown of the intestinal wall will also cause sensory problems, followed by ADHD symptoms. If the gut does not recover from the gluten/zonulin insult, depression and anxiety will soon follow as inflammation rises (Fasano 2012).

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Why do children exposed to the same inflammatory environments develop different symptoms?

Dr. Tom O'Bryan, in his informative book *The Autoimmune Fix*, explains why some people are hurt by gluten and others seem to be just fine: Epigenetics teaches us that while genes influence our health, they are not our destiny. Studies of twins give us a great example for how this works. If you were to take identical twins and keep them in the same environment, they would continue to look identical as they got older. But if you change the environments, including feeding them different foods and experiencing different stressors and different lifestyles, the twins will actually look different, and their health will be different. These differences are caused by whether or not a certain genetic expression was activated, dependent on those external factors (Rodale, 2016, 42). Our genes are fully loaded when we are born. The decisions we make for ourselves and our children in terms of diet and lifestyle will determine if certain genes will be activated or not.

The factors discussed above (how and where a person was born, antibiotics, exposure to nature or animals, levels of stress, etc.) will either keep genes dormant or allow them to be expressed. Once disease is already present, we can reduce the damaging symptoms with better diet and lifestyle choices. Dr. O'Bryan reminds us that it is excessive chronic inflammation that is causing our child to feel out of sorts.

Now we may better understand why there is a modern epidemic of childhood disorders. Just one or two generations ago, our environment was cleaner, life was a little slower and less stressful, children played outdoors and with animals, elective C-sections were not popular, and we had a more diverse home-cooked diet, consisting mainly of fresh produce and whole foods. Much has changed, and our sweet children are paying the price. Today Dr. Bush estimates that about eighteen million Americans are sensitive to gluten. Our genes have not changed, but our environment sure has.

The difficult symptoms caused by gut dysbiosis can be reversed. **Are you ready for the Thirty-Day Challenge to reverse the harm done to the gut and potentially eliminate ADHD symptoms?** Why thirty days? Because it's a sure way of getting a sense if your child's symptoms are coming from his gut or not. Obviously if it took a few years to develop a health problem, it will take some time to repair the damage. But thirty days will indicate if we are moving in the right direction or not. We must find out if eliminating the inflammatory foods and adding healing foods will begin a restorative process in your child.

You have to be strong here!

All too often, parents will agree to jump on board for one month, but despite the obvious positive results they see right before their eyes, they then choose to discontinue the diet. Why? Because this diet requires some hard work, and sometimes we simply don't have the bandwidth to carry on.

One example comes to mind. I was meeting with the parents of a beautiful blond boy, aged eleven. The kid was fantastic! He was constantly pulling wild ideas out of thin air. He also had dyslexia and a nonstop runny nose. He literally bounced off the walls. The parents agreed to take their son off gluten for a short trial. Within a week, his nose stopped running completely. The boy was loving his snot-free face. After two weeks, he seemed calmer. Three weeks later, his nose was running again. "What's going on?" I asked. His sad response was that the holidays happened. His parents could not maintain the diet, and he was back to his original discomfort.

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Another parent called at the end of the Thirty-Day Challenge to report that the entire family had gone off gluten for the month with great results all around. She, the mother, could finally focus for long enough to sit and read a book for more than half an hour. She had already finished a few good books. Her husband was much less constipated, and the kindergarten teacher was reporting that their daughter was less aggressive. She wanted to know when she could start reintroducing gluten because it was hard to maintain the diet when visiting grandparents and going out to eat.

I know how hard lifestyle change can be. I've done it and am still at it. It can take over our lives until we get it straight. It's a huge project. Which is why, if you discover that this will make all the difference to your child, you must be strong! Our child depends on us. Our chances of success are higher if we do it together as a family or with a friend or relative, so we can support each other. What happens at the end of the month? Simply put, if there were improvements, you need to keep at it.

