



CHAPTER 1

The Kids Are Not All Right

CHILDHOOD IS IN CRISIS. The things that children used to do for millennia, which largely consisted of running around outdoors with friends and being unsupervised by adults, have been eroded by modern society. So too has the sense of responsibility and the expectation from parents that children would pitch in and contribute to the running of the household, the family business, or the farm. It has been replaced by a strange shell of childhood that has had the life sucked out of it. Children now spend their formative years mostly indoors, sitting, doing homework and consuming screen-based media. When they go out, they attend adult-directed organized activities and follow their parents around stores.

This is their life. For anyone who's ever lived anything different, it's not hard to see that this is far from satisfactory. This new version of childhood misses the point. It is a dehydrated skin of an experience that should be rich and juicy and overflowing with lessons that propel a young person toward adulthood with confidence. Instead, it leaves them incomplete, anxiety-ridden, inexplicably bereft. They may not know what they're missing, but they're still suffering for it.

It's profoundly unnatural. One might even say dangerous, like saying kids should sleep upside down, to quote one expert.¹ It's an inversion of all that humans have known to be normal and natural up until about two seconds ago on the scale of human history. I am generally not a pessimist when it comes to the state of the world; there's no time in history when I'd rather be alive than right now. But I am deeply worried about the children. They are not all right.

The purpose of childhood is to play, and the kids aren't playing. In 2003, only 10 percent of U.S. children were playing freely outdoors on a regular basis,² and that was before smartphones and tablets existed. Now we're at a point where children spend less time outdoors each day than the average American inmate, and the amount of time they spend doing

homework and shopping has increased by 145 percent and 168 percent respectively.³

There are various reasons for this, including academic pressures, the rise of extracurricular activities, parental fears, and lack of playmates. But these reasons, all real and justifiable in their own way, are enabled and overshadowed by another reason, which is the presence of digital media. Screens are getting in the way of kids playing freely, imaginatively, and physically, more than anything else. Children aged 8 to 12 now spend 5.5 hours a day on screens, and teens aged 13 to 18 are on their devices for an average of 8 hours, 39 minutes.⁴

Kids gravitate to devices because they offer immediate distraction and fun. There's no work required in finding people to play with and thinking up a game. Parents see how much their kids enjoy being on devices and are content to let them be; it's easier than fighting about going outside, and it keeps the kids contained where they're easier to monitor, physically at least. But this has an unfortunate ripple effect. It changes the feel of an entire neighborhood. When a kid actually wants to go outside and find playmates, there's no one there because all the other kids are indoors on their devices. The child goes back inside; it's no fun playing alone.

This comes at a high cost. When digital media is allowed to replace physical play, children miss out on the crucial early lessons of their lives. Play is how a child learns to *be* in the world. That is its evolutionary purpose, and nothing can replace it. Play has an impact on three main areas of child development, according to Isabel Behncke, an expert on the role of play. First, it enables creativity and imagination, which is how children learn to problem-solve. Second, it allows for social bonds, which teaches children how to interact with others. Third, it creates a sense of aliveness, which is how children learn to experience joy and pleasure. These lessons, Behncke explains, are not "trivial add-ons to becoming a functioning human being... They are the core of it. Play builds the foundation of a solid personality, and everything that adults sit down and explain to the child afterward builds on this base."⁵

Social psychologist Jonathan Haidt describes play as being what all mammals do to practice the skills of adulthood. Human children play three types of games—chasing, conflict, and pretend—which teach them the "skills that are necessary for democratic engagement." That's how you learn to come up with procedures and enforce them, to be flexible, to

accept defeat. Sometimes you think it's unfair, but you learn to go along with it. When outdoor play got replaced by devices, Haidt says kids were deprived of the vitamin they most needed: "We gave them digital scurvy."⁶

Creative play gives children a way to imitate and grapple with the real world. Pediatric occupational therapist Angela Hanscom told me that, during the COVID-19 pandemic, she saw children playing out all sorts of interesting games based on what they overheard and saw. Kids were acting out funerals and protests, nominating presidential candidates and counting ballots. My own kids went through a phase of pretending to vaccinate each other with pointy sticks. It was their way of processing what was happening around them in a safe way, and it helped them heal from a collective trauma.

