

second nature

HOW PARENTS CAN
USE NEUROSCIENCE
TO HELP KIDS DEVELOP
EMPATHY, CREATIVITY,
AND SELF-CONTROL

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Contents

List of Illustrations . . . ix

Preface . . . xi

part 1 Second Nature Parenting

CHAPTER 1 Creativity, Empathy, and Self-Control . . . 3
Why These Are the Skills Kids Need

CHAPTER 2 Practical Neuroscience for Parents . . . 21
Key Facts and Processes

CHAPTER 3 Second Nature Parenting . . . 43
Methods for Developing the Three Skills

part 2 Raising Creators

CHAPTER 4 The Neuroscience of Creativity . . . 69

CHAPTER 5 How to Raise a Creative Child . . . 79

part 3 Fostering Compassion

CHAPTER 6 The Neuroscience of Empathy . . . 103

CHAPTER 7 Applied Empathy Is Compassion . . . 125

part 4 Cultivating Self-Control

CHAPTER 8 The Neuroscience of Self-Control . . . 151

CHAPTER 9 How to Help Kids Develop Self-Control . . . 161

part 5 Self-Regulation for the Win

CHAPTER 10 What Is Self-Regulation? . . . 171

CHAPTER 11 How to Win at Parenting . . . 185
Motivation, Discipline, and Game Theory

CONCLUSION Parents Shape Future Free Will . . . 205

APPENDIX 1 Commonsense Neuroanatomy . . . 209
Ten Building Blocks to a Human Brain

APPENDIX 2 Epigenetics . . . 215
The Intersection of Nature and Nurture

APPENDIX 3 Neuromyths Versus Neurofacts . . . 221

Glossary . . . 225

Notes . . . 229

Acknowledgments . . . 259

Index . . . 261

About the Author . . . 267

Creativity, Empathy, and Self-Control

Why These Are the Skills Kids Need

WE LIVE IN A WORLD where we can Google any fact, where voice recognition software will make spelling accuracy irrelevant, where computers can read books to us. This means that as parents, we should rethink the skills that we're placing emphasis on. Of course, we want to raise kind people, but it's also true that we want our kids to have relevant skills and a valued place in society when they grow up. We need to keep our kids from being replaceable or outsourced. To prepare our kids for future lives in a computer-dominated world, we need to hone skills in our kids that are vastly different from the things that computers can do so easily. We have to incorporate things like flexibility, rulemaking, and problem-solving into our school curricula and our homes. We have to deemphasize procedure and facts. And we need to give our kids practice—tons of practice—doing the uniquely human things that still elude computers, like the capacities to surprise, to empathize, to create, and to love.

We Aren't Computers

Our society has a love affair with computers. We admire them, but we've started to view our own skill sets through the eyes of technology

and to think about human memory and learning differently because of it. We relate to computers, compare our brains to them, and identify with them in ways that are contrary to the principles of neuroscience, such as thinking about our brains as being hardwired for certain skills or having a limited amount of memory space.

As computers have changed the landscape of our collective ability, we have shaped our lives around the benefits that technology provides. Our value system has changed, and as a result, we're parenting differently. We're cultivating the skills of a computer in our kids, such as multitasking, quick computation, and fact memorization, sometimes at the expense of the things that make us truly human. (We forget that the brain can't turn off like a computer. Our brains are always learning something, always working, even during sleep.) As a result of cultivating the wrong skills, we're setting up our kids for failure and frustration because they won't be prepared for the jobs of the future—jobs that we may not be thinking about yet, human jobs that no computer can do.

Humans and computers approach problems in fundamentally different ways. Computers require two things to work: (1) information coming in and (2) a set of rules to process that information. Computers execute those rules, and they do it rapidly, whereas humans process incoming information in a more flexible way. Computers specialize in tasks that need to be done quickly, while humans are better at finding solutions to messy situations. Compared to computers, humans are exceptionally good at leadership, social collaboration, goal setting, teaching, coaching, encouraging, and selling things. Humans can also more easily decide what is relevant when working with new information.

These differences mean that humans are better than computers at certain types of jobs. These jobs include roles with no strict sets of rules to follow, such as a designer writing a new web application or a doctor diagnosing someone with highly unusual symptoms. They include jobs where you need to easily decide what is relevant when working with new information, such as underwater exploration or convincing your manager that a new type of human resource management system will serve the company better than the current one.

