Concern over claims about how technology affects young brains

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Claims by Susan Greenfield, a senior research fellow at Lincoln College Oxford, that intense use of the internet and computer games can harm the adolescent brain are not backed by current scientific evidence, warn experts in *The BMJ* this week.

Scientists at University College London and the University of Oxford say, "despite calls for her to publish these claims in the peer reviewed scientific literature, where clinical researchers can check how well they are supported by evidence, this has not happened, and the claims have largely been aired in the media."

They say there is currently no evidence from neuroscience studies that typical internet use harms the adolescent brain - and they are concerned that Greenfield's claims "are not based on a fair scientific appraisal of the evidence, often confuse correlation for causation, give undue weight to anecdote and poor quality studies, and are misleading to parents and the public at large."

Greenfield claims that social networking sites could negatively affect social interaction, interpersonal empathy, and personal identity. However, the authors say "the bulk of research does not support this characterisation."

For example, they point out that adolescents' use of social networking sites "has been found to enhance existing friendships and the quality of relationships, although some individuals benefit more than others."

And "in terms of affecting personal identity, evidence from Facebook suggests that people generally portray their identity accurately."

Greenfield has also speculated that online interaction might be a "trigger" for autism or "autistic-like traits." This claim "has no basis in scientific evidence and is entirely implausible in light of what we know of autism as a neurodevelopmental condition that can be first diagnosed in the preschool years," argue the authors.

"Her claims are misleading to the public, unhelpful to parents, and potentially stigmatising to people with autism," they add.

Another of Greenfield's claims is that intense use of computer games could lead to impulsiveness, a shorter attention span, and aggression. Yet studies on video gaming give a much more nuanced conclusion, the authors say.

Another claim made by Greenfield is that reliance on search engines and surfing the internet could result in superficial mental processing at the expense of deep knowledge and understanding. But the authors point out that this effect applies to many situations and is not restricted to the use of technology.

They acknowledge that valid concerns exist about digital technology, but say these "are in danger of being overshadowed by the current debate."

And rather than technology affecting children's capacities, they suggest the displacement of other activities seems to be an important source of negative effects.

For example, low levels of physical activity associated with the passive use of digital technology have been linked to obesity and diabetes, while for video games, the displacement of academic activities, rather than altered cognitive function, has been found to account for reduced school performance.

Online safety is another important concern and needs to be tackled at the individual, community, industry, and policy levels, they add.

"Nevertheless, we need to recognise that use of the internet and digital technology has cognitive and social benefits and to balance these against any risks," they write.

"Accurate, informed information from sound scientific studies is essential to inform this process, and we think that it is unfortunate that Greenfield's media profile means her claims have an exaggerated impact on public debate given their limited evidence base.

There is already much research into the many concerns about digital technology, and the public deserves to participate in the debate fully

informed of all the evidence," they conclude.

More information: The debate over digital technology and young people, www.bmj.com/cgi/doi/10.1136/bmj.h3064

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