

DO ELECTRONICS CHANGE MY BRAIN?



In today's world of cell phones, tablets, video games, streaming, and more...we are constantly bombarded with information from electronic devices. The question on everyone's mind...are electronics changing the brain?

By Renee Chillcott, LMHC

While this topic is somewhat controversial and has been the cause of many debates, we are hoping to simplify the information by looking at two different areas. The first area being excessive use and the second area being specific effects on the brain.

There are obvious implications for excessive electronic use. As these have been common issues for adults in secretarial or technology fields, it is alarming that these are now common issues for children.

- **Bad Posture, Back Aches, Neck and Shoulder Strain**
- **Pain in Wrists — Carpal Tunnel Syndrome**
- **Eye Strain**
- **Headaches**
- **Stress**
- **Physical Fatigue**
- **Poor Sleep Patterns**
- **Obesity**
- **Compromised Immunity**

Now, if we look at the added implications of excessive use on children, we see interference in other areas such as:

- **Poor Socialization**
- **Poor education**
- **Privacy and Security**
- **Poor Physical development**
- **Mental Health impacts**

HOW MUCH IS TOO MUCH AND HOW DO I KNOW?

Of course, it is possible to take advantage of today's technological advances without crossing the line to excessive...but where is that line? The term "excessive" is a vague one...what may be a lot to one person is quite minimal to another. Is there a right way or wrong way to monitor this?

The best way to tell if you or your child has crossed the line into the "land of excessive electronics" is to watch for these warning signs:

- **Depression**
- **Dishonesty**
- **Feelings of guilt**
- **Anxiety**
- **Feelings of Euphoria when using the Computer**
- **Inability to Prioritize or Keep Schedules**
- **Isolation**
- **No Sense of Time**
- **Defensiveness**
- **Avoidance of Work**
- **Agitation**
- **Mood Swings**
- **Fear**
- **Loneliness**
- **Boredom with Routine Tasks**
- **Procrastination**

For parents, you may have recognized that your child "is not acting like themselves" after playing video games, or after using a cell phone to watch youtube videos or play games. There was a time when the blame fell on the games. We would see violent video games as the cause for changes in mood for our children. But with the addiction to games such as mind-craft or Fortnite, it is becoming increasing clear that the device, not the content, is the issue.

ARE ELECTRONICS DAMAGING OUR BRAINS?

When we look at EEG firing pattern trends, it is becoming increasingly clear that electronics do have an impact on brain wave activity. Excessive High Beta activity has been noted in those that use electronics to excess. High Beta is a fast/excited/stress wave in the brain that is also responsible for adrenaline production. High Beta is also increased with sugar and caffeine use. Therefore, it is not a far reach to say using electronics right before bed, has the equivalent impact of eating candy or drinking a soda. The brain is stimulated and initiating sleep and REM cycles can be very difficult. Excessive High Beta can also cause irritability, moodiness, and anxiety/depression symptoms. Additionally, we are beginning to see a trend of brain wave activity showing that the brain has reduced levels of Delta, a calming hormone that should be in abundant production in childhood.

It is difficult to pinpoint the exact cause. These devices and games are both designed to reel a person in and make it difficult for them to stop playing. We once thought it was strictly the blue light causing the brain to be more alert and awake in the evenings, but we now know that there is much more to this and several factors are involved, and that the quality, quantity and timing of use can effect the changes on the brain.

WHAT CAN I DO AS A PARENT?

- 1. Remove exposure whenever and wherever possible.** The elimination of gaming devices in your home won't cease screen time all together and gaming can be easily found on phones and computers, however, the harder it is to use, the more likely, with a little time, that outside play resumes and other activities are revisited.
- 2. Make a point to revisit other activities.** Encourage sports, extracurricular activities and games/hobbies to fill space that was once used for gaming.
- 3. Limit gaming time.** If you decide to let gaming resume, limit the exposure, just as you would with candy and caffeine. Moderation and balance are key. And schoolwork/homework is best before gaming or screen-time.
- 4. Give them enough time to shift out of "game mode" and shift their brain into a calm, relaxed state to initiate sleep.** Even if your body is physically exhausted to initiate sleep, it won't be restful if your brain is wide awake. Again, think about candy and caffeine and how close to bed-time you would allow that.

5. Use relaxation techniques to help your child shift out of the fast, High Beta state and into a calm and relaxed state. A mental time out may be necessary to improve mood and allow the brain to shift.

6. Use Neurofeedback to help. Neurofeedback can help. Neurofeedback can not only help reduce the overactivated symptoms specific to your child, but it can "retrain" the neural patterns in the brain so that electronic use is better managed or controlled throughout your child's life. Through Neuroplasticity, Neurofeedback becomes a permanent correction of the patterns in the brain.

WHAT IS NEUROFEEDBACK?

