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## Zone'in Fact Sheet

*A research review regarding the impact of technology on child development, behavior, and academic performance.*

- Infants watch 2.5 hours per day of TV, and children use 7.5 hours per day of entertainment technologies (cell phone, TV, internet).
- 39% of parents use 11 or more hours per day of screen media during their leisure time.
- 30% of children will enter kindergarten developmentally vulnerable.
- 25% of children are obese in Canada, 30% in the U.S.
- 14.3% of children in Canada have been diagnosed with a mental illness.
- Canada is 13<sup>th</sup> and U.S 27<sup>th</sup> on world stage in math, science and reading (2012 PISA), and half of grade eight students do not have job entry literacy.

*The ways in which we are educating and raising our children with technology are no longer sustainable.*

### Impact Statement

The past decade has seen a profound increase in use of entertainment technology by children, some as young as one month of age. Critical milestones for child sensory, motor and attachment development are not being met. Developmental delay, obesity, mental illness, attention deficit, and illiteracy are now becoming the norm. Attachment to technology is “detaching” children from humanity, with consequent increased incidence of childhood psychological and behavior disorders, often accompanied by prescription of psychotropic medication.

Media violence has now been categorized as a Public Health Risk due to causal links to child aggression. Brain development research shows technology overuse by children results in “pruning” of tracks to the frontal cortex, adversely affecting executive functioning and impulse control. Early studies now indicate that electromagnetic radiation emitted from some forms of technology is harmful to adult physical and mental health, with no studies to date on the effects of EMF radiation on children. Schools continue to escalate use of “educational” technologies without any research evidence to show efficacy or safety. It is now time for parents, teachers, health professionals, government, researchers and technology production corporations to join together to manage balance between healthy activity and technology use, a concept termed *Balanced Technology Management*. The *Zone'in Fact Sheet* information is formatted by impact topic, with referenced research alphabetized at the end of document.

- I. **Technology Use:** usage statistics; technology addiction prevalence
- II. **Physical Impairments:** developmental delay; obesity, cardiovascular disorders and diabetes; movement deprivation, sensory overstimulation, electromagnetic radiation, sleep disruption
- III. **Mental Disorders:** human detachment and mental illness; psychotropic medication, restraints, and seclusion rooms, touch deprivation, pornography and risky behavior
- IV. **Social Disorders:** communication, aggression and declining empathy,

- V. **Academic Decline:** attention deficit; illiteracy, education technology;
- VI. **Implications and Solutions:** costs, technology screening and management, playgrounds as epicenter for child development and learning

## Technology Use Overview

- **Elementary aged children now use an average 7.5 hours per day entertainment technology**, (TV, video games, internet, movies, and cell phones), with total amount of exposure time averaging 11 hours per day. Two thirds of children report their parents do not restrict their access to technology, and 75% of these children have devices in their bedrooms (Kaiser Foundation Report 2010).
- **78% of parents report “no conflict” with their children regarding technology usage, and 39% of parents use 11 or more hours of screen media during their leisure time** (Center on Media and Human Development 2013).
- **“Baby TV” now occupies 2.5 hours per day for the 0-2 year old population**, and television occupies 4.5 hours per day for 3-5 year olds, and 7.5 hours per day for elementary aged children and is causally linked to developmental delays (Christakis D 2007). This situation has prompted France to ban its broadcasters from airing TV shows aimed at children under three years of age (CBC News, 2008), and Disney to offer refunds for their “Baby Einstein” DVD’s (NY Times, 2009).
- 173 research efforts going back to 1980 were analyzed and rated, showing 80% of the studies showed a **link between the following negative health outcomes and media hours or content: obesity, smoking, sexual behavior, drug use, alcohol use, low academic achievement and ADHD** (Nunez-Smith M 2004, Zimmerman F 2007, Hancox R 2005, Murray J 2006).
- By preschool age, 80% of children are in some form of child care. Average screen time was 4.1 hours daily, including 3.6 hours at home and 0.4 hours in child care. **Children in centers had the lowest screen time (3.2 hours)** compared with children in parental care only (4.4 hours) (Tandon, 2011).
- An American study found that **children have access to a mean of five connected devices at home; a higher number of devices was correlated with increased risks** experienced by children, but was not associated with increased concern or information seeking from parents (Davis 2012).
- The [American Academy of Pediatrics](http://www.aap.org) has stated that **“today’s children are spending an average of seven hours a day on entertainment media.”** These estimates include time spent watching television, using a computer, on the telephone (talking or texting) and using other electronic devices (Innis, 2014).
- On average, children from birth to 23 months old are watching 55 minutes of TV a day, and 2-to-4-year-olds are watching 90 minutes per day. Use of mobile media starts young: More than a third (38 %) of all children less than 2 years old have now used a mobile device for any media activity compared to 10% 2 years ago (Barr & Lerner, 2014).
- The average seven-year-old will have already watched screen media for more than one full year of 24-hour days. By age eighteen, the average European young person will have spent a full four years of 24-hour days in front of a screen (Sigman, 2012).
- The U.S. Department of Health and Human Services has announced a ‘national 10-year health promotion and disease promotion objective,’ a main aim to increase the proportion of children aged 0-2 years who view no TV or videos on an average weekday, and increase the proportion of children and adolescence aged 2-18 who view TV, videos, or



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play video games for no more than 2 hours per day (USDHHS, 2010).

## Technology Usage Guidelines

- The American Academy of Pediatrics in 2001, and again in 2013, issued statements that children between the ages of 0-2 years not be exposed to any technologies (even background TV), 3-5 years restricted to one hour total technology per day, and 6-18 years be restricted to 2 hours total technology per day (AAP 2001, 2013).
- The Canadian Pediatric Society concurred with the AAP recommendations in 2010 (CPS 2010).
- Children are presently using 4-5 times the amount of technology recommended by pediatric experts (Pagini 2010, Common Sense Media 2013).

The following *Technology Use Guidelines* for children and youth were developed by Cris Rowan pediatric occupational therapist and author of *Virtual Child*, Dr. Andrew Doan neuroscientist and author of *Hooked on Games* and Dr. Hilarie Cash, Director of reSTART Internet Addiction Recovery Program and author of *Video Games and Your Kids*, with contribution from the American Academy of Pediatrics and the Canadian Pediatric Society in an effort to ensure sustainable futures for all children.

## Technology Use Guidelines for Children and Youth

Developmental Age	How Much?	Non-violent TV	Handheld devices	Non-violent video games	Violent video games	Online violent video games and or pornography
0-2 years	none	never	never	never	never	never
3-5 years	1 hour/day	okay	never	never	never	never
6-12 years	2 hours/day	okay	never	never	never	never
13-18 years	2 hours/day	okay	okay	limit to 30 minutes/day		never

## Technology Addiction

- **12% of boys and 8% of girl video game players exhibit pathological patterns of play, and fit the DSM IV category of addiction.** Study also showed that pathological gamers are twice as likely to have ADD or ADHD (Gentile D 2009).
- **ADHD was the most associated symptom of Internet Addiction, followed by impulsivity** (Yen J 2008).
- Research on video games have shown **dopamine (implicated in reward processing and addiction) is released during gaming** (Koepp 1998 and Kuhn 2011) and that **craving or urges for gaming produces brain changes that are similar to drug cravings** (Ko 2009, Han 2011). Other findings in **internet addiction** include **reduced numbers of dopamine receptors and transporters** (Kim 2011 and Hou 2012).
- **Young adults experience distress when they try to unplug from technology for even one day**, a research project has found. Many students also reported mental and physical symptoms of distress and "employed the rhetoric of addiction, dependency and

- depression," when reporting their experiences of trying to go unplugged for a full day (CBC News 2011).
- Experts have warned that **parents who allow babies and toddlers to access tablet computers for several hours a day are in danger of causing “dangerous” long term effects.** Children **as young as four** are becoming so addicted to smartphones and iPads that they require psychological treatment (Ward V, 2013).
  - Data from 2257 students of an English university found that **3.2% of the students were classified as being addicted to the Internet** (Kuss et.al., 2013).
  - A recent [infographic](#) from MapsoftheWorld.com dissects Internet addiction disorder (IAD), survey by Sodahead shows **71% of aged 18-24 yrs. reported internet addiction** (Mlot, 2013).
  - Children and teenagers with autism spectrum disorder (**ASD**) **spend longer on screen-based media like television and video games** than their neurotypical siblings, according to a recent study, and are **more likely to develop video game addiction** (Siddique, 2013).
  - New research from the University of Missouri indicates **escapism, social interaction and rewards fuel problematic video-game use** among “very casual” to “hardcore” adult gamers (Neuroscience news, 2013)
  - The stronger blood volume pulse and respiratory responses, and the weaker peripheral temperature reactions of the high-risk Internet Addiction abusers indicate the **sympathetic nervous system was heavily activated in these individuals** (Lu D 2010).
  - A Harris Interactive Poll in the US release in April 2007 found that **8.5% of youth gamers could be classified as “pathological” or “clinically addicted” to playing video games.** A British survey of gamers indicated 12% reported being “addicted”. 2.4 % of South Korea from ages 9 – 39 have video game addiction according to a government funded survey. Another 10.2% were found to be borderline cases at risk of addiction. Addiction was defined as an obsession with playing electronic games to the point of sleep deprivation, disruption of daily life and a loosening grip on reality, depression and with drawl when not playing. 10 South Koreans died in 2005 from disruption in blood circulation caused by prolonged use. S. Korea has government funded counseling and clinics for gamers. Most addictive video games are the MMORPG’s massively multiplayer online role playing games (Washington Post 2006).
  - A German nationwide survey in 2007 and 2008 of 44,610 ninth graders indicates that **3% of male and 0.3% of female students were diagnosed as Video Game Dependent** accompanied by increased levels of psychological and social stress in the form of lower school achievement, increased truancy, reduced sleep time, limited leisure activities, and increased thoughts of committing suicide (Rehbein, 2010).
  - **Difficulty identifying feelings, higher dissociative experiences, lower self esteem, and higher impulse dysregulation** were associated with higher incidence of internet addiction (DeBerardis D 2008).
  - Internet addicts are **lonelier and have lower self-esteem and poorer social skills** than moderate users (Ghassemzadeh L 2008).
  - Video game addiction can be statistically predicted on measures of **hostility and poor academic achievement** (Shao-I C 2004).
  - An internet-obsessed Korean couple allegedly allowed their infant daughter to starve to death while they cared for their virtual child (Telegraph, UK, 2010).
  - In an effort to **solve the problem of escalating child internet addictions**, the South Korean government has created the Jump Up Internet Rescue School, a camp designed to cure Internet-addicted or online game-addicted children (Koo C 2010).
  - In a study covering evolution of internet addiction in Greek adolescent students, results