Play teaches children everything they need to know about the world. It is a complete deal where the whole is greater than the sum of its parts. The experiences that children take away from years of free play cannot be replicated by adult-administered versions or infrequently encountered fragments of those lessons. Lenore Skenazy, founder of Let Grow, says that when it comes to childhood, "We take everything out, and then we try to put it back in."⁷ But it doesn't work like that. Kids don't need guided mindfulness classes or yoga or emotional freeze-tag where they identify how they're feeling. They just need to play. "Kids are alive when they play. They're taking in all sorts of information, making plans, switching when they don't work, making alliances, betraying each other, then making up so they can have fun again, laughing... I cannot believe how out of it we are when it comes to a normal childhood."

Digital media harms children in two ways. It detracts from their lives by occupying time that could be dedicated to more fulfilling pursuits, and it does scientifically proven harm to their bodies, brains, and emotions. This book focuses on practical solutions to the former category, but a brief overview of the latter category is necessary to provide context for why I, along with many others, believe this is a real crisis.

Mental and Emotional Costs

I meet Mari K. Swingle over video chat. It takes fifteen minutes for the IT department at her Vancouver-based psychology clinic to sort out tech issues on her end, so our appointment starts late. She apologizes, then cracks a joke about the irony that technology, the topic of our discussion, is preventing it. I like her immediately, and not only for her red hair (the

same color as mine) that dominates the screen. She reminds me of Merida, the Scottish princess from the Disney movie *Brave*.

I'd read Swingle's hefty book, *i-Minds: How and Why Constant Connectivity Is Rewiring Our Brains and What to Do About It*, and knew she was someone I wanted to interview. I've found that most people treat the topic of digital media with kid gloves. No one wants to come out and tell parents that their favorite parenting tool has potentially bad side effects. But not Swingle. She is a vocal proponent of cutting back on digital media, a common prescription for her young patients who exhibit signs of emotional deregulation. She backs this with hard data and years of clinical experience, not to mention the profound benefits that appear once a child has gotten a tech overuse habit under control.

But even then, she tells me, sometimes it's too late. "It depends on the age, but for periods of attachment, sorry, they're gone."

"Gone?"

"I hate to be so incredibly pessimistic, but if a child attaches to a device instead of an individual, there's a lot of retraining involved."

She explains that, if a parent hands their baby a smartphone or suspends a tablet above the infant's crib to soothe them whenever they cry, the child learns to associate that object with comfort. "If a child needs soothing and you go to hug them, that hug doesn't do it. They actually need the screen. They've attached to the device, not the person."

"But haven't children always attached to devices of sorts, like stuffed animals?" I ask.

Swingle says there's a big difference. "All the things we used to give children in previous generations, from teddy bears to jingly keys, served a specific purpose within the developmental cycle. You'd grow out of them. A five-year-old is not going to be amused by jingly keys. But screens compound. It gets worse and worse over time. You don't grow out of it."

She describes research by a pediatrician in Australia who noted that parents were coming into her clinic worried about their baby's failure to develop specific facial expressions, such as the smile response. The pediatrician asked her receptionist to do some informal research and note what the parents and infants did in the waiting room ahead of their appointments. It turns out, either the parent was on a device, or the baby was, or both. This meant they were not making ongoing, repeated eye contact with each other, which is a crucial step in teaching a baby how to smile.

“The really scary thing here,” Swingle says, “is the disconnect. These parents had the wherewithal to know something was wrong and bring their child to a pediatrician, but they didn’t [make the connection] that, in order to develop a smile response, you have to interact with smiling human beings.”

