

# IS VR TOO DANGEROUS FOR KIDS? WE ASKED THE EXPERTS

By [Simon Hill](#) — Posted on April 23, 2016 3:00 am



For decades now, we've imagined a future where we can plug into a fully three-dimensional virtual world. Virtual reality opens the door to true escapism with a whole new level of immersive experience. It will let us be with people, attend events, and visit places that are physically out of reach. The educational possibilities are endless, but as excitement about the dawn of virtual reality continues to heat up, there's one group that could be left out in the cold – children.

The majority of VR headset manufacturers are setting age limits. The Oculus Rift and Samsung's [Gear VR](#) headset have a 13+ age rating. Sony's PlayStation VR is not to be used by children under the age of 12. And though HTC doesn't specify an age limit, it does warn against allowing young children to use the Vive.

Disappointed parents and frustrated children everywhere wonder why these age limits have been set. What are the risks? Is this a precautionary measure, arbitrary legalese, or is there real danger?

## New doesn't mean dangerous

“So far I’ve seen no so-called smoking gun, no concrete evidence that a child of a certain age was somehow adversely affected by wearing a VR headset,” Martin Banks, Professor of Optometry, Vision Science, Psychology, and Neuroscience at the University of California, Berkeley told Digital Trends. “My guess is that all they’re doing is saying that kids are developing and development slows down when they reach adolescence, and so lets just play it safe and say that while these kids are undergoing significant development, we’ll advise people not to let them use it.”

It’s not surprising that VR headset manufacturers are being cautious. Virtual reality is relatively new, and we don’t know much about the long-term effects yet, especially on children.

“There is pretty good evidence, particularly among children, that if you do so-called near work, where you’re looking at something up close, like reading a book up very close or looking at a cellphone, that it causes the eye to lengthen and that causes the eye to become near-sighted,” explains Professor Banks.

Nearsightedness, or myopia, is where close objects appear clear, but objects far away look blurry. It has been on the increase in recent years. One [study](#) in the U.S. found that nearsightedness in those from age 12 to 54 rose from 25 percent in 1971-1972 to 41.6 percent in 1999-2004. There’s a lot of [evidence](#) linking this trend to near work, such as reading or using a computer.

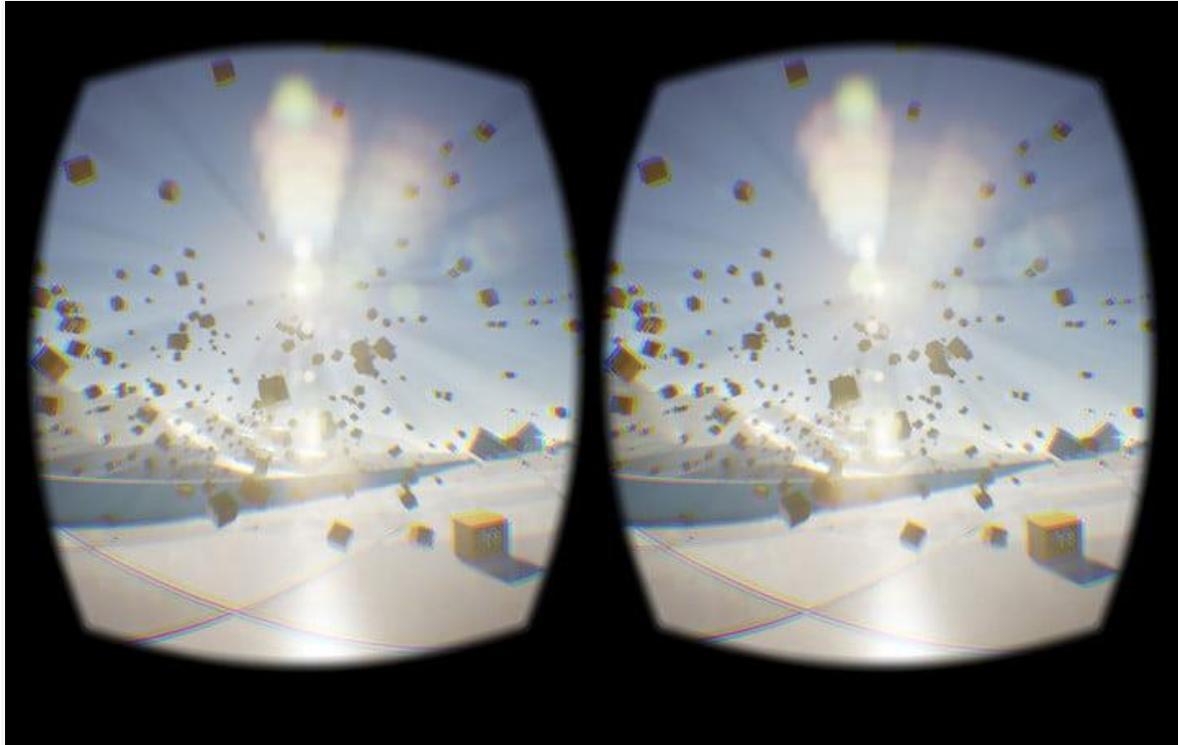
The damage occurs when a child focuses on something near for long periods of time, so it’s understandable that some may fear VR headsets will add to the problem. The screen is just two inches from the user’s eyes. But the technology is more complex than that.