- indicate that **Internet addiction is increased in this population parallel to an increase in Internet availability**. The best **predictor variables** for Internet and computer addiction were **parental bonding variables and not parental security practices**. The three online activities most associated with Internet addiction were watching online pornography, online gambling and online gaming (Siomos et al., 2012).
- Results show that those suffering from Internet addiction showed **increased levels of trait impulsivity which were comparable to those of patients diagnosed with pathological gambling**. Additionally, the severity of Internet addiction was positively correlated with the level of trait impulsivity in patients with Internet addiction. These results state that Internet addiction can be conceptualized as an impulse control disorder and that trait impulsivity is a marker for vulnerability to Internet addiction ( Hae Woo Lee, 2012).
  - A **sizable minority of students experience problems related to Internet use** and that the **use of Facebook may contribute to the severity of symptoms** associated with Internet addiction (Kittinger et al., 2012).
  - A cross-sectional study conducted with 257 adolescents found **evidence among females for the mediating role of a preference for online social interaction, and a relationship between self esteem and internet addiction**. No significant effects were found for males (Fioravanti et al., 2012).
  - A data analytics company, Flurry, has conducted a study that found **a 123 percent increase in the number of mobile addicts over the last year**. They categorize a mobile addict as someone who launches an app **more than 60 times per day**, or **six times more** than the **average user** (Dwyer, 2014).
  - The first ever International Congress on Internet Addiction Disorders was held in Milan on March 21 and 22, 2014. Internet addiction disorder is such a global and significant problem that international congresses have been started in order to develop programs to start addressing this issue (Young, 2014).
  - **80 per cent of people would rather go without a car, chocolate or alcohol than be without their digital device for a day** according to a **recent report** (Bodycomb, 2014).
  - Staying connected has become an addiction called **nomophobia**. Not yet formally recognized, there is, however, a **proposal out to include it in the next edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM)** (Castle, 2014).
  - In a recent survey by CivicScience that was charted by Statista, **70% of U.S.citizens** polled said they **unplug from their gadgets once or week or less**. Some **43% said they don't unplug from personal electronics at all**. (Fitzgerald, 2014).
  - Some individuals suffer from a loss of control over their Internet use resulting in **personal distress**, symptoms of **psychological dependence**, and diverse **negative consequences**. This phenomenon is often referred to as Internet addiction. (*Brand et al May 2014*)

## PHYSICAL IMPAIRMENTS

### Developmental Delay

- A joint study by the BC Business Council, and University of BC researchers with Human Early Learning Partnership showing that just under **30% of BC children entering kindergarten are "developmentally vulnerable"** - lacking in those basic skills they need to thrive in school and in the future. These children will go onto fail their grade 4 and 7 exams, and drop out of high school prior to completion. This study, entitled *A*

- Comprehensive Policy Framework for Early Human Capital Investment in BC* states "Economic analyses reveal this depletion (in human capital) will cause BC to forgo 20% GDP growth over the next 60 years, costing the provincial economy a sum of money that is 10 times the total provincial debt load." (Kershaw P 2009)
- This mapping study was repeated in 2013 by University of British Columbia's Healthy Early Learning Partnership which showed overall continued decline in developmental delay for British Columbia children (HELP EDI Map 2013).
  - **Canadian children were granted an "F" grade for inactivity** in 2009 by Active Healthy Kids Canada, citing TV, internet, and video games as the primary cause (Active Healthy Kids Canada 2009 Reports).
  - **Canadian and U.S. children continue to escalate usage of technologies**, citing 7.5 hours per day for the 8-18 years population (Active Healthy Kids Canada 2012; Common Sense Media 2013).
  - American Physiotherapy Association reports **two-thirds of over 400 members surveyed report they've seen an increase in early motor delays in infants** over the past six years (Jennings J 2005).
  - A 2006 Canadian study reported **one in six children have a developmental disability** with only 55-65% of developmental disabilities are detected prior to school age entry (Hamilton S 2006).
  - Data from the **1988 National Health Interview Survey** reported **17% of U.S. children had a developmental disability** with 6% of child population having language impairment, 8% a learning disability, 7% ADHD and 0.5% Autism with 13.2% accessing special education assistance, resulting in 1.5 times more physician visits, 3.5 times more hospital days, twice the number of lost school days and a 2.5 fold increase in the likelihood of repeating a school grade compared to a non-developmentally disabled child (Boyle C 1994).
  - A **2006 US study** reported **32% of children admitted to inpatient pediatric ward demonstrated a developmental disability** (Petersen M 2006).
  - The **past decade** has seen an **unprecedented rise in numbers of referrals to occupational therapists for children with disorders** such as printing and reading delays, attention and learning difficulties, and significant behavior problems, which has placed the occupational therapist under considerable workload management stress (Davidson & Bressler, 2010).
  - The past decade shows a 28.4% increase in mental and neurodevelopmental disabilities in affluent families.

## **Obesity, Cardiovascular Disorders & Diabetes**

- Professor Andrew Prentice told the British Association's science festival in Leicester that due to the secondary effects of obesity on child cardiovascular systems and potential for diabetes, the **21<sup>st</sup> century generation may be the first generation to not outlive their parents** (BBC News, 2002).
- There is a large body of evidence from all study designs which suggests that decreasing any type of sedentary time is associated with lower health risk in youth aged 5-17 years. In particular, the evidence suggests that **daily TV viewing in excess of 2 hours is associated with reduced physical and psychosocial health, and that lowering sedentary time leads to reductions in BMI** (Tremblay et al., 2011).
- **TV and video game use accounts for 60% of childhood obesity, and is now considered a North American 'epidemic'** (Tremblay M 2005, Strauss R 2001).
- A French study used to explore the association between Internet addiction symptoms, body image esteem, body image avoidance, and disordered eating found that **body**

- image avoidance was associated with Internet addiction symptoms among both genders. Controlling for body-mass index, Internet addiction symptoms, and body image avoidance were both significant predictors of disordered eating among women. **These findings support the self-presentational theory of Internet addiction and suggest that body image avoidance is an important factor** (Rodgers et.al, 2013).
- **Facebook usage by teen girls** was significantly correlated with **weight dissatisfaction, drive for thinness, thin ideal internalization, and self-objectification** (Meier, 2013).
  - Research indicates **70% of hispanic children have a TV in their bedroom, raising their risk of obesity by 30%**, increasing TV usage by one hour per day, and increasing their consumption of fast food (Feng et. al, 2011).
  - In **1996, 10% of Canadian children ages 7-13 years were obese**, with estimated economic costs of 1.8 billion (Tremblay M 2002). In **2004**, just eight years later, this number is **50% higher** with a prevalence of obesity at fully **30% of Canadian children** (Statistics Canada, 2010).
  - **US** study reports **obesity incidence doubled** in 2 to 5 year old toddler population, increasing from 2.1% to 5.0% in boys and 4.8% to 10.8% in girls over a 6 year period (Harvey-Berino J 2001).
  - In the U.S., 31.8% of children and adolescents are overweight or obese and 16.9% are obese (Ogden et al., 2-14).
  - Health care providers are finding more and more **children with type 2 diabetes**, a disease usually diagnosed in adults aged 40 years or older (Center for Disease Control and Prevention, 2010).
  - Health study **intervention lowered obesity rate in youth at high diabetes risk**. Interventions included healthier food choices, longer, more intense periods of physical activity, and participation in activities that promoted long-term healthy behaviors (National Institute of Health, 2010).
  - Climbing obesity rates in European countries have lead a team of **child health experts to recommend placing obese children in foster care**, citing that parents of obese children are negligent in some way as to have indicated that the parents have caused their child's obesity. By neglecting to identify child technology overuse as a causal link to obesity, these experts are subjecting whole families to what might be an unnecessary and uncalled for traumatic and catastrophic event (Vilner R, 2010).
  - A boy who spent an entire day kneeling down playing computer games needed hospital treatment for a **blood clot in his leg** (BBC News, 2004).
  - The number of overweight or obese infants/young children aged 0-5 increased from 32 million globally in 1990, to 42 million in 2013 (WHO, 2014).