Swingle is not the only one alarmed about this. Psychiatrist Daniel Siegel has also found that babies require eye contact with parents to develop the parts of their brain associated with attachment. Not having that can result in “a persistent sense of disconnection and problems with empathy.”⁸

Other research has found that when a mother uses a mobile device in front of her infant, the infant shows signs of distress, tries to regain the mother’s attention, and is less likely to explore the surroundings or play with new toys. The infant recovers when the mother puts her phone away and the pair reconnects, unless she’s a habitual heavy phone user, in which case the “reunion” phase is less successful. The infant remains distressed, less engaged, and less curious.⁹

As babies grow, they start using digital media themselves, often before they can walk. Children in 1970 started watching TV regularly at age 4, but now children interact with digital media as early as four *months* of age. That’s according to the American Academy of Pediatrics (AAP), which recommends that no child under the age of 18 months should have access to any screens.¹⁰ Few parents follow that advice. It’s educational, they think, opening an ABC or counting game app for their toddler to play, not realizing that the educational label is largely made up. The AAP has found that most of the apps available in the educational section of app stores are developed without input from developmental specialists and fail to follow an established curriculum.

There’s concern about how the bells and whistles designed to hold a child’s attention can decrease comprehension or distract from the social interaction that’s supposed to occur between parents and children during use. You might be scratching your head at that—social interaction *during use*? Isn’t the whole point of setting up a kid with an educational app to give the parent a guilt-free break? Not in the eyes of the AAP, which recommends “covieing of media” to improve a child’s digital media experience. When a parent joins the child’s online activity, the child has a more positive experience and retains a greater amount of information. Take, for example,

videos that teach new words to toddlers between 12 and 24 months of age. This only works, the AAP says, if parents watch with them and re-teach the words.¹¹

Let's be honest. Who has time for that? Parents might aspire initially to use digital media solely for educational purposes, but in reality, 85 percent of parents admit to using it to occupy their children so they can get other things done, and only one in five continues to restrict it to educational use.¹² I suspect most parents can relate. Audrey Wichert, a screen-free parent from Toronto, Ontario, told me she always found it funny when parenting books recommended that screens or TV be used with intention. "Why would you use it *except* as a babysitter?" she said.

Not only are kids not learning from their so-called educational apps, but they are failing to develop other crucial skills. Numerous studies show associations between excessive TV watching in early childhood and delays in cognitive, linguistic, and social/emotional functioning.¹³ In studying preschoolers, the combination of starting digital media use from a young age, spending many hours doing it, and being exposed to low-quality content are significant independent predictors of poor executive functioning (e.g., impulse control, mental flexibility, self-regulation) and a decreased ability to understand other people's thoughts and feelings.

Digital media use impedes emotional regulation, and ironically, it's the kids who are already struggling with emotional regulation that are most likely to be given devices. Excessive media use is more common in infants and toddlers with a "difficult temperament," particularly if parents are struggling to maintain control.¹⁴ This is unfortunate because not all children are created equally when it comes to their susceptibility to the negative impacts of digital technology; children who struggle with emotional regulation are at much greater risk and are precisely the ones who need tighter restrictions on use. The more interactive the technology, the worse its effects. This is because interactive devices are more likely to cause hyperarousal and compulsive use than passive ones, resulting in sleep, mood, and cognitive problems.

When it comes to children with mood dysregulation, psychiatrist Dr. Victoria Dunckley has written that no diagnoses should be given unless a child has undergone an "electronics fast," with all devices eliminated for several weeks. This gives the nervous system a chance to reset and possibly resolve many of the symptoms that might indicate mental disorder. Even

when a child has an accurate diagnosis, eliminating electronics altogether can reduce the need for medication while making other treatments more effective.¹⁵

Depending on how much digital media a child consumes, it can be hard to recalibrate a child's emotional baseline. Swingle says, "Once a child has gone down the proverbial rabbit hole, it's really hard to reel them back in. That's when we get into brain development."¹⁶ She describes a scenario that's likely familiar to every parent, that of a child throwing a tantrum because the device has been turned off.

