ESSAY

What Children Lose When Their Brains Develop Too Fast

Adverse early experiences can make young minds inflexible, while a carefree childhood has clear cognitive benefits

ILLUSTRATION: JARRED BRIGGS

By Alison Gopnik
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The great Swiss psychologist Jean Piaget used to talk about "the American question." In the course of his long career, he lectured around the world, explaining how children's minds develop as they get older. When he visited the U.S., someone in the audience was sure to ask, "But Prof. Piaget, how can we get them to do it faster?"

Today it's no longer just impatient Americans who assume that faster brain and cognitive development is better. Across the globe, as middle-class "high investment" parents anxiously track each milestone, it's easy to conclude that the point of being a parent is to

accelerate your child's development as much as possible. Both parents and policy makers increasingly push preschools to be more like schools.

A wave of new research shows, however, that this picture is far too simple. A slower, longer, more nurturing childhood may actually be the best way to prepare for adulthood. Developing grown-up skills also matters, of course, but a long childhood is itself one key to a flourishing adult life.

In 1998 a landmark series of studies at the Kaiser Permanente Medical group looked at the long-term effect of Adverse Childhood Experiences, or ACEs, on children growing up in California. ACEs include physical or emotional neglect or abuse; poverty; divorce; and violence, addiction or mental illness in the home. Since the original studies, there have been hundreds of similar ones done across the world.

It turns out that ACEs are tragically common: About 60% of children in the U.S. experience at least one adverse event, and about one in 10 experience four or more. Low-income children are most at risk, but children from all classes and backgrounds are vulnerable.

A longer, slower childhood with space to play and explore can help children flourish as adults.

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These early adverse experiences can have a big effect on adult life. Children with more ACEs are more likely to suffer from anxiety, depression or addiction as adults, and they have a higher risk of cancer and heart disease. But how would witnessing a shooting when you're 5 years old put you at risk for cancer when you're 50? Just how do early experiences shape development?

Surprisingly, ACEs seem to actually accelerate the pace of physical development. A number of studies suggest that children with stressful lives reach puberty earlier. A new study by Allyson Mackey at the University of Pennsylvania and her colleagues, published in the Proceedings of the National Academy of Sciences, shows that children growing up with more ACEs even get their adult teeth earlier.

The most important developing organ, however, is the brain. Another new paper by Dr. Mackey and her colleagues, published in Nature Neuroscience Reviews, looks at evidence from both human and animal studies. They conclude that poverty, stress and adverse experiences also seem to make children's brains grow up too quickly.

Brains start out being more "plastic," as neuroscientists say—more open to experience, better at learning. As we grow older, our brains become more efficient but less flexible, better at exploiting but not so good at exploring, better at acting effectively but not so good at doing new things.

> **More varied and unusual good experiences in childhood may be particularly likely to keep the brain open to learning.**

Dr. Mackey and her colleagues looked at two different kinds of development more specifically. One involves changes in the physical characteristics of the brain, like the thickness of the cortex or the density of neurons. The other involves the way that brain areas are connected to one another. In both cases, there is a consistent, though complicated, sequence of development. The brain gets thicker in infancy, for instance, and then thins out in adolescence. The researchers found that those sequences unfold more quickly in children with less income and more stressful adverse experiences.

The paper also reviews animal studies that show the opposite effect. Young creatures who grow up in enriched and varied environments, with lots of different objects and other animals to play with, have a delayed and extended pattern of brain development and maintain more plasticity for a longer time. Dr. Mackey and colleagues suggest that frequently repeated bad experiences may have the worst acceleration effect, while more varied and unusual good experiences may be particularly likely to keep the brain open to learning.

For humans too, good early experiences can have long-term effects, perhaps because they help children maintain a sense of possibility. Children who go to high-quality preschools often don't do much better on standardized school tests than children who don't. This originally led policy makers to think that the good effects of preschool faded away as children grew older. But, in fact, there are substantial "sleeper" effects that appear much later, suggesting that preschool eventually improves adult income and health and helps children to thrive as adults. It may work by letting children maintain the flexibility to deal with unexpected challenges as much as by teaching academic skills.

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Why would stress and adversity make us grow up faster and a rich, varied, nurturing environment make us grow up more slowly? One influential recent idea, reviewed in a recent paper by Willem Frankenhuis and Daniel Nettle in the Philosophical Transactions

of the Royal Society, takes off from the biological concept of "life history." An animal's life history includes how long it lives, how much it invests in its young and how long it takes those young to mature.

A long, slow life history goes with a big, smart brain. The smartest mammals and birds, like chimps and crows, also have a particularly long childhood, and adults put a lot of work into caring for the young. We humans are particularly brainy, with an especially long childhood and large caregiving investment.

Different species have different life histories, but different individual animals also may develop different life histories. Some will mature more quickly, while others stay young for longer. Early experiences can influence these individual life histories. After all, what happens when you're young tells you about the sort of world you will face when you get older.

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A "live fast, die young" life history makes more evolutionary sense when resources are scarce and life is predictably harsh. Extensive learning may not do much good in that case, so it's better for young creatures to quickly zero in on a few effective survival techniques. In a rich, supportive, varied world, on the other hand, there is lots to learn and time and resources to learn it, so keeping an open mind and flexible brain is more valuable. Early adverse experiences may be cues that the life to come will be harsh and short, while a nurturing preschool signals a richer set of possibilities.

All of this should be reassuring to middle-class parents worrying about "the American question." The most important part of caring for young children is in some ways the easiest. Loving your children and giving them space to learn and explore is more important than crafting a particular curriculum. A longer, slower childhood may be better, at least if you believe that the adult environment will also be rich and varied.

But as the research on adverse experiences shows, far too many children and parents don't have the resources they need to allow that sort of childhood to unfold. The recent studies all tell the same story when it comes to policy. Whether through child tax credits,

parental leave or high-quality preschool, supporting young children is the best way to ensure a new generation of thriving adults. It seems the reason these policies work is not because they make children develop faster but because they let them remain children longer.

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