Step one: Evaluating symptoms before and after the Thirty-Day Challenge
Before we get into the plan, please take some time to write a list of gut-related symptoms you or your child are struggling with. Make a separate chart for each family member participating in the challenge. Describe all the symptoms in detail.
Ready to roll? Great! We are going to focus on three treatment areas, and in each we will discuss what we are eliminating and adding. The three categories are:

1. Resealing the gut lining to stop the leaking (what we will be removing from the diet)
2. Creating a diverse and healthy ecosystem in our gut (what brain-nourishing foods we will add)
3. Feeding our helper bugs the food they thrive on (adding extra support)

We will remove anything that causes inflammation (processed food, gluten, dairy, toxic animal products) and flood our child's body with nutrients to get his gut and brain functioning optimally.

Step two: Restructuring your diet

What must we eliminate Please refer to the accompanying chart for all the information on what we will be eliminating:

These are the major food groups you will be eliminating. It feels like a lot, and it is, especially when your child is a picky eater. To make this realistic for families with children on less-than-ideal diets, I try not to be too strict. Taking this program step by step for a few weeks before beginning the challenge is recommended, especially for kids who live on processed food. In our family, we started by removing dairy and adding coconut or nut-based replacements. Once the kids were used to that, we went gluten-free, making sure there were good home-baked options for the brave kids who were giving up their bread.

We must go 100 percent gluten-free. This part of the diet is not flexible. The good news for parents of kids with a limited tolerance for anything but carbs is that at the beginning of this dramatic shift, GF pretzels, bread, pancakes, cake mix, etc. will be allowed if you can't find anything else your child will eat. Please limit these items as they are loaded with sugar, simple carbohydrates, and preservatives.

Try to provide home-prepared alternatives using nourishing GF flours. Some examples of these flours include almond, buckwheat, brown rice, oat, chickpea, tigernut, and coconut. Tapioca flour has little nutritional value but is useful as a binder or thickener. Chickpea, almond, and tigernut are great flours for sweet baked goods. The others work for savory dishes.

Dairy should be very limited. Kids should not be drinking whole glasses of milk. There are many substitutes today. Go with nut or coconut milk. Since plain yogurt and aged cheese have healthy probiotics in them, they are permitted in moderation on the dairy-free diet.

There is a raging debate about the health benefits of animal products. Some doctors, including Dr. Brooke Goldner (look her up on YouTube), recommend a plant-based, mainly raw, vegan diet, loaded with vegetables, greens, fruit, legumes, and healthy grains. Her research indicates that animal products cause substantial inflammation and should be avoided. Parents whose children have already been diagnosed with any autoimmune condition (celiac, psoriasis, asthma, etc.) should consider following Dr. Goldner's raw, vegan diet to reduce or even eliminate symptoms. Other doctors, specifically in the functional medicine world, recommend eating animal in moderation. All agree that a healthy diet should be primarily plant-based and that processed and factory-raised meat should be avoided at all costs. If you would like to include animal products in your diet, be sure the food is pasture-raised and hormone- and antibiotic-free.

Completely eliminating sugar is the way to go, but it may be too challenging for your child socially and emotionally. He goes to birthday parties; she hangs out with friends. You may have a total rebellion on your hands if you try to eliminate sugar completely. The first two weeks of complete sugar elimination are difficult because your gut bugs will be tantrumming and demanding their sugar. Once you wean those nasty bugs, you will start to feel great. Try it! Be a role model and remove sugar from your diet first. Allow kids some 70 percent chocolate; make home-baked almond muffins with maple syrup; give them dried fruit or other less offensive GF snacks. If you do take the brave step of completely eliminating sugar, begin the process two weeks before the Thirty-Day Challenge. The first two weeks of sugar elimination are very difficult; you may feel sick, tired or very agitated. After two weeks, you will feel better than ever and be ready to begin the Thirty-Day challenge with energy you didn't know you possessed.

Another idea is to restrict sugar consumption to the second half of the day. As we know, sugar is very addictive. The minute we taste some in the morning, we are searching for more all day long. If we only permit ourselves to eat something sugary later in the day, we will naturally and gradually reduce our intake. If we go too extreme, we will lose our audience. The following are the foods and supplements we will be adding during the Thirty-Day Challenge in order to promote gut healing and a diverse microbiome.