"If a child has been literally tuned into interactive screens since early childhood, then the speed at which the brain works, the attention point, the arousal point that the child needs to be interested in something, is so much higher. The rest of the world *is* boring, and that's where we get some of the extreme emotional deregulation. That's why children [have a] tantrum when they get off their devices. It's because that quiet is actually painful for them. They can't self-entertain. They don't know how to."¹⁷ In other words, there is a profound neurological response underpinning that child's behavior. It's not that he's undisciplined; his brain has been rewired by chronic exposure.

A mother named Paula has two daughters, one of whom is more susceptible and sensitive to screens than the other. Paula describes it as an eerie pull. "[My daughter] was a terrible sleeper from the get-go. I was exhausted from working full-time, so I often tried to get my then-husband to find a solution to her characteristic two-hour night wakings. His solution was screens. He'd put on Baby Einstein—blobs dripping to music, a sort of YouTube hypnosis—and return to bed, leaving her safe in her crib, tablet propped up outside. As soon as that video ended, the fire would ignite about tenfold to what it was prior. It was as if all the energy she had built up watching and learning and expanding her little mind had nowhere to go but out."¹⁸

Paula says this continued throughout childhood, and her daughter, now 10, still struggles with emotional deregulation following screen use. "We were unable to have her sit for a full movie without a lash of emotion and energy and sometimes rage after the TV or tablet or other electronic device was turned off. It wasn't always a protest that time was up, but more like a spring had been coiled by the screen, winding tighter and tighter until *bam!* Power down, energy flies."

Emotional deregulation also comes in the form of aggression if a child has been exposed to violent behaviors online. This virtual violence is not experienced physically by the child, but rather “in realistic ways via new technology and ever more intense and realistic games.”¹⁹ A summary of more than 400 studies found a significant association between watching violent content and behaving aggressively.

Critics point out that the correlations are only in the small to moderate range, but as the authors of a study in *Pediatrics* explain, they are stronger than the associations between passive smoking and lung cancer, which was sufficient for many jurisdictions to ban smoking. What’s interesting, though, is that most Americans do agree there’s a link between exposure to screen-based violence and real-world aggression, but they think their own children are immune to it. This is known as the third-person effect. It’s a common phenomenon in which people assume that only a small fraction of the population that does not include themselves is susceptible to a negative effect.²⁰

Effects of Social Media

As they get older, preteens and teens create social media accounts. While apps like Instagram, Tik Tok, and Snapchat are fun and allow kids to stay in touch with peers and up to date on trending memes and videos, they create a host of problems. One issue is that of comparing oneself to others online. Social media does not depict reality; it only shows what a person wants others to see. But that’s a hard thing for an emotional, hormonal teenager to keep in mind. Cornell University researcher Janis Whitlock put it well when she said, “If you want to create an environment to churn out really angry people, we’ve done it. They’re in a cauldron of stimulus they can’t get away from.”²¹

According to Haidt, 2013 kicked off a mental health crisis that coincided with most adolescents becoming smartphone owners. Girls gravitated to visual platforms like Instagram, while boys went to YouTube and video games. This, he says, is the only explanation for the truly shocking and quantifiable spike in anxiety, depression, and suicides that ensued, and we shouldn’t be so surprised by it. “Going through puberty while posting photos of yourself and waiting for strangers to comment—there is no way you can tweak this to make it mentally healthy. This is devastating for girls in particular. This has to stop.”²² He wants the age of Internet

adulthood to be bumped up from 13 to 16, as was originally proposed in the Children's Online Privacy Protection Act, but even then, it would have to be enforced and currently is not in any way.

