Extended Abstract

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Autism and Screen Time in Children

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Abstract

Autism is typical type of disorder that manifests itself in infancy and is characterized by "markedly abnormal or impaired development in social interaction and communication and a markedly restricted repertoire of interesting activities," consistent with the Statistical Manual and Diagnostic method of Mental Disorders. Diagnoses of autism have risen dramatically over the past few decades, from an estimated one in 2500 children thirty years ago to at least one in 150 today.

As a result, Autism has become a topic of great concern for folks, medical providers and researchers, and policy makers alike. Despite the growing interest in autism, its causes are not well understood. It is widely accepted that genetics or biology plays an important role in the development of autism. However, many within the medical profession believe that the increasing prevalence of autism points to a task for an environmental "trigger" that's becoming more common over time. Yet there is little consensus as to what the trigger (or triggers) might be. With the recent explosion in television programming and videos aimed toward very young children, exposure to electronic media could also be one possible trigger. One study found that on a typical day, four out of 5 children aged 6 months to six years old use screen media (TV, videos and DVDs, computers, and video games), for an average of two hours per day as shown in figure. While similar statistics for earlier periods are hard to come by, it seems likely that young children are spending more time in front of the television today than they did in the past. "Does Television Cause Autism?" , researchers Michael Waldman, Sean Nicholson, and Nodir Adilov explore the hypothesis that "a little segment of the population is susceptible to developing autism due to their underlying biology and that either too much or certain types of early childhood television watching serves as a trigger for the condition".

In truth, these impacts in occur altogether folks , but children with autism are going to be both more susceptible to experiencing negative effects and fewer ready to get over them; their brains are more sensitive and less resilient. As a framework for understanding these vulnerabilities, it's helpful to understand that screen time—particularly the interactive kind—acts sort of a stimulant, not unlike caffeine, amphetamines, or cocaine. Also know that children with autism are often sensitive to stimulants of all types , whether pharmaceutical or electronic. For example, children with autism and a spotlight issues often can't tolerate prescribed stimulants, a typical treatment for ADD/ADHD. Stimulants tend to form children with autism irritable, weepy, over-focused, more obsessive-compulsive, and unable to sleep. Stimulants can also exacerbate tics, self-injurious behaviors, aggression, and sensory issues.

Meanwhile, in families handling autism, there exist additional social and emotional factors that contribute to technology overuse. First, families are often handling highly disruptive behaviors that are quieted—at least within the short term—by handing the kid a tool . Second, parents are told that "playing video games is 'normal.' It's something your son can do with other kids." Third, parents are encouraged to introduce technology early and often—especially if "he's good at computers." Fourth, in-home and school behavior therapists often use video games or other apps as reinforcers: "It's the only thing that works with her!" And lastly, parents and clinicians are routinely encouraged to undertake unproven screen-based software claiming to scale back autistic behaviors or to enhance social, communication or reading skills.

Children with autism tend to have low melatonin and sleep disturbances and screen time suppresses melatonin and disrupts sleep. Aside from regulating sleep and therefore the body clock, melatonin also helps modulate hormones and brain chemistry, balances the system, and keeps inflammation cornered.

Children with autism are prone to arousal regulation issues, manifesting in an exaggerated stress response, emotional dysregulation, or a tendency to be over or under-stimulate]; screen time increases acute and chronic stress, induces hyper arousal, causes emotional dysregulation, and produces over stimulation. Autism is associated with inflammation of the nervous system and screen time may increase inflammation by a variety of mechanisms including increased stress hormones, suppressed melatonin, and non-restorative sleep. Light-at-night from screens also suppresses paradoxical sleep , a phase during which the brain "cleans house. The autistic brain tends to be under connected—less integrated and more compartmentalized—and screen time hinders whole-brain integration and healthy development of the frontal lobe. In fact, in tech addiction brain scan studies reveal reduced connectivity and atrophy of gray matter in the frontal lobe. Children with autism have social and communication deficits, like impaired eye contact, difficulty reading facial expressions and visual communication, low empathy, and impaired communication screen time hinders development of these exact same skills—even in children and teens that don't have autism. Screen time appears to directly compete with social rewards, including eye contact—a factor essential for brain development. Lastly, screen viewing and even background TV has been shown to delay language acquisition. Children with autism are prone to anxiety including obsessive-compulsive traits, social anxiety and screen time is associated with increased risk for OCD and social anxiety. While contributing to high arousal and poor coping skills. Additionally, anxiety in autism has been linked to abnormalities in serotonin synthesis and amygdala activity and both serotonin regulation and amygdala changes have been implicated in screen time. Children with autism frequently have sensory and motor integration issues as well as tics; screen time has been linked to sensori-motor delays and worsening of sensory processing, and can precipitate or worsen vocal and motor tics thanks to dopamine release.

Individuals with autism are typically highly interested in screen-based technology and aren't only at increased risk for developing computer game and other technology addictions, but are more likely to exhibit symptoms with smaller amounts of exposure. Many of children are with many other addictions thanks to a mixture of social deficits, isolation, and excessive computer time, and may develop romantic delusions or obsessions fueled by being familiar with immediate gratification and a scarcity of practicing within the world.

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