I will be recommending supplements that I have studied and which I, my family, and many clients use. I have no financial relationship with any of these companies.

Step three: Adding gut health-promoting nutrients and activities to your diet Add these foods and activities to your diet and lifestyle Refer to the accompanying chart to learn what foods and lifestyle changes you will be adding:

These are all the gut-healing foods we should be enjoying. What about our helper bugs? Shouldn't we be feeding them as well?

Step four: Adding foods to our diet specifically to nourish our healthy gut bacteria Prebiotics are the rich compost in the soil of our gut. They are the seeds that grow new vibrant microbes. Prebiotics are made up of nondigestible carbohydrates [fiber] that are used by bacteria in the colon to produce measurable health benefits. Naturally found in food, a prebiotic is not broken down or absorbed by the gastrointestinal tract. Beneficial bacteria use this fiber as a food source in a process called fermentation (Jockers).
The following is a list of prebiotic foods that taste great and are a gift to our healthy bacteria. This list was provided by Dr. Jockers:

- Onions
- Leeks
- Radishes
- Carrots
- Coconut meat and flour
- Flax and chia seeds
- Tomatoes
- Bananas
- Garlic
- Chicory root
- Dandelion greens
- Jerusalem artichoke
- Jicama
- Asparagus
- Yams

I have added several supplements to this program, and I would like to discuss each one.

1. **Magnesium:** In a perfectly delightful book called *The Magnesium Miracle* (Ballantine Books, 2003), Dr. Carolyn Dean tells us that we shed a lot of magnesium, a trace mineral, daily. Magnesium should be found naturally in many foods, but it is depleted through sugar consumption, sweat, and stress. She also explains that magnesium is a vital element in the release and uptake of serotonin. Low levels of serotonin equal lower-quality sleep, memory, and emotional stability. In addition, children and adults who suffer from constipation (less than two bowel movements a day) get instant relief when they supplement with magnesium. If you detect sleep problems in your child, anxiety or depression, constipation or brain fog, magnesium is your best friend. Dr. Leo Galland, author of Superimmunity for Kids (Random House, 1989), recommends six milligrams per pound of weight per day, meaning two hundred and forty milligrams for a child who weighs forty pounds. He suggests a child take one tablespoon of magnesium citrate daily or one and a half teaspoons of milk of magnesia a day. It is preferable for a child to swallow a tablet, but the liquid works too. Magnesium can cause diarrhea in some children. If that's the case, split the dose in two. I highly recommend a magnesium supplement for moms and dads as well. We are major magnesium poppers in my house. If a child (or her parent) is not eliminating bowel movements twice daily, increase magnesium intake until elimination becomes consistent. This step alone can dramatically improve mood, behavior, and focus.