## Myopia

- According to the American Academy of Ophthalmology (2014), 42% of the U.S. population has myopia and according to the Canadian Association of Optometrists and provincial optometry associations, myopia affects 30% of Canadians. Myopia in Asian countries is up 80%, citing increased use of computers as a causal factor. Myopia is associated with potentially blinding complications such as glaucoma, retinal detachment, and myopic macular degeneration.
- Eye experts attribute the alarming rise of myopia or nearsightedness to the overuse of handheld devices (Yang, 2013).
- Dr. Liu, head of the new Myopia Control Clinic at UC Berkeley's School of Optometry states children are particularly vulnerable to developing myopia because of their high tablet usage as their eyes are still developing and may begin to interpret nearsightedness as a normal state (Berkley News, 2013).

- Research shows increasing time spent outdoors may be a simple strategy by which to reduce the risk of developing myopia and its progression in children and adolescents. Myopia is irreversible (Sherwin et al., 2012).

## Movement Deprivation

- **Rapid advances in technology and transportation have resulted in a physically sedentary society** with high frequency, duration and intensity of sensory stimuli (Nelson M 2006).
- These **environmental changes are faster than human being's ability to adapt and evolve**. Children who immerse themselves in virtual reality may exhibit signs of sensory deprivation, as they become disconnected from the world of physical play and meaningful interactions (Tannock M 2008).
- Overuse of TV and video games may result in children lacking essential connection with themselves, others and nature. **Child now fear nature**, limiting outdoor play which is essential for achieving sensory and motor development (Louv R 2005).
- **Four critical factors** for healthy development and learning are **movement, touch, human connection, and nature** (Rowan C 2010, Insel R 2001, Korkman M 2001).
- **Developing children require 2-3 hours per day of active rough and tumble play** to achieve adequate stimulation to the vestibular, proprioceptive, tactile and attachment systems (National Association for Sport and Physical Education 2002). This type of sensory input ensures normal development of posture, bilateral coordination and optimal arousal states necessary for attainment of printing and reading literacy (Schaff R 2007, Braswell J 2006, Rine R, 2004).
- Scottish study reports **toddlers aged 3 years engaged in only 20 minutes per day of moderate to vigorous physical activity**, which correlated with a decline in total energy expenditure and sedentary behavior. Study identifies TV, video games, strollers as "culprits" (Reilly J 2004).
- Infants with **low tone**, toddlers **failing to reach motor milestones**, and children who are **unable to pay attention** or **achieve basic foundation skills for literacy**, are frequent visitors to pediatric physiotherapy and occupational therapy clinics. **Infant flat head has increased 600% in the past 5 years** (Jennings J 2005).
- **Delayed vestibular maturation** correlates significantly with **sensory integrative dysfunctions, slow vision processing, impaired hearing, and reading disability** (Solan H 2007).
- **Researchers found no increase in physical activity with active video games**, possibly due to games were played with minimal effort and/or children exercised less during the rest of the day as a result (Baraknowski et. al, 2012).
- **A systematic review of children with autism and physical exercise showed decreases in stereotypy, aggression, off-task behavior, and elopement** (Lang, 2010).
- **Canada's Overall Physical Activity levels are at a D-**, clustered near the back of the pack with Australia (D-), Ireland (D-), the United States (D-) and Scotland (F). Even though 84% of Canadian kids aged 3-4 are active enough to meet guidelines, this falls to **only 7% of kids meeting guidelines at ages 5-11, and only 4% meeting guidelines at ages 12-17** (Active healthy kids Canada, 2014).
- An Australian cross sectional study was conducted in order to look at the trend in children's after school activities. Out of 2,940 reports of children's activities, **25% involved physical activity**, including organized sports and free play. **51% of activities**

- were sedentary in nature.** Among sedentary activities, television and screen time were the most commonly reported. **81% of activities were indoor activities.** Outdoor activities were more likely to be active than indoor activities (69% vs. 14%). (Engelen et. Al., 2014).
- For **healthy growth and development**, caregivers should **minimize the time infants** (aged less than 1 year), **toddlers** (aged 1–2 years) and **preschoolers** (aged 3–4 years) **spend being sedentary** during waking hours. (ParticipAction & CSEP 2014)

## Sensory Overstimulation

- **Sensory Processing Disorder affects 1 in 20 children** [www.SPDFoundation.net](http://www.SPDFoundation.net), 2009.
- The ability of a child to adapt to sensory responses in their environments emerges early in life as a protective and discriminative mechanism, and as children grow they typically become better at tolerating uncomfortable sensory stimuli by applying strategies to self regulate. Sensory over-responsivity reflects a failure to achieve a balance between sensitization and habituation, and can affect many aspects of a child's life in both home and school settings. A study long term study looked at infants with sensory over-responsivity when they entered the school system and found that **early sensory sensitivities were associated with sensory over-reactivity status at school-age** (Ben-Sasson, 2010). Technology overuse may result in sensory over-reactivity (Rowan, 2010).
- Study investigating sensory over-responsivity in children with ADHD shows **substantiated links between sensory over-responsivity and anxiety**, in both typical and ADHD children. Results suggest that ADHD should be considered in conjunction with anxiety and sensory responsivity; both may be related to bottom-up processing differences, and deficits in prefrontal cortex/hippocampal synaptic gating (Lane, S 2010).
- Inattention was greater in ADHD than SMD, while SMD had more sensory issues, somatic complaints, anxiety/depression, and difficulty adapting than ADHD, as well as greater physiological/electrodermal reactivity to sensory stimuli than ADHD. **Evidence suggests ADHD and SMD are distinct diagnoses** (Miller LJ 2012).
- **94.4% of adults with ASD reported extreme levels of sensory processing** on at least one sensory quadrant of the Adult/Adolescent Sensory Profile (Crane, 2009).
- **69% of children with Autism demonstrated sensory symptoms** on the Sensory Experiences Questionnaire (Baranek, 2006).
- **95% of children with Autism demonstrated some degree of sensory processing dysfunction** on the Short Sensory Profile Total Score, with the greatest differences reported on the underresponsive/seeking sensation, auditory filtering and tactile sensitivity sections (Tomchek, 2007).
- **Children with photosensitivity have increased risk of epilepsy when using video games** or other high speed visual technologies (Singh R 2004 and Kasteleijn-Nolst Trenite DG 2002).
- **Children with Autism frequently exhibit photosensitivity** (Baron-Cohen S 2010).
- A study on phenotypes within **sensory modulation dysfunction**, describes the **first subtype as characterized by sensory seeking/craving, hyperactive, impulsive, externalizing** (eg, delinquent, aggressive), unsocial, inadaptive, and impaired cognitive/social behavior. The **second subtype is characterized by movement sensitivity, emotionally withdrawal, and low energy/weak behaviour** (James et.al, 2011).
- The findings in a brief report on sensory abnormalities in Autism provide support for the notion that **sensory abnormality is very common in young children with autism**. This

- symptom has been proposed for inclusion among the diagnostic criteria for ASD in the upcoming DSM-V (Klintwall, 2011).
- A ground breaking study has found that **children affected by sensory processing disorders show differences in brain structure**. This finding suggests a biological basis for the disease and sets it apart from other neurodevelopmental disorder (Bunim, 2013).
  - In a study examining the effect of classroom decoration on focus and learning, findings stated that **when placed in a highly decorated classroom, the children spent more time off-task and retained less information** (Burnet, 2014).

## Radio Frequency and Electromagnetic Radiation

- Infants are being strapped into car seats with **iPad mounts less than 6” from their face** (CTV News 2013), forcing them to view glaringly bright images in a virtual reality devoid of touch and human connection.
- **Toddlers as young as 2 years of age have their own iPads**, and children as young as 3 have their own cell phones (Guardian News 2014).
- The frequency use of cell phones by young children is of particular concern because the RF waves from cell phones reach more brain tissue in children than adults due to their thinner cranium (Rosenberg, 2013).
- In-utero exposure to cell phone radiation in mice, caused frontal cortex change, hyperactivity, and impaired memory (Aldad et. al. 2012).
- EMF radiation decreases sperm motility and causes sperm DNA fragmentation in humans (Avadando et. al. 2012).
- The percentage tumor volume increased per year of latency and per 100 h of cumulative use, statistically significant for analogue phones. This study confirmed previous results demonstrating an association between mobile and cordless phone use and acoustic neuroma (Hardell et. al. 2013).
- American Academy of Pediatrics comment on the Proposed Rule “Reassessment of Exposure to Radiofrequency Electromagnetic Fields Limits and Policies” published in the Federal Register on June 4, 2013, requesting the FCC (Federal Communications Commission) to reassess impact of EMF radiation on children citing 3 reasons:
  - 1) **Protect children’s health and well-being**. Children are not little adults and are disproportionately impacted by all environmental exposures, including cell phone radiation. Current FCC standards do not account for the unique vulnerability and use patterns specific to pregnant women and children. It is essential that any new standard for cell phones or other wireless devices be based on protecting the youngest and most vulnerable populations to ensure they are safeguarded throughout their lifetimes.
  - 2) **Reflect current use patterns**. The FCC has not assessed the standard for cell phone radiation since 1996. Approximately 44 million people had mobile phones when the standard was set; today, there are more than 300 million mobile phones in use in the United States. While the prevalence of wireless phones and other devices has skyrocketed, the behaviors around cell phone uses have changed as well. The number of mobile phone calls per day, the length of each call, and the amount of time people use mobile phones has increased, while cell phone and wireless technology has undergone substantial changes. Many children, adolescents and young adults, now use cell phones as their only phone line and they begin using wireless phones at much younger ages. Pregnant women may carry their phones for many hours per day in a pocket that keeps the phone close to their uterus. Children born today will experience a longer period of exposure to radio-frequency fields from cellular phone

use than will adults, because they start using cellular phones at earlier ages and will have longer lifetime exposures. FCC regulations should reflect how people are using their phones today.