Adolescents, despite appearing connected, are lonelier than ever. In her book *iGen: Why Today's Super-Connected Kids Are Growing Up Less Rebellious, More Tolerant, Less Happy—and Completely Unprepared for Adulthood—and What That Means for the Rest of Us*, Jean Twenge, a professor of psychology at San Diego State University, cites research that found heavy social media use in grade 8 (when kids are typically 12 or 13 years old) increases risk of depression by 27 percent. "Social networking sites do not spark joy or protect against depression the way non-screen activities do," she writes. "They don't help and, especially among younger teens, actually hurt."²³

Like Haidt, Twenge points out that depressive symptoms rose sharply and suddenly at the same time that smartphones became ubiquitous and face-to-face interactions plummeted. After analyzing nationally representative surveys of 11 million young people across multiple generations and interviewing hundreds of teens, she concludes that new forms of screen-based media are to blame for many of the challenges young people face these days. She describes it as "the worm at the core of the apple."

Social media isn't the only problem. Digital media use in general is linked to depression, but the relationship goes both ways. Research has revealed that individuals with mood dysregulation are drawn to excessive digital media use, but at the same time excessive digital media use leads to mood dysregulation. In other words, depression is both a cause and a symptom. Swingle writes extensively about how people who feel social awkwardness embrace digital media more readily than others. They use it to cope with anxiety and to avoid face-to-face interactions. Such individuals perceive digital media as being more controllable than humans and thus safer, but over time this creates problems. It reduces a person's ability to interpret subtle nonverbal messages, ultimately worsening the problem and making them more socially awkward.²⁴

Not surprisingly, when you take away that crutch, skills return. One study from 2014 found that when a group of sixth graders went to an overnight camp for five days without TV, computers, or mobile phones, their social skills improved significantly by the end. Compared to classmates who stayed home and maintained their usual media habits, the

campers got better at reading nonverbal cues and picking up on the facial expressions, voice tone, and body language that have always been a crucial component of human interaction. Perception of these cues allows a person to modify their own behavior in response to another, but it deteriorates when face-to-face interaction is replaced with screen time. Particularly for children whose social skills are developing, there's a risk that daily existence in a media-saturated environment could interfere with their long-term ability to read human emotion.²⁵

MIT psychology professor Sherry Turkle writes that markers for empathy among college students have declined 40 percent in the past three decades, which aligns with the emergence of online communication replacing in-person companionship. Empathy refers to the ability to sense what other people might be feeling. To lack that skill is to lack a basic awareness of what it means to be human, and the result is a society made up of people who are grossly out of sync with each other. If a person feels disconnected from others, they may turn to their phone to fill a social void. But that perpetuates a heartbreaking cycle in which they're neither finding true connection nor enjoying solitude. Turkle says, "Afraid of being alone, we struggle to pay attention to ourselves. And what suffers is our ability to pay attention to each other. If we can't find our own center, we lose confidence in what we have to offer others."²⁶

Strong social relationships are important in many more ways than just feeling like we belong. They strengthen a person's immune system, speed recovery from illness, reduce risk of depression, and influence longevity. Haidt says, "If you want to predict how happy someone is, or how long she will live, you should find out about her social relationships."²⁷ This is where parenting comes in. It's up to us, as the guardians of our offspring, to ensure they have opportunities to develop strong and healthy relationships. This means emphasizing in-person interactions while simultaneously reducing screen-based ones. Twenge's prescription for improving mental health is simple: "Put down the phone and do something else."²⁸ The more your children do this, the better off they'll be.

Physical Costs

Angela J. Hanscom is a pediatric occupational therapist who noticed a downward trend in children's physical abilities. More children were seeking therapy for issues that would have been considered rare in the past.

They had little stamina and poor posture; some experienced back pain and tense neck muscles. Their bones were prone to fractures. They fell down frequently and tripped over their own feet. Teachers told her that a greater number of children showed aggression and were less focused in class. Hanscom noticed a reduction in creative thinking, in ability to engage in unstructured outdoor play, in emotional stability. She wondered if these symptoms were related and began to dig deeper.