2. **Probiotics:** We do not consume enough probiotic foods per day. We are also not exposed to all the good bacteria from nature nearly enough. We have lost the art of preserving Your Second Brain: The Thirty-Day Challenge 285 food through fermentation. It is preferable to diversify and strengthen our gut bug helpers through food and natural exposure, but we must deal with what we have. In the words of Dr. Mark Hyman, best-selling author and leading functional medicine pioneer, "Think of your gut as an inner garden; just as with any garden—when you let the weeds take over, you get into trouble." When we eat a processed diet, we consume pesticides and medications that ravage the good gut bacteria. Once the helpful bacteria are gone, the weeds—aggressive unhealthy bacteria—take over. Along with other gut-healing nutrients, a low-glycemic, whole-foods diet filled with healthy proteins, fats, fiber, and probiotics can improve the health of your gut significantly. Why? Because probiotics help to populate your gut with good bacteria, I recommend taking very high-potency probiotics (look for at least 25 to 50 billion live CFUs from a variety of strains). Start slowly and observe how the probiotics affect your gut. When you first start taking probiotics, you might notice some uncomfortable symptoms like gas and bloating, but if the symptoms persist for more than a few days, you may need to delay probiotics until your gut is more intact (Hyman). Look online for Dr. Hyman's favorite brands. I recommend Garden of Life, developed by Dr. Perlmutter. My family and clients have used it with positive results.
3. **Vitamin D3:** In a study published online in 2018, vitamin D was shown to reduce the permeability of the intestinal lining in animal models. Interestingly, some probiotics increase serum vitamin D levels. In a multicenter study, oral supplementation with lactobacillus reuteri, a probiotic, increased serum 25(OH)D concentration (Tabatabaeizadeh, SA et al. 2018). In an additional study headed by Bruce Vallance, PhD, investigator at the BC Children's Hospital Research Institute, University of British Columbia, researchers found: Vitamin D deficiency has been shown to promote an inflammatory environment which leads to dysbiosis of the gut microbiota, even in clinically healthy individuals. Oral vitamin D supplementation is known to be beneficial for individuals who suffer from chronic inflammatory diseases . . . UVB exposure boosted the richness and evenness of their microbiome . . . (Bosman et al. 2018). In other words, exposure to direct sunlight for a limited time each day, or supplementation with vitamin D3 will strengthen your gut lining and enhance your gut microbiome. We are all deficient in vitamin D. Between 50–80 ng/mL is considered an optimal level of vitamin D. Levels of vitamin D should be monitored.
   The following is the recommendation of the American College for Advancement in Medicine: a. Healthy children under the age of 1 year – 1,000 IU. b. Healthy children over the age of 1 year – 1,000 IU per every 25 pounds of body weight c. Healthy adults and adolescents – at least 5,000 IU d. Pregnant and lactating mothers – at least 6,000 IU.
   Additionally, children and adults with chronic health conditions such as autism, multiple sclerosis, cancer, heart disease, or obesity may need as much as double these amounts. All of these amounts are per day that a person is not exposed to direct sunlight.
4. **High-quality micronutrient multivitamin**: While there are other quality micronutrient supplements on the market, I discovered Hardy Nutritionals through a study I read a few years ago. The study tested the efficacy of micronutrients as a treatment for depression, anxiety, and ADHD symptoms. The study was a ten-week randomized double blind placebo-controlled study led by research professor Julia Rucklidge of the University of Canterbury between 2014–2017.

The original study concluded that preliminary findings indicated a trend in the improvements of ADHD symptoms of inattention, hyperactivity, ODD, and DMDD following treatment. A follow-up study was conducted recently, showing that children who chose to stay on the micronutrient regiment continued to improve. Those who want to supplement with micronutrients can rely on these vitamins to supply adequate magnesium, B vitamins, and vitamin D.

5. Omega-3: Omega-3 is a fatty acid that is essential to our diets and is not produced by our body. We must consume omega-3 in order to guarantee proper brain development and function. In a recent study, the researchers found that children with ADHD have reduced omega-3 levels. They concluded that dietary supplementation appears to create modest improvements in symptoms. There is sufficient evidence to consider omega-3 fatty acids as a possible supplement to established therapies (Hawkey and Nigg 2014).
   Amy Myers, MD, in her best-selling book The Autoimmune Solution (Harper One, 2015), tells us that omega-3 fish oil helps to decrease inflammation in addition to supporting brain function. This is precisely the support our gut needs on its way to healing. She recommends supplementing with one thousand to four thousand milligrams of omega-3 daily. This is an adult dose. Consult with your doctor for an appropriate children's dose. Other excellent sources of omega-3 are chia seeds, flax seeds, and walnuts. Those who choose a vegan, plant-based diet would benefit greatly from these natural sources of omega-3. The seeds oxidize quickly, so Dr. Goldner recommends grinding a handful of seeds in a coffee grinder immediately before eating them. They can be added to a smoothie, made into a pudding or put in salad. Do not heat them. These seeds and walnuts are powerful anti-inflammatory supplements and can be added liberally to a healthy diet.