- 3) **Provide meaningful consumer disclosure.** The FCC has noted that it does not provide consumers with sufficient information about the RF exposure profile of individual phones to allow consumers to make informed purchasing decisions. The current metric of RF exposure available to consumers, the Specific Absorption Rate, is not an accurate predictor of actual exposure. AAP is supportive of FCC developing standards that provide consumers with the information they need to make informed choices in selecting mobile phone purchases, and to help parents to better understand any potential risks for their children. To that end, we support the use of metrics that are specific to the exposure children will experience (AAP 2013).
  - It has been three years since the World Health Organization shocked the medical community by warning that exposure to microwave radiation from wireless devices might increase our cancer risk. **If the same elite cancer specialists were to meet again today, the warning would be upgraded from a "possible carcinogen" to a "probable carcinogen."** (Clegg, 2014).
  - Recently released research from the Department of Biophysics, Faculty of Medicine in Cukurova University, Turkey indicates **exposure to extremely low-frequency electromagnetic fields (ELF-EMF), known to be emitted from technology including computers, wireless internet, cell phones, and televisions, causes oxidative cell damage and cell death in rats** (Emre M 2011).
  - Using a **cell phone for > or = 10 years approximately doubles the risk of being diagnosed with a brain tumor on the same ("ipsilateral") side of the head** as that preferred for cell phone use. The data achieve statistical significance for glioma and acoustic neuroma but not for meningioma (Khurana V 2009).
  - **Electromagnetic radiation can cause difficulty sleeping, dizziness, headaches, tingling in the hands, ringing in the ears, pain in the eyes, "unexplained" cardiac conditions, electro-sensitivity, low immunity, ADHD and Autism** (Crofton K, 2011).
  - Findings provide new epidemiological evidence that **high maternal magnetic field levels in pregnancy may increase the risk of asthma in offspring** (Li et al., 2011).
  - Whole body exposure to pulse modulated RF radiation that is similar to that emitted by global systems for mobile communication (GSM) mobile phones, can cause **pathological changes in the thyroid gland** (Esmekaya et al., 2010).
  - When electrical properties are considered, **a child's head absorption for electromagnetic radiation can be over two times greater, and absorption of the skull's bone marrow can be ten times greater than adults** (Gandhi et al., 2011).
  - **Time-varying electromagnetic waves have the potential to temporally modulate the nervous system**, particularly when populations of neurons are required to act together. The most likely source of temporal noise in the environment is artificially generated electromagnetic radiation (University of Wales Swansea, 2006).
  - Research suggests a precautionary approach to the use of technologies. Dr. Frangopoulou researched the cognitive effects of the exposure to radiofrequencies in mice, and found **reduced memory after only 2 hours per day for 4 days exposure to a cell phone** (Frangopoulo, 2011).
  - **First accommodation in a US public school system for microwave sickness.** On September 18, 2014, LAUSD, the second largest public school district in the US, officially accommodated teacher Ms. Anura Lawson by approving her request to have the Wi-Fi turned off in her classroom during the 2014-2015 school year. (LAUSD press release October 10, 2014)



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- Canada's current guidelines on **RF exposure** are in line with those of the International Commission on Non-Ionising Radiation Protection – the largest regulatory body in this field. But many **other jurisdictions** have adopted **considerably lower limits**, either as a precautionary measure or because they view the science differently. (Globe and Mail May 2014)
- On 31st May 2011, **IARC** (International Agency for Research on Cancer) the specialized cancer agency of the World Health Organization **classified radiofrequency electromagnetic fields as possibly carcinogenic** to humans (Group 2B).(C4ST September 2014)
- In 2011, the World Health Organization categorized electromagnetic radiation, which is emitted from all wireless electronic devices, as a Group 2B (possible carcinogen based on the fact that it contains 73 carcinogenetic agents. It is in the same category as lead, engine exhaust, and chloroform.
- "Even though the radio frequencies that are emitted from current cell phone technologies are **very weak**, they are able to activate the **human brain**" (Volkow, 2014).
- Research shows children who used cellphones or were exposed prenatally to wireless radiation were at risk for developing headaches (Sudan et al., 2012).
- EMF in extremely low frequency and radio frequency activates cellular stress responses and increases levels of stress proteins. Exposure to EMF radiation may lead to DNA damage which could account for increases in cancer epidemiology (Blank & Goodman, 2009, 2011).
- In order to protect living cells, Dr. Blank recommended EMF safety limits be changed from the current thermal standard, based on energy, to one based on biological responses that occur long before the threshold for thermal changes (2011).
- All wireless devices have manufacturer warnings within their manuals stating specific distances they must be kept away in order to not exceed the current FCC limits for exposure to WiFi radiation. (FCC sets exposure limits for laptops and tablets that are tested 20 cm away from the body).
- More than 29 international experts recommend wired access without WiFi whenever possible. Technology can be used more safely with wired devices that do not produce biologically-disruptive levels of wireless radiation (Carpenter & Sage, 2012).
- Waiting for high levels of scientific and clinical proof before taking action to prevent well-known risks can lead to very high health and economic costs, as was the case with asbestos, leaded petrol and tobacco (European Commission Resolution, 2011).
- Dr. Russell recommends removing wireless devices (white boards and routers) in schools in favour of wired connections and fiber optic (2013).
- WiFi radiation opens voltage gated calcium channels causing excessive of calcium in the cells and therefore, is associated with an increase of adverse biological effects (Pall, 2013).
- Research shows mobile data doubled from 2012-2013 and is expected to increase by 650% by the year 2018 (CITA, 2014).

## Sleep Deprivation

- **75% of U.S. children aged 9 and 10 years are sleep deprived** to the extent that it significantly impacts on their grades (Boston College 2012).
- For some people – especially children – sleep deprivation does not necessarily cause lethargy; instead they become **hyperactive** and **unfocused**. Researchers and reporters

- are increasingly seeing connections between dysfunctional sleep and what looks like A.D.H.D., but those links are taking a long time to be understood by parents and doctors (Thakkar, 2013).
- Sleep deprivation is a **significant hidden factor in lowering the achievement of school pupils**, according to researchers carrying out international education tests (Coughlan, 2013).
  - 11 percent of teens develop depression by age 18. **Teenagers who don't get enough sleep are four times as likely to develop major depressive disorder as their peers who sleep more**, according to researchers (Singh, 2014).
  - **Passive and active TV watching results in irregular sleep patterns and sleep/wake transition disorders.** Attention and learning are negatively impacted by sleep deprivation (Paavonen E 2006).
  - 30% of children consumed a daily caffeinated beverage, reducing total sleep by 15 minutes per night. **42% had a television in the bedroom reducing total sleep by 45 minutes per night** (Calamaro et. al, 2011).

## MENTAL DISORDERS

### Human Detachment and Mental “Illness”

- **39% of parents use over 11 hours of entertainment technology per day** (Center on Media and Human Development 2013).
- **Children who watch more than the expert recommended 1-2 hours per day of technology, have a 60% increase in psychological disorders** (Bristol University, 2010).
- **Studies have shown an association between ASD and increased screen time exposure in infancy.** Authors present a developmental model of autism where screen time results in specialization of the brain for non-social sensory processing, and **through neuroplasticity, the infant develops skills that are driven by screen viewing.** The screen viewing pathway compete with social pathways, negatively affecting the social brain pathways, resulting in global developmental delay (Heffler 2015).
- Nationwide survey reports **problematic use of video games was associated with lower scores on life satisfaction and with elevated levels of anxiety and depression** (Mentzoni R 2011).
- Dr Larry Rosen, American professor of psychology reports that **our obsession with technology is causing an epidemic of psychological disorders, with social networking related to narcissism, and texting to obsessive compulsive disorder and ADHD** (Naish, 2013).
- A recent study revealed that **20% of parents did not know how to “play” with their children, and one third of parents found play “boring”** (Guardian News, 2010).
- **Parent time spent connected to various forms of technologies is disconnecting them from forming healthy, primary attachments with their children.** This parent-child “disconnection” is a major contributing factor to the reported increased incidence of mental diagnoses (Flores P 2004).
- **Too many parents are distracted by mobile devices** when they should be watching their kids, causing a **recent rise in injuries of 12% between 2007 and 2010**, after falling for much of the prior decade, according to the most recent data from the Centers for Disease Control and Prevention (Worthen, 2012).