“Let’s contrast a kid using a VR headset compared to a kid using a smartphone. When they use the smartphone they typically hold it very close to them and so they have to focus their eye close,” explains Prof. Banks. “You might think that with the VR headset they’d have to do the same thing because the image is close to the eye, but [VR headsets] have optics in the setup that make the stimulus effectively far away, so, in terms of where the eye has to focus, you have to actually focus fairly far away to sharpen the image in the headset.”

That means VR headsets may be less of a problem than books or smartphones. But what about other risks that may be more serious for a child’s developing eyesight?

## The virtual can detect real eyesight problems early

“In the real world the two eyes get slightly different views,” Professor Peter Howarth, a Senior Lecturer, optometrist and vision expert, explained to Digital Trends. “For a normal child, this gives rise to the development of the sensory capability to judge depth by using stereopsis. I can’t see that the intermittent use of a VR system by a normal child would adversely affect this.”



VR headsets are essentially mimicking the way our eyes already work by showing each eye a slightly different image, which enables us to perceive depth.

“The ability to see detail depends upon the production of a sharp image on the developing retina. Again, the intermittent use of a VR system should not adversely affect this, even if the image quality was less than perfect,” says Prof. Howarth.

VR devices can mimic the equipment used to treat Orthoptic problems, such as lazy eyes. So, there is the possibility that virtual reality headsets could help diagnose eye problems, and even treat them, rather than cause them.

“Manufacturers could build in vision tests and allow people to see that they might have a problem and should consult an eye specialist,” suggests Prof. Banks.

It remains to be seen whether any VR manufacturer will go down that road. And there is still the risk that the wrong optical hardware could exacerbate an undiagnosed problem.

### **Most known risks are shared with adults**

“There will be issues for children that are the same as for adults, and one of these is visually-induced motion sickness (VIMS),” explains Prof. Howarth. “This comes about because the image you’re viewing gives the brain the visual signals it receives when you’re actually moving – and these can give rise to motion sickness.”

### **So far, there’s been no so-called smoking gun.**

In other words, if you get sick on a roller coaster, it’s a reasonable bet that you’ll get sick on a virtual one. There are also problems when the visual images being presented by the VR headset are inconsistent.

“When you move your head and they try to update the image, so the image looks like it’s a stable part of the world. If they don’t get that right, if there’s a time lag or they don’t move the image the correct amount, people who are susceptible to motion sickness can be susceptible to nausea, headache and stuff like that with VR headsets,” explains Prof. Banks.

Nausea isn’t the only danger that rises from the separate real and virtual worlds. Collisions with nearby objects are a concern.

“While wearing headsets and physically moving around to navigate a virtual world, there is a danger of colliding with the real world,” Dr. Cyriel Diels, an expert in Psychology and Human Factors, explained to Digital Trends. “I can’t really see how this would differ for children except for potential health and safety issues, which may have different ramifications for children than for adults.”

In other words, an adult will probably be okay if she walks face-first into a bookshelf, but a child might not. Some headsets try to account for this problem. The HTC Vive maps your environment with sensors and will warn you when you get too close to something by having it bleed into the virtual world. But the risk remains, as the technology isn’t perfect, and kids don’t always heed warnings.

Finally, the virtual world can have a lingering impact on users after they’ve disconnected. As you use VR, your brain starts to adjust for the peculiarities of the new experience – but when you return to the real, you must adjust again.

“Some people may experience after-effects that may affect motor control (hand eye coordination, postural stability),” explains Dr. Diels. “The classic example is that soldiers may not be allowed to engage in any activities that may be affected such as driving or using certain machinery.”

### **Kids can use VR safely, but expect caution, anyway**

It seems a shame to inflict a blanket ban on kids when there’s no real evidence that VR is any more dangerous than a book or a tablet. Fear of litigation definitely contributes to the modern obsession with health and safety and our culture is growing ever more risk-averse as we increasingly look to bundle our kids in cotton wool.

However, the lack of long term studies on the possible impact of VR headsets may make caution sensible, for the moment at least.

“My opinion is that it’s more lawyers talking than scientists talking,” says Prof. Banks. “But never say never. I’m not going to say that there’s definitely no risk, because we can’t know that.”

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