The Thirty-Day Challenge

The Preparation Stage

1. Discuss what you have learned in this chapter with your family and make sure everyone is on board.

2. Invite a friend or relative to join. It's easier and more fun to do the challenge with a supportive group of friends.

3. Get blood tests. Ask your doctor for a comprehensive blood test. Pay attention to vitamin D, the entire B group, and iron. Only 1 percent of magnesium is found in blood serum, so I recommend supplementing with magnesium no matter what the blood test reports if you detect symptoms of magnesium deficiency such as constipation or sleep problems.

4. Go to the grocery store and get to know the gluten-free and dairy-free products. Buy different flour alternatives and start to play with your existing recipes or look online for pancake, bread, and baked good recipes. Have your child bake with you. Do not buy sugar-free anything! The sugar substitutes used are very damaging to your gut. There are better sugar substitutes mentioned above. Once you see what is out there with a fresh new perspective, the Thirty-Day Challenge will seem less intimidating.

5. Take your child along to look for healthy snacks. Apple sauce, dried fruit, nuts and seeds are fantastic options. Trader Joe's is a great supermarket to visit. Check out thrivemarket.com to order affordable gluten-free and organic foods and products at competitive prices. They deliver directly to your home.

Start trying new vegetables and creative salads. Eat as many raw vegetables as possible. Let the kids do the chopping. Make refreshing smoothies and add leafy greens to them. Our goal is to get the whole family to fill up on vitamins and minerals harvested directly from the ground and trees. These are the very foods our brains and bodies crave.

6. Get rid of the food you will not be eating for the next thirty days. Rid your pantry of all the junk!

7. Make a chart of all the neurological and gut symptoms your child is experiencing and describe them in detail (example above).

8. Join gluten-free groups on Facebook and look online for healthy meal options for a gluten-free plant-based diet. You are in luck! Gluten-free is all the rage, so you will be inundated with as much information as you need. There are online cookbooks and endless resources.

9. Start to stock food in your fridge that can easily stay fresh for a week, so you are not sweating over the stove constantly. Examples include a pot of quinoa, rice, or roasted vegetables. Chicken and salmon also can be refrigerated for a few days. Gluten-free soup is a great quick meal and can be made in large portions and frozen or reheated throughout the week. Make sure you have enough produce.

10. Don't skimp on healthy snacks. Feeling hungry on this challenge is not permitted! Remember, fruit is fast food, so place a bowl of fruit on the table. It will be eaten. I am always amazed that when I slice carrots and peppers and just place them near my children as they play a card game, the vegetables get vacuumed up, even by the kids who theoretically don't like vegetables. A platter of melon is a great way to be greeted after school. Many supermarkets offer presliced vegetables and fruit and pre-mashed avocado. These are instant, effort free snacks.

11. Focus on nutrient-dense whole foods, foods that can still be identified as their original form. As food is processed it loses its nutritional value. We want to flood ourselves and our children with abundant natural foods (fruit, vegetables, beans and lentils, organic eggs, pasture-raised meats and healthy grains). If a food is so processed that it can only be identified by the ingredient list on the package, it has no nutritional value and is harmful to our health.

Now, choose a date to begin. Do not launch your Thirty-Day Challenge until you have enough food in the house and a solid menu plan. Many families fail because they feel hungry and don't have an easily available snack. You are now ready to begin your journey to complete physical health, mental clarity, and emotional well-being.

Action Plan

1. Review the chapter.

2. Take a week to prepare, with the instructions for the preparation stage, and then begin your epic Thirty-Day Challenge. If you feel your family needs more time to prepare, as mine did, make small

changes every week for a few weeks (cutting out the processed stuff and adding new vegetables), and begin the Thirty-Day Challenge after those preparatory weeks.

3. When you complete the challenge at the end of thirty days, take out your symptoms chart and fill it out again. If you have seen improvements, keep at it.