- **40 out of 55 parents were observed to use their cell phones during a restaurant meal**, and highly absorbed parents responded more harshly to child behavior (Radesky 2014).
- **95% of children report they would rather go outside and play than use technology** (participACTION 2013).
- The perfect storm for the **formation of a killer** is **mental illness** combined with **violent video games**. A child addicted to anything is mentally ill, whether it is an addiction to drugs, alcohol, or video games (Doan, 2012)
- The unique association between media multitasking and these measures of psychosocial dysfunction suggests that the **growing trend of multitasking with media may represent a unique risk factor for mental health problems related to mood and anxiety** (Becker et.al., 2013).
- A new University of Michigan study on college aged adults finds that **the more they used Facebook, the worse they felt** (Hu, 2013).
- The idea that DSM disorders are separate diseases with distinct pathophysiologies has now been disconfirmed by the DSM-5, the American Psychiatric Association, and the National Institutes of Mental Health. Commentary states there is **no demonstrated physiological, genetic, or phenotypic specificity to the different DSM-5 disorders** (Ross, 2013).
- Children who were **more impulsive** and **less comfortable with other children** spent **more time playing video games**, the study found. Two years later, these heavy gamers, who played an average of 31 hours a week, compared with 19 hours a week for other students, were **more likely to suffer from depression, anxiety and social phobias** (Rabin, 2011).
- **Using multiple forms of media at the same time** – such as playing a computer game while watching TV – is linked to symptoms of **anxiety and depression**, scientists have found for the first time (MSU News, 2012).
- Anxious attachment, depression, and anxiety could explain problematic alcohol use. In contrast, both **anxious and avoidant attachment** as well as depression and phobia **explained problematic Internet use**. Additionally, depression moderated the effects of avoidant attachment on problematic Internet use. We demonstrated that the interaction of attachment and psychopathology predicts problematic Internet use originating from an earlier stage of life than that associated with problematic alcohol use (Shin S 2011).
- **Mood disorders showed a statistically significant ( $p=0.044$ ) correlation with a higher score on the IAT** (Internet Addiction Test). Mental health care practitioners must consider questions on Internet use as an essential part of the patients' evaluation given its significant correlation with diagnosis of a mood disorder (Liberatore K 2011).
- **People who report they are not happy watch over 30% more TV hours per day** than people who report they are happy (Robinson J 2008).
- **Television exposure and total media exposure in adolescence are associated with increased odds of depressive symptoms** in young adulthood, especially in young men (Primack B 2009).
- **In Canada 1 in 165 children have been diagnosed with Autism** (Autism Society of Canada, 2010), and in the **US 1 in 110 children have Autism** (Autism Society, 2010).
- **Children born after shorter intervals between pregnancies are at increased risk of developing autism**; the highest risk was associated with pregnancies spaced <1 year apart with a more than three times elevated odds of Autism (Cheslack-Postava K 2011).
- **9% of US children age 8-15 years meet criteria for ADHD** (Rapport M 2008).
- Recent studies document a **rise in psychological disorders in children reporting increasing incidence of ADHD, autism, bipolar disorder, depression and anxiety**

- (Zito J 2001, The Well-being of Canada's Young Children Report 2003, Mental Health: A Report of the Surgeon General, Overview of Mental Disorders in Children, Mental Health in the United States: Prevalence of Diagnosis and Medication Treatment for ADHD, Center for Disease Control and Prevention 2003).
- 2007 mental illness statistics for children in **Canada show that 14.3% of children have a diagnosed mental health disorder** with anxiety disorders 6.4%, ADD or ADHD 4.8%, conduct disorders 4.2%, depressive disorders 3.5%, substance abuse 0.8%, autism spectrum disorders 0.3%, obsessive compulsive disorders 0.2%, eating disorders 0.1%, schizophrenia 0.1%, bipolar disorder <0.1% (Waddell C 2007).
  - Based on the ways in which the parent copes with the stresses of their own technology overuse, the parent consequently might raise their children in such a way as to result in either an avoidant, ambivalent, or disorganized attachment disorder. A study conducted in Beijing, China reports that **adolescents with Internet Addiction Disorder consistently rated parental rearing behaviors as being over-intrusive, punitive, and lacking in responsiveness**, indicating that the influences of parenting style and family function are important factors in the development of internet dependency (Xiuquin, 2010).
  - **Parents who stay in touch with their university aged children using social networking** (texts, email, Facebook), have children who are **more anxious, lonely and who indicate loneliness, anxious attachment, as well as conflict within the parental relationship**, than children who's parents stay in touch by phone (Gentzler, 2010).
  - **Recent changes from a 'categorical' to a 'dimensional' model** in the upcoming Diagnostic and Statistical Manual, Fifth Edition to be released in May of 2013, has **opened the flood gates for increasing diagnosis of children with mental disorders**, reports Dr. Allen Frances, who was chair of the DSM-IV Task Force and of the department of psychiatry at Duke University School of Medicine in North Carolina (Psychiatric Times, 2009). Dr. Francis states that this paradigm shift is premature, as there is not even one biological test ready for inclusion in the criteria sets for DSM-V.
  - With **increasing numbers of experts in the field of child psychiatry now questioning whether there even is a biological component in child mental illness** (Breggin P, 2008), it seems pertinent to investigate environmental causes for the incremental rise in child mental and behavioral diagnoses.
  - **13% of respondents ages 8 to 15 years of age who participated in the National Health and Nutrition Examination Survey reportedly met criteria for at least one of the following mental health disorders** in the past year: generalized anxiety disorder, panic disorder, eating disorders, depression, ADHD, and conduct disorder (National Institute of Mental Health, 2009).
  - **There are no reliable, valid, or replicable studies showing genetic evidence for any psychiatric disorders**, including ADHD, Autism, bipolar disorder, schizophrenia, depression or anxiety (Joseph J., 2003, Baughman F., 2009).
  - Yet – in a study of 491 physicians in Washington D.C., almost **half of the diagnoses of ADHD in their patients had been suggested first by teachers** (Sax L., 2003).
  - **Teachers have taken on the role of "disease spotters" and "sickness brokers" for ADHD**, as pharmaceutical companies escalate their infiltration of the school system (Phillips C., 2006).
  - The results from a study examining the **impact of twitter use on relationship fidelity and divorce** suggest that active **Twitter use leads to greater amounts of Twitter-related conflict among romantic partners**, which in turn leads to infidelity, breakup, and divorce (Clayton, 2014).
  - According the new research on happiness "**The sense of well-being derived from "a noble purpose" may provide cellular health benefits**, whereas "simple self-

gratification" may have negative effects, despite an overall perceived sense of happiness." (University of Michigan, 2014).

## Psychotropic Medication, Restraints, Seclusion Rooms

- **Child behavior diagnoses and subsequent use of psychotropic medication may be a result of technology overuse**, resulting in the development of a novel "Unplug – Don't Drug" policy initiative and routine technology screening (Rowan C 2010). **Every behavior is an unsolved problem, unmet need or lagging skill.**
- **Behaviors associated to technology overuse** may be confusing for parents, teachers and physicians, and could be easily misunderstood, possibly **resulting in psychiatric diagnosis and prescription of psychotropic medication** (Ruff M 2005, Diller L 1999, Welch M 2006, Mukaddes N 2000).
- **There has been a significant rise in use of restraints and seclusion rooms reported by BC parents**, as indicated by independent study by disability advocacy group (Vancouver Sun 2013).
- Dr. David Stein reported at the International Center for the Study of Psychiatry and Psychology conference in October 2009 that **32% of children ages 0-18 years covered by Blue Cross insurance are currently on psychotropic medication** (Stein D 2009).
- Between 1991 and 1995, **prescriptions for psychotropic medications in the 2 – 4 year old toddler population, as well as in children and youth tripled** (Zito J 2000, 2003, Mandell D 2008). 80% of this medication was prescribed by family physicians and pediatricians (Goodwin R 2001).
- **28-30% of children receiving psychotropic medication are on multiple medications**, with minimal knowledge regarding drug interactions or long term toxicity (47).
- Study performed by researchers from the Government of Western Australia, Department of Health, report **reduced academic performance and increased risk of heart malfunction in children who receive ADHD medication**. "We found that stimulant medication did not significantly improve a child's level of depression, self perception or social functioning and they were **more likely to be performing below their age level at school by a factor of 10.5 times.**" Prof Landau said the study also suggested that a child's heart function may be affected by long-term stimulant use and may remain affected even after stopping medication (Raine ADHD Study).
- A comparative study of children diagnosed with ADHD who were **on stimulant medication showed a 10% decrease in growth rate** when contrasted with children diagnosed with ADHD who were not receiving stimulant medication (Swanson, Elliot, Greenhill, Wigal Arnold & Vitiello, 2007).
- Prominent psychotic symptoms (i.e., hallucinations and/or delusions) determined to be caused by the effects of a psychoactive substance is the primary feature of a substance-induced psychotic disorder. **A substance may induce psychotic symptoms during intoxication (while the individual is under the influence of the drug) or during withdrawal (after an individual stops using the drug)** (Hahn, 2003).
- The majority of **mass shooters were either taking, or strongly suspected of taking, mind-altering psychiatric drugs**. Between 2004 -2012 there have been 14,773 reports to the US FDA's MedWatch system on psychiatric drugs causing violent side effects. Acts of violence towards others are associated with a relatively small group of drugs, antidepressants with serotonergic effects. **Psychiatrists prescribe antipsychotic drugs to children in one third of all visits, which is three times higher than during the 1990's** and nearly **90 percent of those prescriptions** written between 2005 and 2009 **were prescribed for something other than what the Food and Drug Administration**