Her research yielded both academic and practical results. One is her book, *Balanced and Barefoot: How Unrestricted Outdoor Play Makes for Strong, Confident, and Capable Children*. The other is her business, TimberNook, a licensed nature-based play program where children learn how to play freely outdoors, and thus cure many of the ailments that hamper them.

Children learn by challenging their bodies physically, Hanscom tells me over the phone. When that doesn't happen, they fail to develop optimally, and many of the issues listed above can manifest. The best activities for kids to engage in are the ones we adults often think of as silly, annoying, pointless, or even risky. It could be tree-climbing, swinging from branches or monkey bars and hanging upside down, hopping along rocks or logs, scrambling up a steep embankment, rolling down a grassy slope, jumping, practicing cartwheels, spinning wildly, and swinging high on a play set. These activities develop gross and fine motor skills, endurance, strength, posture, and the five senses that you're already familiar with—taste, sight, smell, sound, and touch.

But there are two more senses you may not know about. The proprioceptive sense is the ability to know what different parts of the body are doing without needing to look at them. The vestibular sense provides awareness of a body in space and helps a person navigate the environment effectively. A child with a good vestibular sense can leap effortlessly from rock to rock along a shoreline, whereas an underdeveloped child "may consistently run into things, trip a lot, be too close and personal when talking to people, and frequently fall."²⁹ Of all the senses, Hanscom says that the vestibular is the most overlooked, and yet essential because it affects everything.

The more time a child spends exposed to a range of sensory-rich experiences, the better off she will be, and the better integrated the senses, body, and brain will become. Hanscom's solution is to implement several

hours of daily active play in a child's life, preferably unstructured, outdoors, and with other children.

This brings us back to screens and digital media.

Many parents assume it's impossible to find time for free play each day. Schedules are jam-packed as it is, plus the kids have recess at school and extra-curricular sports; isn't that enough? But there's a profound difference between adult-directed sports and child-directed play. The latter challenges children's bodies and minds in far more varied ways. And children do have more time than their parents realize. Just remove digital media.

Hanscom's blunt advice is bound to make parents squirm: "The math is pretty easy when it comes to screen time. To solve the problem, you might establish a new rule of television as a treat once or twice a week, and add in a compulsory two or more hours of active playtime every day to your child's routine."³⁰ Three hours a day of outdoor play is ideal for children of all ages, including teens. No electronic devices are allowed at TimberNook, of course, and this carries over into Hanscom's own family, where her children are not allowed phones until high school. She tells me they occasionally watch movies, but she avoids promising a set amount of screen time each day, since they might start feeling entitled to it. It's best kept as a rare treat.

Screens are not entirely to blame for children's sedentary lifestyles these days. Other factors include the widespread adoption of baby "containers" like bouncy seats and carriers, a car-centric culture, and an academic obsession with sitting in the classroom. But digital media certainly makes it harder to get kids moving and worsens matters by firing them up neurologically, only to give them nowhere to release it. Screens should be for special occasions only, Hanscom says. "Try saving the screen time for a rainy day."³¹

Too Much Sitting

All that sitting contributes to unhealthy weight gain. Children are less able to detect being full when distracted by digital media during meals.³² Another factor is exposure to advertisements for high-calorie junk foods, making them more appealing to young viewers.³³ This is nothing new. Advertising has always shaped consumption, but the barrage of ads through kids' increased time online makes it worse than ever. In the past, kids saw commercials when they watched TV after school or on weekends, but now ads pop up in the middle of YouTube videos and social media feeds.

If you're concerned about a child gaining unhealthy weight, reducing the amount of screen time is a logical first step. There's an established link between time spent consuming digital media and weight gain, and the magic number is around the 1.5- to 2-hour mark. That's where the risk for obesity persists, even when adjusted for psychosocial risk factors and behavioral problems.³⁴

Young children aren't off the hook, either. One study of 2-year-olds found that body mass index increased for every hour per week of media consumed.³⁵ The strongest association with obesity happens when children are allowed greater amounts of screen time *and* have a TV in their bedroom,³⁶ so get those devices out of their rooms and into a common space where they don't have unrestricted access.

