

Electronics Addiction: Stimuli for the Brain's Reward System

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As a university professor, my biggest competitor for the time and attention of my students is not the upcoming party, the new boyfriend/girlfriend, or participation on sports teams. It's their cell phones. I teach students who are often called Millennial – those born roughly between 1980 and 2000. These young people, who comprise 25% of the United States population, have grown up with electronics and some were probably exposed to computers and cell phones before they were old enough to attend school.

Lest one think that I'm a technophobe, I'm not. I understand quite well how devices and features such as cell phones, computers, and GPS in cars can render life more convenient, efficient, and safe, but their constant use can cause us to lose some valuable skills when, for example, we lose the ability to write a coherent, grammatically correct sentence without spell-checker or read a map without GPS. Other forms of courteous contact may fall by the wayside, as e-cards tend to replace handwritten thank-you notes or get-well cards. Many school districts in the United States have all but given up teaching cursive writing in favour of teaching students how to print, which is still a chore for those who are used to staccato bursts of digital activity as they abbreviate LOL (laughing out loud) or BRB (be right back). Like so many other functions in the United States, primary and secondary education is decentralized. While individual states have standards to which they must adhere, the quality of education can differ widely, as the budget for the public school system is usually tied to the financial circumstances of each community. Perhaps it's easier on over-worked and under-paid teachers to teach students only how to print and not how to write [1].

Electronic forms of communication separate the sender of the message from the recipient, which means that the individuals involved may miss important cues indicating how the recipient really feels about the message, such as: facial expressions, tones of voice, or body language. In so doing, we weaken our ability to understand the subtleties of communication.

As far as the Millennial are concerned, they are addicted to their cell phones. In conversations with my students, they express a dependence on their phones that borders on an electronic addiction. They are afraid that if they don't have their phones with them at all times that they are going to miss something important, or that someone will say or do something that they will not know about, or will find out about much later than everyone else. As the peer group has, in many ways, replaced the family as these young people's main sources of identity, commitment, and interaction, the students with whom I spoke admit that they use their cell phones mostly to communicate with their peers. A forgotten, broken, or mal-functioning cell phone is cause for panic, as there is no telling what crucial piece of information they might miss. In all fairness, many students use their cell phones for a variety of other purposes: as alarm clocks, as watches, as email servers, as sources of news and information about a variety of topics. But, the main purpose is to keep in touch with their friends on a 24-hour, 7-day-a-week basis. I asked one student what she would do if she forgot to bring her cell phone with her when she left her home; she forced herself to hyperventilate and said she would need a defibrillator. Ok, she was exaggerating, but, I got the point.

An increased reliance on electronics as the primary form of communication may eventually impair one's ability to think creatively or critically. We stand to lose what were once taken-for-granted abilities such as putting together sentences that are coherent, grammatically sound with words spelled correctly. Our vocabularies shrink when we become too accustomed to abbreviating sentences and using emoticons to express feelings that we should be able to express with words. With smaller vocabularies our tendency to read common sources of information such as books, newspapers, or magazines, diminishes, as does an important ability to synthesize seemingly disparate types of information sufficiently to form an opinion and defend it. I'm all for the use of electronics, but with our burgeoning technological ability come the loss or diminution of important aspects of human interaction.

In addition, the obsession with cell phones may have an impact on the brain by stimulating the reward system. According to Wikipedia, "the reward system is a group of neural structures responsible for feelings such as 'wanting' or 'craving' a reward that the individual associates with positive emotions. Using cell phones in a manner that could be called addictive is considered to be an extrinsic reward, in that the devices have motivational value because of a learned association (Schultz, W., 2015). My students feel, albeit subconsciously, that if they always have their cell phones with them and check them frequently, sometimes every few minutes, they won't miss any calls, messages, or news from their friends. This feeling of being connected to their peer group 24 hours a day, 7 days a week, provides a sense of membership in the most important group in their lives.

According to Schultz (2015), the main functions of the rewards systems of the brain include:

The capacity to produce associative learning in a classical conditioning scenario

- The capacity to have an impact on decision-making and motivate individuals to continue to use such stimuli to achieve pleasurable rewards.
- The capacity to produce positive emotions, particularly those associated with pleasure.

This paper is about cell phone use among young adults, whose brains are not yet fully mature. The pre-frontal cortex, generally responsible for what we might call 'mature' decision-making, does not fully mature until, as some believe, the early to mid-twenties. We know

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that young adults often seek pleasurable experiences, sometimes to the detriment of other responsibilities, such as: paying attention in class, studying, or interacting in person with others around them. It seems that the addiction that some young people have to their cell phones is an addiction in the true Pavlovian sense of the word, although in fairness I have observed adults and sometimes entire families talking and texting while supposedly interacting with each other. Let us not

dismiss cell phone addiction as merely the folly of the young who should know better. It's not just a potentially annoying habit; it can, like addictions in general, have an impact on the brain that is not easy to overcome.

References

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