- approved them for.** A total of 8.2 million children under 18 are taking psychiatric drugs in the U.S. There are over 40 million Americans taking antidepressants – a 15% increase since 2002; of these, 2 million are children under 18. **Since 2002, the number of Americans on ADHD drugs has gone up by 94% with over 10 million currently taking them.** According to the CDC, **11 percent of school-age children have been diagnosed with ADHD** and there are now 4.7 million children under 18 in the U.S. taking ADHD drugs, per IMS Health. The total number of Americans on antipsychotics has increased by 40% since 2002 (O'Meara, 2013).
- A Star investigation found that nearly **600 cases of Canadian kids have suffered serious, sometimes fatal side effects suspected to have been caused by ADHD medications in the past 10 years** (Bruser, 2012).
  - **Antipsychotics have a subtle but measurable influence on brain tissue loss over time**, suggesting the importance of careful risk-benefit review of dosage and duration of treatment as well as their off-label use in children (Ho B 2011).
  - **Limited high quality evidence guiding appropriate dosing and inexperience in documentation of long term effects of these prescriptions in children** may mean that these children undergo unquantified risks (dosReis S 2005, Rosack J 2003, Kirsch I 2004, Thomas C 2006).
  - Dr. Peter Breggin reported at the International Center for the Study of Psychiatry and Psychology conference in October 2009 that **ADHD medication causes permanent neurotransmitter changes due to receptor down regulation, resulting in depletion of the transmitter the drug was originally designed to increase.** New psychotropic medication molecular structure has added fluoride and chloride ions to improve long acting ability, which are proven to be toxic with long term (> 4 months) administration to cell mitochondria causing eventual cell death. **ADHD medication results in growth retardation and 20% brain shrinkage, appetite loss, 50% depression, 50% Obsessive Compulsive Disorder, Tardive Dyskinesia, and alcohol and cocaine abuse.** Psychotropic medication decreases spontaneity and increases obsessive compulsive disorder, two traits which are ALWAYS interpreted as "improvement" by the educational system (Breggin P 2008).
  - Research regarding stimulant medication with children is rife with conflict. Studies have **low validity and reliability ratings, and findings can rarely be replicated.** Clinical trials are generally small in sample size (30-40 children), and on children older than FDA approved regulations, resulting in prevalent "off label" prescribing. **Clinical trials are rarely conducted for longer than 4-8 week periods**, which is insufficient to document any toxicological side effects, and authors state "**Neither the long-term effectiveness nor the long-term safety of stimulant medications has ever been demonstrated**". (Jensen P 2002)
  - Three year follow-up of treated **ADHD subjects showed increases in heart rate, and/or systolic and diastolic blood pressure in 20% of children taking stimulants for ADHD** (Winterstein A 2009).
  - Health Canada warns that **Atomoxetine (Strattera), a drug commonly used to treat ADHD disorder in children, has been linked to 189 reported adverse reactions as of December 31, 2007, including 55 suicide attempts** of which 43 were among children between the ages of 6 and 17 (CBC News 2008).
  - Two world-renowned Harvard child psychiatrists Dr. Joseph Biederman and Dr. Thomas Spencer, whose work has helped fuel an explosion in the use of powerful antipsychotic medicines in children, found in a 2006 study increased prevalence of adult ADHD and call for increased detection and treatment (Kessler R 2006). Senator Charles E. Grassley **implicated these same researchers in payments of \$1.6 million of unreported**

- income from pharmaceutical corporations** over a 6 year period (New York Times 2008).
- Although “off label” marketing of psychotropic medication and suppression of negative results of drug trials are illegal, they are widely accepted practices by pharmaceutical companies (Bass A 2008). Researcher concerns regarding the correlation between stimulant use and cardiovascular risk in children, (Vitiello, B. & Towbin, K. 2009), **indicates immediate attention be directed to nonpharmalogical behavior interventions for the treatment of child behavior and learning disorders.**
  - **School management difficulties with increasing numbers of aggressive children, is resulting in the rising use of physical and chemical restraints** (Irwin M 2009), as well as the rising use of seclusion rooms (Vancouver Sun 2010).
  - When there **is no evidence that locking children in “safe rooms” improves behavior in the long term, and may actually be harmful to children** (PENT Forum 2008), *why are schools increasing their use?*
  - Two children (out of sample of 43) on **fluvoxamine**, a serotonin reuptake inhibitor, showed **drug-induced apathy**; neither had depressive illness (Reinblatt et al., 2006).
  - A preliminary but provocative new study finds **women who take antidepressants during pregnancy have a moderately higher risk of having a child with autism**, according to a paper published in the Archives of General Psychiatry (Wane, 2011).
  - **Antipsychotics are now the top-selling class of medications in the United States**, with prescription sales of \$14.6 billion in 2009. Many clinicians worry these agents are being overprescribed and used inappropriately (Culpepper, 2011).
  - 500 pediatric occupational therapists, physical therapists and speech-language pathologists reports that more than **two-thirds had seen children with deficits processing and integrating sensory information who had been misidentified as having Attention Deficit Disorder or Attention-Deficit Hyperactivity Disorder**. This finding is significant as the treatment for ADD or ADHD is medication while the treatment for sensory processing deficits is therapy (Pathways awareness, 2011).
  - It was established years ago that **Paxil carries a risk of suicide in children**, but GlaxoSmithKline has been conducting a study of the antidepressant in children as young as seven - in Japan (Edwards, CBS News 2010).
  - Study shows **stimulant-related decreases in growth rates** after initiation of stimulant medication (Swanson et al., 2007).
  - In the United States, **the number of adults on government disability due to mental illness rose from 1.25 million in 1987 to 3.97 million in 2007**. On a per-capita basis, the disability rate rose from 1 in every 184 Americans in 1987 to 1 in every 76 Americans over that 20-year period. (Total population divided by number of working-age adults on disability.) At the same time, **societal spending on psychiatric drugs soared, from less than \$1 billion in 1987 to more than \$40 billion annually today** (Whitaker, 2011).

## Touch Deprivation

- **Adequate tactile stimulation is integral to optimizing infant and child development, and tactile deprivation can cause abnormal development of the tactile system.** Dr. Ann Bigelow, pediatric researcher at St. Francis Xavier University, Nova Scotia found that skin-to-skin tactile stimulation between mother and infant was shown to reduce gurgitation, improve sleep, and improve overall growth, as well as enhance infants' sensitivity to their mother which accelerates knowledge about, and expectations for, her behavior (Bigelow, 2006).

- The use of **safety restraint devices such as infant bucket seats and toddler carrying packs and strollers**, have further limited movement, **touch** and human connection, as have TV, internet, and video games (Rowan C 2010).
- A comparative study of two different types of neonatal infant care: the use of a 'kangaroo care' where the infant was carried in a pouch-type device at all times by the caregiver optimizing skin-to-skin contact, and the use of traditional incubators concluded that **kangaroo care had a significant positive impact on the infant's perceptual-cognitive and motor development and on the parenting process**, and speculated that kangaroo care has both a direct impact on infant development by contributing to neurophysiological organization and an indirect effect by improving parental mood, perceptions, and interactive behavior (Feldman, R 2002).
- **Sixty nine percent of the boys with ADHD were categorized as tactile defensive** (Parush 2007).
- **Following touch therapy, children with Autism showed decreased touch aversion, off task behavior, orientation to irrelevant sounds, and stereotypic behaviors** compared to a control group of children with Autism who sat on researcher's lap and were read a book. The touch therapy group also improved more than the control group in stereotypic behaviors and orientation to irrelevant sounds. The authors suggest the effectiveness of touch therapy might be related to changes in vagal tone and/or EEG patterns (Field T 1997).
- **Dr. Montagu reports that when children lack touch and human connection, they may respond by 'turning in' (anxiety, depression) or 'turning out' (aggression)** (Montagu A 1972).
- **Differences in response to tactile stimuli are prevalent in ASD, and tactile contact early in infancy is a foundation for the development of social and communication skills affected by ASD.** While tactile hypo-responsiveness correlates strongly with increased social and communication impairments, and to a lesser degree, repetitive behaviors, researchers found that tactile hyper-responsiveness did not significantly correlate with any core features of ASD. (Foss-Feig et. al, 2012).

