The technology of VR is like any modern computer, there is a screen, physical interfaces, and some ability to imitate a physical experience. Indeed, it is possible to run VR programs on a modern computer in VR simulators without the need for a headset. Despite the similarities, the experience of simulated VR is substantially different from that of headset VR in both physical and psychological ways.

The physical differences are obvious: headset VR tracks movement and wraps around your entire field of view while simulated VR does not. Movement tracking is the most obvious difference when using a simulator; as with anything designed for one setting and used in another, VR apps on a computer can be somewhat difficult to control without movement tracking. A mouse and keyboard can be coordinated to approximate hand movements, but in a program designed with actual hand movement in mind controlling a simulator feels clunky compared to a headset.

The screen enveloping the field of view creates a more engrossing environment in headset VR. This is less because it appears larger, which it does, and more because you cannot see anything else. The entire visual world becomes the application, which is an experience simulated VR cannot simulate. Inability to see your surroundings comes with some severe drawbacks, most of which involve running into said surroundings. It is also uncomfortable in headset VR when your expectation of movement (or lack thereof) is subverted. Simulated VR has the same problem in a sense, where it is possible to get motion sickness from moving on a screen while not physically in motion, but that experience is highly amplified when you cannot see anything that does not appear in motion to ground yourself like a desk might in simulated VR. These physical differences are important but are only part of the story.

As motion sickness indicates, headset VR creates an extremely effective phycological illusion. We rely heavily on sight, and motion sickness is an indicator that the body believes it is moving based on sight but none of the other senses agree (or that the movement is somehow wrong). The experience of headset VR is not just motion; it is an entire kinesthetic experience. The visual aspect of headset VR is like a more realistic version of sitting close to the screen at a movie theater, immersive but not fundamentally different from sitting in front of a computer screen like simulated VR. The movement tracking combined with the visuals however is enough to completely fool the body into thinking it is in the virtual world. Rubber hand experiments from 2016 (<https://elifesciences.org/articles/14972>) showed that the brain takes ownership of body parts based on senses. Headset VR is sufficient to create this experience of assuming the virtual body (or in our case disembodied hands) while losing track of the physical body and feels like being the character in the app in a way simulated VR does not come close to capturing.

The psychological connection to the virtual character in headset VR is easiest to explain through when it goes wrong. Running into an object in reality while wearing a headset is a more startling experience than running into an object in a dark room. I suspect this is because in some ways your brain has dissociated your real limbs, like in the rubber hand experiments, and the impact makes it suddenly apparent that your real limbs are still there.

The psychological assumption of a virtual body is, in my opinion, what makes headset VR so much more powerful than simulated VR. It is not impossible to have a similar experience of losing track of your body in a computer game or a book, and I imagine it is not impossible to do the same in simulated VR, but it may well be impossible to keep track of your body in headset VR which makes interacting with the world in headset VR feel fundamentally different from interacting with the world in simulated VR.