In addition, jobs that require a “human touch,” like counseling, customer service, and delivering medical diagnoses, will always be preferentially given to humans.

Humans retain more flexibility than computers because of *synaptic plasticity*—the way our nervous system can pivot and adapt to change (we’ll discuss this in chapter 2). Computer memory grows by adding more computer chips. Human memories grow by strengthening the connections between neurons—no chips or more storage needed. Constant modification and refinement of these connections is what allows us to learn, remember, and hold an unlimited amount of information. We are constantly adapting, and doing so in a way that computers cannot, by choosing which of our brain’s neuronal pathways get activated and then honing how those circuits are used, using an adaptive flexibility that is never exhausted.

If future humans will need to solve problems and clean up everything messy in ways that computers cannot, then we’re going to need creativity, empathy, and self-control—three qualities that make us uniquely human—and we’re going to need a lot of them.

Creativity

Creativity is key to competitiveness in a global economy. In a competitive workplace, applied imagination may mean the next big thing happens at your company. According to a 2013 *Time* magazine poll about the role of creativity in the American workplace, schools, and government, more than 8 in 10 people surveyed thought America should be considered a global leader in creativity, and many of those who said America is *not* a global leader in creativity felt that American schools are not building creativity in students (31%) or that the American government is not doing enough to support creativity (30%).¹

Creativity is associated with genius in tangible ways. Albert Einstein was able to imagine the theory of relativity, Leonardo da Vinci was able to think up a helicopter in the 1500s, Alexander Bell was a prolific inventor, and Mozart’s lasting musical works are surely hallmarks of creative genius. We know genius runs in families. Sir Francis Galton proposed a genetic basis for genius back in 1869 in his

book *Hereditary Genius*. However, if you consider that the majority of inventions come from unknown inventors, we see that creativity is the rule, not the exception, in humans.²

There are business journals dedicated entirely to finding creative talent and effectively managing it. Finding creative people takes time and money; it's hard because they are rare. When we encounter a creative adult, it's like sighting a unicorn because so few of us make it through our school gauntlet with our creativity and imagination unscathed. We wonder how those creative people still have that spark as adults. We often conclude that they must have just been born creative. We think of creativity more as a talent than a skill, and we certainly don't teach or cultivate it. But there's a disconnect here between what we are taught and what we need: the majority of the 2,040 adults polled by *Time* (62%) say that creativity is more important to success in the workplace than they anticipated when they were in school.³

Building creativity in your child from the ground up serves two purposes: First, creativity will give your child a career boost—not just for jobs with an artistic slant, but also in business, entrepreneurship, engineering, teaching, law, and medicine. But creativity is also essential for effectively solving problems, which will make your child more successful at life, regardless of career choice. Imagination, a natural bridge between empathy and self-regulation, is intimately associated with decision-making. For our children to have confidence in diverse situations and to be effective leaders, we need to teach them to think creatively about problems and then act on their ideas. We won't be always there to point out to our kids all the possible decision routes that are available during a conflict, so they'll have to take the creative lead in conflict resolution themselves. To do this, they'll need to develop creative pathways. Creativity is not a bonus or the finishing touch in our children's development; it should be part of their core curriculum.

CREATIVITY DEFINED

There's a fundamental difference between ideas about creativity in Western and Eastern cultures, and both views contain important concepts.

Western culture sees creativity as divergent thinking—thoughts that take the road less traveled. Western culture values creativity in terms of innovation and the act of harnessing these insights for a specific purpose.⁴ Creativity is defined by the presence of two components: originality and effectiveness. America, it seems, wants to know your ideas *and* what you can *do* with your ideas.

The Eastern definition of creativity, on the other hand, describes a sense of self-fulfillment or self-realization. The Eastern tradition involves an awareness of the truth about yourself, an event, or an object: it's more about finding a new point of view rather than breaking from tradition. We're perhaps not as familiar with this view, but we shouldn't be quick to dismiss it. Practices such as yoga and mindfulness/meditation can help cultivate self-regulation (as we'll discuss in chapter 10).

Not surprisingly, parents also have very different ideas about what creativity means. Sometimes we think about creativity in a Western way, like Doug, who defines creativity as “making thought visible in a tangible product,” or Catherine, who describes creativity as “being able to solve problems by taking what you know, adding new knowledge, and coming up with solutions. Then picking the best solutions and trying them out. Then adjusting them, if necessary.” These definitions reflect a way of thinking about creativity as unique thought with a purpose. In his 1993 textbook *Human Motivation*, Robert Franken defines creativity as “the tendency to generate or recognize ideas, alternatives, or possibilities that may be useful in solving problems, communicating with others, entertaining ourselves and others.”⁵ His Western definition taps into other human aspects, like critical thinking, keen perception, empathy, and honed social skills.