## Pornography and Risky Behaviour

- **Researchers report 42% of children ages 10-17 actively use pornography, with average age of first exposure 6 years** (Wolak et al., 2007).
- In an study examining the prevalence and patterns of sexting among ethnic minority high schools students, **20% of students reported sending a nude or semi-nude picture or video or a sexual text message-any one of these considered a "sext"-and more than 30% reported receiving a sext** (Peskin et.al., 2012).
- Dr. Phil Zimbardo, a psychology professor at Stanford University, discussed the demise of guys, stating that **boys are flaming out academically and wiping out socially with girls and sexually with women.** Of all the activities on the Internet, **porn has the most potential to be addictive.** Everything in the porn user's life is boring except porn. **As a result of watching porn, boys' brains are being digitally rewired into a never-ending desire for change, constant arousal, novelty and excitement.** This creates real issues when it comes to romantic relationships that grow gradually and subtly (Baumgardner, 2013).
- The rate of speed at which erotic images are delivered can **alter brain chemistry and rewire the pleasure center of the brain**, creating other changes in body and sexual function, including addiction and erectile dysfunction. **Because an increasing amount of extreme images are sought (in part because of these brain changes), more violent**

- and humiliating images are needed (Sellers, 2013)
- **Six-year-old children were acting out sex and drug scenes from Grand Theft Auto**, reports headteacher (The Telegraph 2014).
  - Children's **online participation was associated with increased exposure to online risks**. The association was moderated by Internet skills and parental restrictive mediation ( Sook and Chae, 2012).
  - **Teens viewing pictures on social networking sites of teens getting drunk, passing out, or using drugs are twice as likely to say they are very or somewhat likely in the future to use drugs**, compared to teens who had not viewed such pictures (National Center on Addiction and Substance Abuse at Columbia University, 2011).
  - **Children who use pornography are significantly more likely to report delinquent behaviour and substance use in the previous year**, as well as depression and lower levels of emotional bonding with their caregiver (Ybarra et al., 2005).
  - **An unfortunate consequence of porn addiction is desensitization and tolerance, requiring increased intensity of stimuli to satiate craving, including prostitution and sexual depravity** (children, sexual violence), (Klein 2009).
  - Approximately 10,000 Canadian youth reported their screen time, or time spent with a television, computer, or video game, as well as their participation in risky behaviors such as smoking, drug use, and non-use of condoms. **Youth who reported the highest amount of screen time, especially computer time, were significantly more likely to engage in risky behaviors**. These results suggest that that media use may contribute to youths' decisions to engage in risky behaviours (Carson et. al, 2011).
  - **Video game playing during adolescence succeeded in predicting later risky driving behaviour** through adolescents' attitudes and intentions to exhibit this behaviour in the future (Buellens et al., 2010).
  - **Universities are hiring rape counsellors and forming rape prevention teams** due to an escalation in campus sexual violence (MacLeans 2013).
  - According to a survey of nearly 1,300 middle school students in Los Angeles, **adolescents** who sent or received **sexually explicit photos or text messages** were **three to seven times more likely to be sexually active** than their peers not involved in sexting,(Goodier, 2014).
  - Studies show 25% of 10 year old children are sexting, 40% of teen girls (girls 2x boys) have posted or sent sexually explicit images and 80% of teens under the age of 18 have sexted. Sexted was defined as sending a nude photo of oneself (Englander, 2012).
  - Results demonstrate that more frequent **viewing of pornography** is associated with a **higher** incidence of **hooking up** and a **higher number** of **unique hook up partners**. (Braithwate et al September 2014)
  - Research shows at least 90% of kids between the ages of 8 and 16 have watched pornography online at least once. Boys ages 12-17 are actually the largest consumers of online porn and is actually being compared to being the drug of choice for youth (Woda, 2014).

## SOCIAL DISORDERS

### Communication

- **One in five toddlers have speech and language delays associated with overexposure to television**, and Dr. Sally Ward recommends improving quality and

- quantity of communication with parents to optimize speech and language acquisition (Ward S 2004).
- The ability of the 21<sup>st</sup> century child to socialize with both adults and peers is deteriorating at a rapid pace. Sally Ward, a professor of speech and language pathology reported in her book "Baby Talk", that one in five toddlers demonstrate speech and language delays (Ward S 2004).
  - Canadian parents spend an average 3.5 minutes per week participating in meaningful conversation with their children (Turcotte M 2006).
  - Dimitri Christakis, pediatric researcher at Children's Hospital and Regional Medical Center in Seattle, reports that children learn language skills largely from verbal interactions with their parents. In his recent 2009 study where he used digital recorders on both parents and children in their homes, Dr. Christakis found **that adults typically utter approximately 941 words per hour, yet these adult words are almost completely eliminated when television is audible to the child.** Dr. Christakis found that each hour of audible television was associated with significant reductions in child vocalizations, vocalization duration, and conversational turns. On average, each additional hour of television exposure was also associated with a decrease of 770 words the child heard from an adult during the recording session. **Since 30 percent of American households now report having the television always on, even when no one is watching, researchers report these findings have grave implications for language acquisition and therefore perhaps even early brain development** (Christakis, 2009).
  - **Time spent using social media** was associated with a larger number of online social network "friends." However, time spent using social media was not associated with larger offline networks, **or feeling emotionally closer to offline network members** (Pollet T 2011).
  - Social self-efficacy in the real world (offline) is negatively related with the degree of game addiction, whereas social self-efficacy in the virtual world (online) indicated a positive association. **Social activities with parents are negatively associated with game addiction**, although no relationship is found between gaming activities with parents and game addiction (Jeong E 2011).
  - Parents reported greater communication and closeness when adolescents initiated calls seeking social support. **Adolescents reported greater conflict when parents called for monitoring activity, for tracking schoolwork, and when upset.** Calls to ask and confer by adolescents and to track school work positively related, but parental calls when upset negatively related to parental self-esteem. **Adolescent self-esteem is predicted by calls seeking support and negatively associated with parents calling when upset** (Weisskirch R 2011).
  - Participants of a study comparing communication patterns and satisfaction levels in three dimensional versus real life intimate relationships, indicated that the **quality of their communication was significantly better in their Second-Life relationships and that they experienced higher levels of satisfaction with their virtual partners** (Gilbert et al., 2011).
  - Data indicates that **excessive internet users have deficits in the early stage of face-perception processing** but may have intact holistic/configural processing of faces. Whether some deeper processes of face perception, such as face memory and face identification, are affected in EIUs needs to be investigated further with more specific procedures (He et al., 2011).
  - **17% of Dutch adolescents surveyed reported real-life encounters with online contacts;** one third of these adolescents did not tell their parents about the encounters.

- Low self-esteem and certain Internet-related parenting techniques were related to the prevalence of such encounters (Van Den Eijnden et al., 2011).
- Researcher found that the **heart's capacity for friendship** obeys the biological law "use it or lose it", and **when humans don't engage in face to face interaction, they actually lose the biological ability to do so** (Frederickson, 2013).
  - In a study conducted on the Use of Therapeutic Robot Companions as Social Agents for Reducing Pain and Anxiety in Pediatric Patients, Dr. Okita reports that **when a child and parent were together during robot therapy sessions, the patients' pain ratings decreased significantly. There were no differences in the pain ratings when the child interacted with the robot animal without the parent present** (Okita, 2013.)
  - A study on the effect of facebook on negative interpersonal relationship outcomes indicate that **a high level of Facebook usage is associated with negative relationship outcomes, and that these relationships are indeed mediated by Facebook-related conflict** (Clayton, 2013).
  - The Protecting Canadian Families Online survey revealed that nearly **90 per cent of parents** surveyed in the Primus Telecommunications Canada research **thought their kids would tell them if they were cyberbullied**, yet only **eight per cent of youth** do so (O'Connor, 2014).
  - A study on the effect of background television on the quantity and quality of parental speech directed at toddlers has found that **background TV reduced words per minute, utterances per minute, and number of new words** (Pempek et.al., 2014).

## Aggression and Declining Empathy

- A **meta-analysis examined 380 studies that involved over 130,000 participants showing media violence causes aggression** (Markman, 2010).
- A study on prosocial, neutral and violent video game usage in college students indicated that **prosocial games reduced state hostility and increased positive state affect. Violent video games had the opposite effects.** These effects were moderated by trait physical aggression (Saleem et.al., 2012).
- A longitudinal study of the association between violent video game play and aggressive behaviour in adolescents has reported that sustained violent video game play was significantly related to steeper increases in adolescents' trajectory of aggressive behavior over time. **Moreover, greater violent video game play predicted higher levels of aggression over time, after controlling for previous levels of aggression, supporting the socialization hypothesis** (Willoughby et al., 2012).
- According to a cross culture study on the effects of violent video games on aggression in Japan and the U.S, the longitudinal results confirm earlier experimental and cross-sectional studies that have suggested that playing violent video games is a significant risk factor for later physically aggressive behavior and that this violent video game effect on youth generalizes across very different cultures. **As a whole, the research strongly suggests reducing the exposure of youth to this risk factor** (Anderson et.al., 2008).
- Six hundred and seven 8th- and 9th-grade students from four schools participated in a study examining the effects of violent video game habits on adolescent hostility, aggressive behaviors, and school performance. **Adolescents who expose themselves to greater amounts of video game violence were more hostile, reported getting into arguments with teachers more frequently, were more likely to be involved in physical fights, and performed more poorly in school** (Gentile et.al., 2004).
- The evidence strongly suggests that **exposure to violent video games is a causal risk factor for increased aggressive behavior, aggressive cognition, and aggressive**

