

Will Today's Kids Be Stumped by the Technology of the Future?



If it sticks to its current cycle, Apple will proudly release iPhone 24 in the year 2050. An executive in hologram form will waltz onto the keynote stage in San Francisco to proclaim that the company's sleek new brain implant has the world's fastest and most usable neural interface on the market. Crazy young people will converge outside Apple stores in nano-assembled tents and vie to be the first to stuff the technology into their craniums.

But what about the adults of 2050? And what about the elderly? If they're anything like today's Americans, they may not be so eager to purchase the new device. Today, older Americans are [less engaged with technology](#) than the rest of the population, lagging behind by more than 25 percentage points when it comes to Internet adoption. Middle-aged adults, too, are [slower to take up new gadgets](#): 58 percent of American 50-to-64-year-olds own a smartphone, compared to 86 percent of 18-to-29-year-olds.

To know whether our hypothetical tech user of the future will pick up an iPhone 24 and react with easy delight or total bewilderment, we must ask why many adults have trouble with technology as they get older. If there's something inherent to aging that makes it difficult to understand the latest technology, then the latest gizmo will be as

opaque to an adult living in 2050 as current technologies are to adults today. But if childhood exposure to a dizzying rate of technological change can inoculate you against deteriorating technology skills later in life, then the adults and seniors of the future may have a very different experience.

Consider the contrast in the early experiences of a modern fifty-year-old, and someone who will be in their fifties in 2050. As children, today's middle-aged adults experienced a relatively slow trickle of new technological concepts. A middle-aged person in 2050 who was born in the 1990s, on the other hand, grew up during the fastest-ever period of technological change. They saw computers speed up by a factor of fifty between 1990 and 2000, before shedding pounds and morphing into portable, pocket-sized marvels.

To be sure, the computers that '90s kids learned and played on will likely bear little resemblance to future devices, be they neural-interface computers, or something totally unimaginable today. An easy aptitude with an iMac won't be a leg up in 2050. But it's possible that the *experience* of constantly learning new technological concepts as children will have taught them how to pick up and understand novel gadgets.

Can childhood exposure to a dizzying rate of technological change inoculate you against deteriorating technology skills later in life?

There don't seem to be any studies that have tried to address this specific question. But maybe by examining how people on either end of life learn and use technology, we can make some good guesses.

New research shows that kids are naturals at learning new technology. Experimenting wildly with anything they're given, children will figure out how to zoom in by pinching their fingers on their parents' iPads before the parents even knew that was a feature. Chris Lucas, a fellow at the University of Edinburgh, says kids' willingness to try new things comes from a fundamental fearlessness. Adults, Lucas says, are encumbered with years and years of experience that has taught them that failure is painful and potentially dangerous; kids, on the other hand, have a safety net in the form of their parents, and few preconceptions about the world.

Last year, Lucas published the results of an experiment he conducted with researchers at the University of California, Berkeley. The team put kids and adults in front of a strange machine, and gave them array of objects which they could place on the machine to try to activate it—make it light up and play music. The participants were instructed to find the logical combination of objects that would activate the machine.

The researchers found that kids were much better than the adults at choosing the right objects. Lucas hypothesizes that adults' rationality and expectations, two usually useful tools, were getting in their way. "Children have a greater drive to consider diverse ideas rather than to get things right," he said. The adults in the experiment were unwilling to explore alternatives once they'd found a solution that almost worked, but kids were more likely to throw out a halfway solution in search of a complete one.

The experiment helps us understand why kids can pick up new technologies so easily. Adults presented with a new and strange thing are likely to try to interact with it in a rational, measured way, based on their past experience. But this reliance on past experience can keep them from figuring out the most innovative technologies, which aren't a natural evolution of what was standard before.

Consider, for example, the "3-D Touch" feature that's included on new Apple devices. The most recent iPhones and some recent laptops allow the user to interact differently with their device based on how hard they press down on the glass or the trackpad. This is a new concept: Before, when you interacted with a trackpad, you were either clicking (or right-clicking) or you weren't. The extra dimension that the feature brings might initially be out of reach—or simply [seem unuseful](#)—for those who aren't even considering new ways to interact with their screens.

But it's possible that kids who grew up in a constant state of adapting would later have a better grasp of their own lack of understanding of the world. They may be aware that their expectations of how technology works will continually be out of date, and be more open to changing them.

"Making peace with mysterious machines might be a fundamentally new part of the human experience."

Lucas, who studied computer science at the Massachusetts Institute of Technology, says that when he's teaching (adult) students programming, "not being afraid to screw up is a major predictor of learning more quickly."

But, of course, there's a lot more at play here than just the rate of innovation that a person experienced as a child. Many children in the 1990s had no access to computers whatsoever, and those who did are not all destined to become the next Elon Musk or Jeff Bezos. The degree to which someone engages with new technology is a personal decision and value judgment. There will always be supernerds who write about technology for magazines, modern Luddites who just don't see the value of Internet-connected devices in their own lives, and all sorts of people in between.

And perhaps the universal experience of aging is enough to turn the most computer-savvy young person into a technophobe later in life. [A study](#) conducted by the Center for Research and Education on Technology Enhancement found that adults' attitudes toward technology are an important factor in predicting how comfortable they are using it. Sara Czaja, a professor at the University of Miami and the director of the research center, said that adults who feel anxious or uncomfortable around technology, or who don't believe they will be able to learn how to use new technology, are likely to avoid them.

This anxiety can come from a lack of exposure to technology, a lack of instruction or support, or a previous bad experience, said Czaja. But in addition to the effect of attitude and intelligence, she found that age still matters: Independent of other factors, an older adult is more likely to have trouble with technology than a younger one.

If Gordon Moore [got it right](#), the rate of technological change will only keep increasing. It could be that the next wave of innovation will leave many behind—especially middle-aged or older adults. Lucas thinks so: "Is today's toddler with a tablet going to be tomorrow's curmudgeon in the face of a brain-machine interface? I suspect that that will be the case"

So it's unlikely that our 2050-era fifty-something will take to her iPhone 24 as quickly as her kids will. She might be confused by its interface (if it has an interface at all), or be slower to grasp its capabilities.

But perhaps she's been conditioned to explore, without fear of breaking it, and will eventually get a hang of using the machine—even if she knows she'll probably never understand what makes it work the way it does.

We've become very good at using devices that we don't understand. Today's gadgets—smartphones, tablets, and everyday objects that are connected to the Internet—are inscrutable. They work, they're slow, or they crash, but all the while, the average user has no idea what's going on beneath the layers of glass, plastic, and metal. But that doesn't seem to bother users, who are happy and confident as long as they can get the devices to do what they want.

"Being in the company of machines that are mysterious: That's a new thing," says Lucas. "And making peace with that mystery might be a fundamentally new part of the human experience."