Lack of Sleep

Getting screens out of bedrooms will improve the quality of children's sleep, particularly that of older kids whose video games and smartphones are keeping them up at night. An estimated 30 percent of families allow their children to use devices in their bedrooms after bedtime every single day. The official percentage may be more. One teacher told me that when she asked her grade 5 class how many of them had Internet-connected devices in their bedrooms, every hand went up. This is unfortunate, since childhood is the best time to establish good sleep habits. We know that college students aren't faring well, either. A typical college student has, on average, the same sleep quality as an active-duty soldier or parent of a newborn baby.³⁷ Academic demands notwithstanding, it doesn't have to be that dire.

Exposure to the blue light emitted by devices like smartphones and tablets suppresses the release of melatonin, a hormone that causes us to feel sleepy. This suppression compromises quality of sleep, even after a person has nodded off. Teens who stay up late texting their friends miss out on the deep restorative REM sleep that's crucial for processing information about the previous day's experiences. REM sleep allows the brain to take whatever new memories have been made and file them alongside existing memories, sometimes making subconscious connections that reveal themselves in the form of "brain waves."

That's why some great thinkers and artists have sworn by the power of sleep to summon inspiration. In *24/6: The Power of Unplugging One Day a Week*, Tiffany Shlain describes how Thomas Edison, Albert Einstein,

and Salvador Dalí employed nifty napping techniques to fuel their creativity. “[They] developed a similar practice to harness it. They would put something heavy in their hand (Edison used steel balls, Dalí and Einstein, a key) and sit in a chair. When they grew drowsy and relaxed, they would drop the object and wake up. That’s when they felt like they came up with their biggest creative ideas (and perhaps broken toes).”³⁸

Your high schooler may not be operating at the same level as Einstein, Edison, or Dalí, but lack of sleep is sure to impede, rather than improve, their chances at success. Pediatrician Michael Rich explains, “So even if [teens] stay awake in algebra class, they may not remember what happened in class yesterday.”³⁹ Memory consolidation, as it’s called, simply won’t happen in a tired brain.

Sleep also allows the brain to clean itself, a literal brainwash. Cerebrospinal fluid flushes through your brain, sending toxic proteins to your liver. Neuroscience professor Roxanne Prichard calls this “brain-cell poop” and says that having too much of it can cause “a hung-over sort of feeling” and an inability to focus.⁴⁰

A general household rule like “no screens in the bedroom” is a straightforward way of improving sleep and general well-being. One mother explained how her family established a spot in the home where everyone, parents included, had to deposit their devices before bed. There were no exceptions to this rule, and it worked well throughout the high school years.⁴¹

Neurological Costs

You may have heard the saying “Neurons that fire together wire together.” It refers to the brain’s remarkable ability to forge pathways that make tasks easier with practice. This is how we acquire new skills and get better at them with every subsequent repetition. But establishing certain pathways comes at the cost of others that aren’t getting exercised or strengthened, and thus become rusty or weakened.

Nicholas Carr warns of this in his seminal 2010 book, *The Shallows: What the Internet Is Doing to Our Brains*, explaining that what we’re *not* doing because we’re busy spending time online has real neurological consequences. He says the flipside of the above saying is that “neurons that don’t fire together don’t wire together”; circuits weaken and break instead.⁴² Another way to think of it is “survival of the busiest”—the best-trodden paths become the ones you’re most likely to use. This means that every

single thing we do online, from searching and reading to liking and commenting, shapes our brains.

Dr. Michael Rich describes it as an ongoing process of building neural connections while pruning away less frequently used ones, with digital media playing an active role in that process. Unfortunately, much of what happens on screens provides “impoverished” stimulation of the developing brain compared to reality.⁴³ This recalls Sherry Turkle’s comment that time spent in simulation prepares children for more time in simulation, not for reality.

