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A new report by Stanford researchers and Common Sense Media examines the potential effect of virtual reality on children

As virtual reality expands into family homes, Stanford researchers help parents better understand the potential impacts this emerging technology has on children in a new report.

BY MELISSA DE WITTE

As virtual reality rapidly expands into American households, it is critical that parents and educators be informed about its potential effect on kids, say Stanford scholars in a new report.

Published April 4 in collaboration with Common Sense Media, *Virtual Reality 101: What You Need to Know About Kids and VR* (<https://www.commonsensemedia.org/research/virtual-reality-101>), is a resource to better understand how this new technology can be applied to everyday life and learning.

Also known as “VR,” virtual reality is drastically changing the way people can experience the world.

“Compared to other media, VR is an extremely powerful way to deliver information,” said **Jeremy Bailenson** (<https://comm.stanford.edu/faculty-bailenson/>), a communication professor at Stanford and co-author of the report who founded Stanford’s **Virtual Human Interaction Lab** (<http://vhil.stanford.edu/>) in 2003. “VR is arguably the most powerful medium in history and research about its effect on children is only just emerging.”

Jim Steyer, AB ’78, JD ’83, founder of **Common Sense Media** (<https://www.commonsensemedia.org/>), agreed with Bailenson, writing in the report, “Because VR is in its infancy, we have a unique opportunity to stay on top of this technological wave before it overwhelms us.” Common Sense Media is an independent nonprofit organization that helps parents make smart choices about media and technology for their children. Steyer is also an adjunct professor of comparative studies in race and ethnicity at Stanford.

Parents attitudes about VR

Included in the report are the results of a survey of 3,613 parents about their attitudes toward virtual reality.

“Until this survey, it was unclear how, and even how many, kids were using virtual reality,” said Bailenson. “Now we have an initial picture of its adoption and use.”



A new report co-authored by Stanford communication Professor Jeremy Bailenson offers a picture on the adoption and use of virtual reality by children and the potential impacts of this emerging technology. (Image credit: Getty Images)

Some key findings from the survey:

- While the long-term effects of VR on children's health and brain development are unclear, 60 percent of parents are at least somewhat concerned about negative health effects.
- Many parents believe VR holds an educational promise. Sixty-two percent of parents believe that VR will provide educational experiences for their children.
- However, only 22 percent reported their child used VR for learning. An overwhelming 76 percent of children who have used VR played games.
- VR has the potential to be an effective tool to encourage empathy among children, but most parents are skeptical. Sixty-two percent of parents don't expect children to empathize with others while using VR.

Emerging technology, emerging research

Research coming out of Stanford's Virtual Human Interaction Lab – home to several studies that have explored the effect of virtual reality on children – led to some of the report's conclusions about the potential power of VR.

“One of the characteristics that really distinguishes VR from other media is that it's perceptually surrounding, so no matter where you turn there is content,” said Bailenson, who has been studying virtual reality for almost 20 years. “VR responds to your body. If you want to get closer to an object you can actually walk; if you want to touch something you can reach out and get haptic feedback.”

In many ways, virtual reality mimics actual life, Bailenson said.

Overall, his findings have shown that the heightened reality of virtual reality can have an outside influence on children.

In a 2009 study, Bailenson found that when elementary-age school children saw themselves swimming with orca whales in a virtual environment, many later believed the fantastical experience happened in real life. This research was done with Kathryn Segovia, then a PhD student working in the lab (she now heads learning and design at Stanford's [d.school](https://dschool.stanford.edu/) (<https://dschool.stanford.edu/>)).

Building off that research is a 2017 study Bailenson conducted with Jakki Bailey that found that media characters in virtual reality may be more influential over young children than characters on TV or computers.

Conducted in partnership with the Sesame Workshop, an educational organization that researches how children respond to media, Bailenson and Bailey set up an interactive and immersive VR environment with the popular *Sesame Street* character Grover.

Kids in the study age 4-6 got to play common kids' games with Grover – including activities like Simon Says and sticker sharing. The scholars found that when children were engaged with the VR version of Grover versus a version on a two-dimensional screen, they were more likely to treat him as a friend.

“We found that kids can develop more trust in media characters in the virtual environment,” said Bailey, a recent graduate from Stanford's PhD program in communication and now an assistant professor at the University of Texas at Austin.

This influence can be a force for positive change, said Bailey, noting that when there is trust, children are more likely to turn to that source for information and learning.

Using VR for better

Bailenson suggests that VR could become a valuable learning tool, and parents seem to agree. According to the report, 62 percent of parents believe that VR can offer educational experiences for their children.

“There is a misconception that VR is just being used for games. There’s been some traction in video games but not at the magnitude that people expected,” Bailenson said about the existing trends in adoption with adults.

“With VR it’s the more useful applications – training, learning, communication – that are really gaining some traction,” he said. His lab is exploring how VR experience can increase empathy, overcome prejudice and confront unconscious biases like ageism.

Because virtual reality can resemble an actual experience, it could help children translate skills learned in educational environments to the physical world.

As virtual reality becomes part of everyday life, Bailenson recommends that people take precautions. In the survey, 11 percent of parents reported their 8- to 17-year-olds experienced dizziness, 10 percent experienced a headache and 13 percent bumped into something.

He advises that VR be closely supervised and in moderation: 5- to 10-minute increments are recommended for young kids and 20 minutes for older children and young adults.

Study co-authors include researchers from the University of Arizona and Common Sense Media. Bailenson is the Thomas More Storke Professor of Communication, a senior fellow at the Woods Institute for the Environment and professor, by courtesy, of education.

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