Other parents see creativity in a more Eastern way: When Brit says, “Creativity is self-expression on every level,” she's identifying more with the Eastern tradition; she's seeing messy paints and unique outfits. She's joined by Kevin, who says that creativity is the “ability to express oneself artistically, verbally, in writing in ways that are from one's heart,” and by Rachel, who thinks of creativity as “being artsy—having the ability to create beauty out of anything.” And Katie says creativity is “the ability to express yourself as a child in various

ways/modes and be free-form and unstructured in these explorations.” This is self-expression based on knowing yourself, the idea that we should let our kids become who they want to be.

Parents who define creativity as self-expression may feel that creativity is like dessert after a healthy dinner: it’s a plus, but you’ll be fine without it. Some parents may see finding your own truth as paramount to foster in kids, while other parents might place cultivating creative self-expression at the bottom of a long list of parenting to-dos.

Different definitions lead to differences in how we talk about creativity and how much we value it, ultimately leading to either prioritizing or marginalizing creativity in our lives. For example, when parents define creativity as a purposeful process, as active problem-solving, then it often pops to the forefront of parenting attention. Doug, because of his wholly Western definition of creativity, probably sees creativity as extremely important to foster in his own parenting style. But because Brit sees creativity as simple self-expression, she doesn’t work creativity into her parenting choices. She feels no need to self-express while parenting.

No matter how we define it, creativity is worth cultivating. The Eastern and Western traditions are two sides of the same coin, and one can build on the other. Creativity is truth with utility that can take many forms.

CREATIVITY IS A BIOLOGICAL QUALITY

Creativity involves innovation, which is why computers aren’t so great at it. Repurposing by finding new uses for old things and problem-solving by making connections between seemingly disparate items necessitate an attitude toward rules that eludes computers. It requires both a bending of the rules and an understanding of why the rules are there to begin with.

Is it possible for computers to be creative? There are computers that can generate works of art: They have no visual system but can be programmed to work with hues and saturation. They can be programmed to do what a human artist would do in a given situation. But in the end, the pictures that the computer creates are actually

created by the computer's programmer, right? Unless the computer has a sense of self, its creativity is limited.

CREATIVITY IS THE FOUNDATION FOR EMPATHY AND SELF-CONTROL

Imagination is intricately linked to both empathy and self-awareness.^{6, 7} There are several types of neurons involved in these processes, including the mirror neurons (in empathy) and von Economo neurons (in self-awareness), and they likely play a role in imagination as well.⁸ Individuals with autism have a greatly diminished capacity for imagination, and they also show alterations in both of these types of neurons.⁹⁻¹²

Imagination seeps over into empathy, as we can actively imagine what others must be feeling or experiencing, and this empathy often happens during the creative process.¹³ If you are more creative, you can easily see things from a different point of view, which is the definition of empathy. And the inverse is also true: if you have an ill-defined sense of empathy, you are less likely to be creative.

Creativity and empathy are so linked that it can be hard to tease them apart, but it's easy to tap into both simultaneously. In one study, when 126 undergraduate students were asked to draw a neuron, all but three reproduced a standard version of a neuron they had learned about in a textbook. However, when undergrads did exercises first that made them see or act like a neuron—like fanning out in the classroom in a way that mimicked the fanlike growth of a neuron—then their drawings were better and more varied.¹⁴ Having empathy for a neuron by imagining the neuron's perspective enhanced their creativity. Teaching in this creative way makes variation okay, makes play acceptable, opens assessment up so that there are multiple “right” answers, and increases the students' ownership of learning, and so enhances conceptual understanding.

Creativity is equally important for self-control since it's much easier to have good self-control if you can generate more solutions to a problem (we'll see this in chapter 4). And it's easier to regulate your own behavior if you can entertain yourself with thoughts instead of

fixating on the one thing you're not supposed to be doing, like getting out of your seat, for example. Clearly imagining both the causes and consequences of behavior is a creative act that can motivate you to control yourself. Imagining causes and outcomes is also a fundamental part of self-regulation: taking action to make your life the way you want it to be.

