Do 3D films make you sick?

Some cinemagoers watching 3D films such as Avatar may be in for a few unpleasant surprises.

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Less than a month after its release, sci-fi blockbuster Avatar is already the fourth most successful film of all time, having earned a billion dollars (£620?million) at the box office in record time. Almost 80 per cent of its takings in Britain have been generated by a newly revitalised 3D technology.

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Link to this video

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But no matter how advanced the technology, a significant minority of the population cannot sit through a 3D film without experiencing discomfort.

More than three million people in the UK have eye conditions that impair “stereoscopic vision” – normal, two-eyed depth perception – making it difficult, or even impossible, for them to experience 3D.

Conditions known to inhibit the effect include strabismus, a squint or “wandering” eye, and amblyopia, more commonly known as “lazy eye”, in which one eye has impaired vision. This is often caused by an uncorrected childhood astigmatism, an easily treatable imperfection in the curvature of the eye that inhibits its ability to sharpen an image and affects depth perception.

The technology used to create the illusion of 3D can also cause more extreme physical reactions. Prior to Avatar’s release last month, one anonymous reviewer on Hollywood gossip website gawker.com reported being ill after attending a 3D screening. “The problem is with cutting in between 3D focus points and perspective,” wrote the blogger. “The mind cannot adjust to it without a buffer – thus, Avatar is literally vomit-inducing.”

Members of the viewing public have gone online to report similar concerns about the effect of 3D viewing, notably on children. An American user of one noticeboard reported accompanying a 14-year-old boy to see the film, who had to be escorted from the auditorium after 20 minutes “due to extreme dizziness, shakiness and headache”. When his symptoms persisted, a doctor was consulted who asked “if it was Avatar that we saw in 3D. [The doctor] said it’s been all over the news that people are getting sick when seeing the 3D version.”

A user of another site reported: "My son’s neurologist warned us not to take him to see it because it could trigger his seizures."

Such violent reactions have been attributed to the unnatural eye movements that 3D demands. Ordinarily, when we see an object coming towards us, our eyes move independently of each other to focus on it. First, the eyeballs rotate inwards towards the nose; then, the optic muscles squeeze the lenses to alter their shape and keep the target in focus. This is known as accommodation.

When watching something in 3D, our eyeballs rotate inwards, with accommodation as the goal. But if that happened, the viewer would be left focusing on a spot in front of the screen, rather than focusing on the screen itself. But this confuses the brain because the eyes have converged without accommodation. Instead, the eyes oscillate between their natural inclination and the artificial state demanded by the film. This can cause extreme eye strain, migraines and nausea.

Avatar is not the only 3D film that is said to cause adverse side-effects. Last year, Caroline Howarth, from Cheshire, took her sons Ben, seven, and Tom, two, to see Bolt, the story of the eponymous superhero dog – but about minutes into this 3D film, Ben started complaining of dizziness and nausea.

“He said: ‘Mummy, I feel sick’,” says Caroline, 39. “So I told him to take off his 3D glasses for a while, hoping that would help. He tried closing his eyes but was still quite unsettled, so we came out of the cinema and had a short break from the film. But, when we went back in, again he complained of feeling dizzy, saying, ‘Mummy, I really don’t like it,’ so we left. He was actually ill when we got outside.”

Caroline could not understand why her son had such a strong adverse reaction. “Ben wears glasses for reading and schoolwork, but I’m not sure if the two things are related, as he’s never had other problems with his vision,” she says.

James Sutton, optometrist and managing director of Oxfordshire eye health company Butterflies Healthcare, explains: “The problem is that 3D offers a completely unnatural situation. It forces the eyes to work extremely hard. For many people, especially children, it causes eye strain, headaches and dizziness. Watching a busy
action film, you can get what feels like motion sickness."

Sutton has experienced nausea in the cinema first hand. “I can’t bear watching things in 3D,” he says. “I don’t find it in any way relaxing. I have had migraine-style headaches from spending 15 minutes in a 3D cinema. Two hours of it could quite easily make you sick.”

Those unlucky enough to experience side-effects from 3D films may soon find choosing which film to see on a Friday night at the cinema a far leaner experience. According to the UK Film Council, there are now 400 3D screens in Britain, with around 10 opening every week. Studios are also producing more films in 3D than ever before. George Lucas is working on remastering the Star Wars series in 3D, the next Shrek film will use the technology, as will the forthcoming sequels to Happy Feet and Friday the 13th.

And 3D is about to invade our homes. Next-generation television sets enhanced with stereoscopic capability were among the most anticipated products unveiled last week at CES, the world’s biggest consumer electronics show held in Las Vegas. Sony expects half of its total television sales will be 3D-ready by 2013.

The future of entertainment may be three-dimensional – but, for a significant number of viewers, it will be anything but a pleasurable experience.