Neurofeedback, also known as EEG biofeedback, has been studied and practiced since the late 60's. It is exercise for your brain; allowing you to see the frequencies produced by different parts of your brain in real-time and then through visual and auditory feedback, teaches the brain to better regulate itself. Neurofeedback can be used to help detect, stimulate, and/or inhibit activity in the brain safely and without medication. It can help restore a wider "range of motion" in brain states, much like physical therapy does for the body.

While the client sits comfortably watching a movie or pictures appear on the screen (a calm and focused state), the EEG equipment measures the frequency or

speed at which electrical activity moves in the areas where electrodes have been placed. This information is sent to the therapist's computer. The therapist is then able to determine what frequencies are out of balance. For example, when the EEG shows that you are making too many "slow" or "sleepy" waves (delta/theta) or too many "fast" waves (high beta), the therapist adjusts a reward band to encourage more balanced activity. This encouragement or "reward" happens through an auditory reinforcement of "beeps" and sometimes through visual reinforcement of changes on the screen.

WHAT TYPES OF CONDITIONS DOES NEUROFEEDBACK HELP?

Symptoms of these conditions, among others, can improve through neurofeedback training:

- **Anxiety**
- **Sleep disorders**
- **Depression**
- **ADD/ADHD**
- **Sensory processing disorder**
- **Bipolar disorder**
- **Seizure disorders**
- **Auditory/visual processing**
- **Chronic pain/Fibromyalgia**
- **Migraines/headaches**
- **Traumatic brain injuries**
- **Stroke**
- **Cognitive decline**
- **Peak performance**
- **Oppositional defiant disorder**
- **Rages/mood swings**
- **Attention/focus/concentration**
- **Reactive attachment disorder**
- **Autism/Asperger's**
- **Learning disabilities**
- **Obsessive compulsive disorder**

WHAT IS AQEEG (QUANTITATIVE EEG) OR BRAIN MAP?

The QEEG is a quantitative EEG. It's also called a brain map and does just that...it gives us a map of what is going on with the entire brain at one time. We attach electrodes to the whole head, 19 spots, and then record the brain waves with eyes open for 5 minutes and with eyes closed for 10 minutes. This recording is then sent to an independent specialist be read and analyzed. They are able to not only give us a summary of significant findings but the report also shows the results of analyzing the data several different ways. The brain activity is not only compared spot by spot over the entire head, but we can also look at connections, symmetry, how different parts are communicating and all of this data is compared to a database of peers (same sex, handedness and age). It can help us see what areas need to be addressed more efficiently than just training spot by spot.

We don't always need this data to make improvements in symptoms but we do recommend it in certain situations. A QEEG can also be helpful information when diagnosing and/or trying to decide the best medication/supplement recommendations.

IS THERE ENOUGH RESEARCH?

Neurofeedback has been researched since the 60's. Here are some resources for research. We have several journal articles, studies and books in our office for you to enjoy, however because of the amount of information out there, we cannot possibly have everything. Here are a few resources.

Look up the work of:
Dr. Joe Kamiya and Dr. Barry Sterman
(Credited for earliest development of Neurofeedback).

Look for specific researched conditions:
<https://www.eeginfo.com>
<https://www.isnr.org>
<http://www.eegspectrum.com>

Print Resources:
Journal of Neurotherapy
Neuroregulation
Applied Psychophysiology and Biofeedback
A Symphony in the Brain: The Evolution of the New Brain Wave Biofeedback (Curtain Up) Paperback – 31 May 2001 by Jim Robbins.
Healing Young Brains: The Neurofeedback Solution Paperback – 15 May 2009 by Robert W. Hill, Eduardo Castro.

HOW DO I GET STARTED?

Getting started is easy, just give us a call. The Brain and Wellness Center staff will answer all of your questions, and help you get scheduled. If you are wondering what services are best for you? We can help determine that at the time of the intake, in a telephone consultation, or you can schedule a face to face consultation and see our facility. Call, email or message us today! Brain and Wellness Center, 7301 W. Palmetto Park Rd., Suite 102A, Boca Raton, FL 33433. (561) 206-2706, e-mail us at info@bocabraincenter.com, or text us at (561) 206-2706 or visit our website at www.BocaBrainCenter.com.



Renee Chillcott, LMHC
Renee Chillcott is a Licensed Mental Health Counselor that has been practicing Neurofeedback training since 2005. Renee holds a BA degree from The University of Central Florida and a Master's Degree in Psychology from Nova Southeastern University. She is a Licensed Mental Health Counselor and is the owner/operator of The Brain and Wellness Center, located in Boca Raton. At The Brain and Wellness Center, adults, teens, children and families enjoy a variety of services from multiple providers. Neurofeedback, Brain Mapping, Acupuncture, Nutritional Counseling, Learning Programs, and counseling are among a few of the services offered.

Brain & Wellness Center
7301 W. Palmetto Park Rd.
Suite 102A, Boca Raton, FL 33433.
(561) 206-2706
www.BocaBrainCenter.com