Empathy

Most parents say empathy is being able to take another person's perspective and understanding what someone else is feeling. More empathy will build trust between people, which will lead to a better future and world peace, right?

Yup, that's an excellent pageant answer. But when my son whacks his sister—again—it's pretty tough to convince him that being empathetic and kind to others is worthwhile. After all, "It's not going to make me rich or anything," he says. (To my 11-year-old, the best imaginable adult outcome is to be rich.)

However, research clearly shows that empathetic people will be more successful at navigating social situations in the long-term. They have better interpersonal relationships, and they stay married.^{15, 16} They end up being better bosses and more effective leaders, and they make better life decisions because they can better predict the future.^{17, 18} They *may* even be richer. And happier. Empathy turns out to have many hidden benefits:

It makes kids safer. An empathetic child may be safer in life both physically and emotionally. Empathy gives your child a superpower: the ability to predict someone's behavior, and thus the future, in very real ways. Empathetic people are better at reading faces and emotional cues to figure out how people are feeling, and that's important for survival in a basic, back-alley way. When dealing with others, it helps them know when to stay still, when to fight, and when to take flight. If your child can anticipate that his playmate will respond angrily when his toy gets broken, your child

can plan ahead, share his own toy, move away, and be ready. Empathy also reduces bullying in older kids; higher levels of empathy mean better conflict resolution and a willingness to come to the defense of a bullied peer.^{19, 20}

It turns kids into leaders. Empathy-enriched children often turn out to be leaders since they're more socially competent.²¹ Why? They have an enhanced ability to manage other people's perspectives and expectations, which is a skill that transcends age. Leaders on the playground become company leaders, where empathy can increase employee motivation, job commitment, and productivity.²²

It makes kids happy. As an added reward for good behavior, benevolent acts make us feel good inside. Giving gifts to another person makes us feel happier than giving gifts to ourselves. Researchers gave people cash and instructed half the participants to spend the money on themselves, while the other half was instructed to spend the money on someone else. The people who were instructed to spend the money on someone else reported being happier over the course of the day, regardless of the amount of money they spent.²³

It makes us feel rich. When we give money away, our sense of abundance and wealth increases.²⁴ When we act in empathetic ways, our sense of time expands. It is actually the *perception* of having things, like time and money, that matters more than the actual measured amount. That enriched perception makes us happier.

It's healthy for us. Empathetic grown-ups have healthier and more satisfying relationships, and they're more likely to stay married.²⁵⁻³⁰ After an injury or surgery, they heal more quickly.³¹ Research has shown that compassion may even lengthen our life spans, possibly due to decreased inflammation and a tempered stress response in those who

help others.^{32, 33} Older people who are happy have a 35% lower risk of dying than their unhappy counterparts, and so if having empathy makes us happy, maybe we'll live longer, happier lives.^{34, 35}

Although empathy brings safety, happiness, leadership skills, abundance, and wealth, studies have shown that self-reported empathy has been declining for the last 30 years. Research shows that empathy, concern for others, and the ability to take other people's perspectives have sharply declined in American college students, particularly since 2000.³⁶ Why? We can blame it on smartphones and on the social isolation propagated by our vast number of virtual Facebook friendships compared to our shrinking number of deep friendships. We can say that perhaps it's the increase in violent media that numbs the empathetic response. But maybe it's even simpler than that: maybe our children just don't practice it.

Lucky for us, empathy isn't just an innate trait but also a teachable skill. There are programs designed to teach empathy, and they work. Many research studies have found that mindfulness/meditation and service learning/community partnerships are proven, simple ways to enhance empathy. Specific evidence-based programs target empathy, social learning, and conflict resolution, including Roots of Empathy (K–8), Positive Action (K–12), Responsive Classroom (K–5), and Second Step (Pre-K–8).³⁷

Teachers are figuring out that if kids don't come into the classroom with empathy, it's worth taking the time to teach it to them. Not only will empathetic kids not disrupt the class for other students, but research has also shown that empathetic individuals are better learners. An analysis of 213 social- and emotional-learning programs involving over 270,000 kindergarten through high school students showed that interventions increased academic performance by 11%, as well as decreased aggression/emotional distress and increased helping behavior in students.³⁸ Empathy training results in higher student GPAs, better reading comprehension, and more developed critical thinking skills.^{39–41} In the absence of one of these school programs, parents can teach kids empathy simply by making time to do it.