When it comes to the Internet and handheld devices, things get particularly scary. Carr writes, “The Net delivers precisely the kind of sensory and cognitive stimuli—repetitive, intensive, interactive, addictive—that have been shown to result in strong and rapid alterations in brain circuits and functions.”⁴⁴ He describes it as possibly being “the single most powerful mind-altering technology that has ever come into general use,” with the exception of alphabets and number systems.

What alterations might these be? Everything we’ve talked about and more. Loss of focus, persistence, and stick-to-itiveness. Loss of ability to navigate the physical world, to entertain oneself, to feel happy in solitude. Loss of communication skills and empathy. We crave immediate gratification; we cannot sustain longer cycles of effort toward reward or achievement. The more distractions we expose ourselves to, the greater the state of our cognitive degradation.

In *Stolen Focus*, Johann Hari writes that the average teen or young adult sincerely believes they can follow six or seven forms of media at the same time. This is impossible. The brain may switch quickly between tasks, but “the evidence suggests that you will be slower, you’ll make more mistakes, you’ll be less creative, and you’ll remember less of what you do.”⁴⁵ It’s hardly a recipe for success.

App and platform designers continue to design their products to take full advantage of what our human brains crave. Everything from the pull-down motion to refresh a newsfeed to bright red notifications to savvy friend suggestions is calculated to draw users in and keep them as long as possible. The motivation is financial. The longer your eyeballs are glued to the app, the more likely you’ll see ads that end up generating huge profits for the company and the more information about you is revealed to the algorithm, but this costs us more than just our time. We pay with

our brainpower, weakening neural circuitry by failing to engage in deeply focused tasks. We settle for mental “snacking” and flit among tidbits of information in a paradoxical state of distracted focus.

These sneaky design techniques are known as a “variable ratio reinforcement schedule,” where you never know what you’re going to get. That mystery drives people to keep scrolling, and they get a thrill when someone validates their post with likes. But even more, they love the *anticipation* of that thrill. This is gambling behavior; it is why people play slot machines compulsively and lose track of time and money—and it’s not something that children should be dealing with. Their brains do not have a sufficiently developed self-control system to stop them from engaging in obsessive behavior.

Dr. Anna Lembke, who has spent decades providing psychiatric counseling to individuals struggling with addiction, says social media apps aren’t any different from a gambling disorder. “The response of others is so capricious and unpredictable that the certainty of getting a ‘like’ or some equivalent is as reinforcing as the ‘like’ itself,” she writes in *Dopamine Nation: Finding Balance in an Age of Indulgence*.⁴⁶ She expresses concern that our “uber-ancient neurological machinery” has not evolved for this world of plenty that we now inhabit. We are maladapted to handle the steady flow of pleasure-inducing dopamine that goes along with a heavy digital diet.

It has made us incapable of taking delight in ordinary things. Surrounded by so many high-dopamine stimuli, natural pleasures cease to be interesting, and we end up feeling bored. Lembke describes this as tragic: “We’ve engineered this world that actually allows us to have leisure time, to reflect on these deep moral questions, and instead of doing that we’re playing League of Legends.”⁴⁷ Her advice? Put down the phone. Learn to live with the “intense boredom” that’s inevitable with a comedown, but know that it will stabilize eventually. “This is part of what we need to learn,” she says, “all of us who are in a way addicted to this crazy dopamine oversupply that we live in. We have to be able to recapture our joy in simple modest pleasures.”⁴⁸

Just as addicts can destroy their lives chasing highs, so can excessive smartphone use fritter away one’s life and brainpower by wasting endless hours. In particular, it erodes a child’s chances of learning crucial life lessons by replacing real play with simulation, robbing them of an opportunity that will never present itself again. Resist this, and fight to restore childhood to the play-filled, imaginative state that it is meant to be.