4. If there have been no improvements, either continue the challenge for one more month to confirm that the symptoms your child is struggling with are not gut-related, or you can begin to reintroduce each food slowly. Take one week to reintroduce gluten and notice how you feel. The next week introduce small amounts of dairy, and once again observe how it affects your mood, energy, and ability to focus. You may decide to reintroduce all the whole foods you have eliminated if they do not cause you harm. Consider keeping processed foods, GMOs, and excess sugar out of your diet. Try to maintain a whole food diet, eating mainly foods that are rich in nutrients and have no chemicals added.

THE CHEAT SHEET (This is a quick review of the chapter for your convenience!)

The Thirty-Day Challenge, Getting Your Brain and Gut Healthy
* The most basic need a parent has is to feed the family.
* When evaluating a child, we must look at behavioral, emotional, and physical symptoms.
* ADHD symptoms that indicate that the gut needs care include: runny nose, sensory issues, diarrhea or constipation, headaches, recurrent intestinal worms, bouts of strep or ear infections treated with antibiotics, anxiety, depression, food allergies, low energy, learning problems, sleep issues, and unhealthy weight gain.
* “All disease begins in the gut” – Hippocrates
* What triggers gut problems? Antibiotics, birth by C-section, not being breastfed, frequent infections, tonsils removed, steroid medication, acid blockers for reflux, gluten.
* How is health linked to the gut? Our gut bacteria are responsible for giving us energy, detoxifying our bodies, keeping inflammation at bay, keeping our brain barrier sealed, maintaining healthy sensory functioning, and producing neurotransmitters.
* How can we keep our gut healthy? Vaginal birth, breastfeeding, full-term birth, avoidance of antibiotics when possible, exposure to animals and nature, less sterile environment, eating a plant-based, very varied whole food diet, and calming down and relaxing.
* All insults to the gut that lead to health problems are environmentally triggered and can be reversed. When we change our diet, we can recreate our gut and brain health.
* Let’s begin to heal our gut: 1. Foods we will eliminate: Gluten (wheat, rye, spelt, barley, kamut), dairy, sugar, artificial colors and flavors and preservatives, “food” born in a factory, GMOs, processed oils. 2. Foods we will eat: ɣ Grains: Rice, GF oats, buckwheat, millet, GF pasta, potatoes, sweet potatoes ɣ Milk substitutes: Nut milk, coconut milk, soy milk ɣ Sweeteners: Natural honey, maple syrup, fruit, dry fruit ɣ Fruit, vegetables, legumes, greens, broccoli, cauliflower and cabbage ɣ Animal products: Some choose to eliminate them altogether. Others eat eggs, meat, fish, and poultry in moderation. ɣ Healthy fats: Olive oil, cold-pressed nut oils, coconut oil, avocado, nuts, and seeds. 3. What we will add to boost health: Probiotics and more time with animals and in nature, omega-3 fatty acids, vitamin D3, magnesium,

multi-vitamins 4. Drink a lot of water! 5. Eat prebiotic foods that feed our gut bacteria: Onions, leeks, radishes, carrots, coconuts, flax, chia seeds, tomatoes, bananas, garlic.

* Prepare for the Thirty-Day Challenge by eliminating all the foods you will not be eating for the month. ϫ Look up recipes ϫ Join Facebook groups for healthy gluten-free eating ϫ Get familiar with the foods you will be buying in the supermarket ϫ Let your kids help you choose healthy snacks ϫ Introduce milk substitutes slowly ϫ Be sure to explain the program to your kids, and don't just dump a total dietary change on them all at once.

* When the Thirty-Day Challenge is over, take out your symptoms sheet and evaluate if your child has made progress on his health concerns. If he has made significant progress, keep at it. If he has made a little progress, consider extending another thirty days, always keeping an eye on the symptoms. If there was no progress, check if you have truly flooded your child with vegetables and fruit and other nutrients and eliminated all inflammatory foods. If you have followed the Thirty-Day Challenge exactly with no progress, slowly begin reintroducing the foods that were eliminated. All children would benefit from less sugar and processed food, so consider not reintroducing them.