

Commentary: Protecting Playful Human Brain Development in a Pervasive Virtual World

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As a researcher and writer on topics related to children's cognitive, social, and emotional development for many years, I think it is now especially important to have a strong research emphasis on exploring the effects of the presently pervasive virtual world on children's brain development because this environment is so different from the environment that has nurtured human life and early development in all past eras. A few years ago I, with colleagues, addressed this question in a book focused on children's increasing technology-augmented play [1], in which we speculated on how their brain development might be differentially affected by this type of play, since it is so unlike the typical play environments that children have had throughout the centuries. Research on the trajectory of brain development has made clear that a major time for shaping human brains is during the first five to seven years of life [2,3], which is also the time period when children's play is so important.

There is a growing body of research that discusses how children's typical play (e.g. physically active, self-directed, composed primarily of self-generated pretense and negotiated game play) has influenced their development in many areas [4-9]. Most of that body of information provides clear evidence that such child-initiated and controlled play has been a major influence on children's development of cognitive, social, and emotional skills. Indeed, there is a consensus among researchers and writers that children's play experiences have been one of the a primary influence on their development and thus on human civilization throughout the centuries [10,11].

In our work on the topic of technology-augmented play [1] we discussed brain maturation and play development and pointed out both potentially positive and negative effects of extensive exposure to adult-designed technology-augmented play experiences, which have changed the primarily child-controlled playful experiences that were typical in the past. We noted that some brain changes that technology play might foster could be useful and relevant in the future, especially allowing human adaptation to virtual environment conditions, but we also expressed concern that such pervasive exposure might cause humans to lose essential abilities and skills that fostered specific cognitive, social, emotional and creative aspects of human life.

Since we wrote this book, of course, the present pandemic conditions that have prevented children from interacting playfully in person with their peers at school, in the community, and often even at home makes this question especially relevant. The recent pervasiveness of technology-augmented experiences and virtual worlds has been disconcerting even for the brains of many adults! We do not presently know if the domination of the virtual world will continue after the pandemic subsides. However, if virtual learning and play experiences become the future norm, then it is likely that most children will have some differential aspects of brain development.

For example, instead of future children using their developing brain power to initiate and create varied play environments and challenging experiences, perhaps their brains will become more and more responsive to external technology-augmented stimuli. Most humans (excluding the ones initiating and designing the technology-related experiences) then might be less likely to generate their own ideas and exhibit actions they internally initiate. Perhaps they also will be more easily influenced by information and experiences generated through virtual rather than in person means. That is, they may rely more on virtual rather than personally active knowledge of the world.

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At the present time there already are some concerns being expressed about the potential effects of so much virtual media exposure on adults, many of whom seem to have lost their reasoning capacity and ability to evaluate information that is misleading or even intentionally false, especially if it is enfolded in emotionally alarming statements. Initial research on the influence of social media is suggesting that some aspects of adult cognition and social/emotional attitudes may be negatively affected by exposure to such messages from various types of technology-augmented information [12-14].

Thus, my concern is that parents, educators, technology toy manufacturers, digital game makers, online play designers, and community stakeholders should be aware of potentially negative brain development implications resulting from the loss of children's active and self-organized play and should make certain that such play remains a major part of children's experience so that their brain development will continue to be richly promoted. As Emily Dickenson reminds us, the brain is "wider than the sky," "deeper than the sea" and holds "the weight of God" [15] and thus it will continue to define us as human beings in the future [16].

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