- affect and for decreased empathy and prosocial behaviour** (Moore, 2010)
- Study 1 surveyed rant-site visitors to better understand the perceived value of the Web sites and found that while they **become relaxed immediately after posting**, they also experience **more anger than most and express their anger in maladaptive ways**. Study 2 explored the emotional impact of reading and writing rants and found that for most participants, **reading and writing rants were associated with negative shifts in mood** (Martin et.al., 2013).
  - **Exposure to violent online games was associated with being a perpetrator as well as a perpetrator-and-victim of cyberbullying** (Lam et.al., 2013).
  - Results from a between-subjects experiment showed that **a realistic controller and a large screen display induced greater aggression, presence, and arousal than a conventional mouse and a small screen display**, respectively, and confirmed that trait aggression was a significant predictor of gamers' state aggression (Kim and Sundar, 2013).
  - **American Physician, Pediatrician, Psychiatrist and Psychologist Associations in 2001 declared media violence a Public Health Risk, stating violence is the leading cause of death in children** (Committee on Public Education – Media Violence 2001).
  - Review of 50 years of research on the impact of violence in TV, movies, video games and internet concludes that **watching media violence significantly increases the risk that a viewer or videogame player will behave aggressively in both the short and the long term**. 60% of TV programs contain violence and 40% contain heavy violence. **Most videogames contain violence**. Video game ratings are a poor indicator of content and constitute conflict of interest, as the rating process is performed by the video game industry. Authors state the impact of violent electronic media on public health is second only to the impact of cigarette smoking on lung cancer (Huesmann L 2007).
  - Results of a study examining social outcomes associated with media viewing habits of low income preschool children, suggest that **viewing of inappropriate content was associated with higher hyperactivity and aggression scores and a lower social skills rating**, whereas the amount of viewing was not related to these classroom outcomes (Conners-Burrow et. al, 2011).
  - In the short term, **media violence can increase aggression by priming aggressive thoughts and decision processes** increasing physiological arousal, and triggering a tendency to imitate observed behaviors. In the long-term, **repeated exposure can produce lasting increases in aggressive thought patterns and aggression-supporting beliefs about social behaviors**, and can reduce individuals normal negative emotional responses to violence (Anderson C 2003).
  - Studies regarding the effects of violent video games on children found **even violent cartoons increased aggression in 9-12 year old children**. Violence is defined as doing intentional harm to another, not how graphic or gory the game is. Increased exposure to violent videogames results in more pro-violent attitudes, hostile personalities, less forgiveness, belief that violence is typical, and causes children to behave more aggressively in their everyday life (Anderson C 2007).
  - **Young children are most vulnerable to media violence as they are more impressionable, can't distinguish between fantasy and reality**, cannot discern motives for violence, and learn by observing and imitating (Buchanan A 2002).
  - Since Newtown CT shooting, **there have been an additional 44 school shootings killing 28 children** (Moms Demand Action for Gun Sense in America 2014).
  - There has been an average of one school shooting every other day so far this year (Think Progress January 23, 2014).

- **Psychotropic medications linked to 90% of school shootings** (WND Education 2012).
- Recent incidents of **growing child aggression against other children and school staff** members have been reported in the press to have **doubled** in the Vancouver School District in the past three years (Vancouver Sun, 2010).
- Results by gender showed **boys played more often and longer than did girls** and type of game: **boys mostly played sports and racing games, and preferred shooter games and games with graphic violence**, whereas girls tended to play games that are characteristically socio-affective and educational (Choliz & Marco, 2011)..
- **School management difficulties with increasing numbers of aggressive children, is resulting in the rising use of physical and chemical restraints** (Gaskin, 2007; Muralidharan & Fenton, 2009), as well as a rising use of **seclusion rooms** (Vancouver Sun 2010; Muralidharan & Fenton, 2009).
- A 2010 University of Michigan study shows **today's college students are 40-per-cent less empathetic than those of the 1980s and 1990s** determined by an analysis of the past 30 years of students who participated in the Davis Interpersonal Reactivity Index which looked at empathic concern, emotional response to the distress of others, and "perspective-taking" or the ability to imagine another person's perspective. This study cites the influx of callous reality television shows and the growth of social networking and texting as causal factors for the decline in empathy in today's young people (Globe and Mail, 2010).
- **Self-efficacy and empathy are two salient determinants for eventual success** (Forbes 2013).
- Tyrone Spellman, 27, played long hours on his Xbox, so when his 17-month-old daughter pulled on some cords and tipped the Xbox to the ground, breaking it, he become completely enraged. He struck her with such force that it "cracked her skull several times." The autopsy too, revealed a broken arm that was at least two weeks old which social workers had failed to identify previously (CBS News, 2008).
- Survey of 3,767 grade 6, 7, 8 students who attended six schools in the US found **11% had been electronically bullied and 4% indicated they had bullied a victim in the past month**. Half of the electronic bully victims reported not knowing the perpetrator's identity (Kowalski R 2007).
- **Youth who reported being harassed online were 8 times more likely to carry a weapon to school in the past 30 days** (Ybarra M., 2007).
- While online cyberbullying occurs off campus, **resulting altercations happen on site** (Willard N., 2007).
- **Internet bullying is correlated with school behavior problems**, and media literacy programs may mitigate the negative effects of electronic media on youth (Worthen M., 2007).
- A study examined perceptions and experiences of cyberbullying in a series of 18 focus groups conducted with young people aged 9–19 in the UK. The results suggest that **cyberbullying is perceived to be problematic and serious but relatively routine part of young people's online lives and interactions** (Bryce, 2013).
- **Cyberbullies demonstrated less empathic responsiveness than non-cyberbullies**, and were also more afraid of becoming victims of cyberbullying. The findings confirm and substantially extend the research on the relationship between empathy and aggressive behavior. From an educational point of view, the present findings suggest that training of empathy skills might be an important tool to decrease cyber bullying (Steffgen G., 2011).
- Research **results revealed a positive association between exposure to profanity in multiple forms of media and beliefs about profanity, profanity use, and**

- engagement in physical and relational aggression** (Coyne et al., 2011).
- Research shows that **violent video games increase aggressive behaviour and decrease prosocial behaviour**, but could relaxing video games have the opposite effects? Compared to those who played violent or neutral video games, **those who played relaxing video games were less aggressive and more helpful** (Whitaker and Bushman, 2011).
  - Research shows that **with increased technology use**, including discussion forums & social media, at the consequence of face-to-face, human interaction, **we lose empathy and our humanity** (CLBB & Boston Society for Neurology and Psychiatry, 2013).
  - In a study examining the **amount of time spent playing video games** and indicators of positive and negative psychosocial adjustment. **Lower playing time was associated with higher life satisfaction and prosocial behavior** and lower externalizing and internalizing problems, whereas the opposite was found for high levels of play (Przybylski, 2014).

## ACADEMIC DECLINE

### Attention Deficit

- Study indicates that the **more time students spend on consuming media and the more violent its contents are, the worse are their marks at school**, even when controlling for vital factors such as family, educational, or immigrant background (Mossle et al., 2010)
- People who spend more time playing **video games** have **more attention problems**, and individuals who are more impulsive or have more attention problems subsequently spend more time playing video games (*Swing et al, 2010*).
- Research on **four year old children showed significant reduction in executive function after 9 minutes of Spongebob cartoon**. Long term implications for attention and learning ability are discussed (Christakis, 2011).
- **Each hour of TV watched daily between the ages of 0 and 7 years equated to a 10% chance of attention problems** by age seven years (Christakis D 2004).
- **Viewing TV and playing video games each are associated with increased subsequent attention problems** in childhood (Swing, 2010).
- **Every additional hour of TV exposure at 29 mo. Corresponded to 6% unit decrease in classroom engagement, 7% unit decrease in math achievement, 10% unit increase in victimization by classmates, 13% decrease in time spent doing physical activity, and 10% higher consumption of soft drinks and snacks** (Pagani L 2010).
- **The more time students spend on consuming media and the more violent its contents are, the worse are their marks at school**, even when controlling for vital factors such as family, educational, or immigrant background (Mossle T 2010).
- **ADHD should be re-termed “attention inconsistency”**, as these children have episodic attention ability. Attention Restorative Theory has three tenants: 1) attention ability is subject to fatigue and restoration 2) voluntary and interesting tasks are less fatiguing than involuntary and uninteresting tasks 3) attention ability is subject to environment modifications (Kaplan S 1995).
- **People switched between media at an extreme rate**, averaging more than 4 switches per min and 120 switches over the 27.5-minute study exposure. Participants had little insight into their switching activity **and recalled their switching behavior at an average of only 12 percent** of their actual switching rate revealed in the objective data. Younger

- individuals switched more often than older individuals (Brasel and Gips, 2011).
- A Harris poll surveyed a randomly selected sample of 1,178 American youth ages 8 to 18. **About 8% of video-game players in this sample exhibited pathological patterns of play.** Pathological gamers spent twice as much time playing as nonpathological gamers and received poorer grades in school; pathological gaming also showed comorbidity with attention problems. **Pathological status significantly predicted poorer school performance even after controlling for sex, age, and weekly amount of video-game play** (Gentile, 2009).
  - Just a **three-second distraction**, such as glancing at your phone, **can divert your attention and double the number of mistakes you make** (Ghose, 2013).
  - The **rise of A.D.H.D. diagnoses and prescriptions for stimulants** over the years coincided with a remarkably successful **two-decade campaign by pharmaceutical companies to publicize the syndrome and promote the pills to doctors, educators and parents.** With the children's market booming, the industry is now employing similar marketing techniques as it focuses on adult A.D.H.D., which could become even more profitable (Schwarz, 2013).
  - The following motion was put forward by Jim Dobbin in the UK Parliament on January 15, 2014. "That this **House notes the 10 fold increase over 10 years of labelling children with diagnoses of Attention Deficit Hyperactivity Disorder (ADHD);** further notes the pharmaceutical drugs prescribed for this condition are similar to cocaine, have **numerous side effects including suicide, depression and anxiety** and costs the health service tens of millions of pounds; affirms that there is **no objective test to demonstrate the existence of this condition and that the United Nations Committee on the Rights of the Child has expressed deep concern about children being misdiagnosed with ADHD;** strenuously opposes the unnecessary drugging of children; calls for rigorous control of the prescribing of psychoactive drugs to children; and further **calls for NHS money currently spent on pharmaceutical drugs to be diverted into research into the dietary and environmental causes of the symptoms currently labelled as ADHD"** (Dobbin, 2014).
  - **ADD/ADHD** has become an epidemic in the last 30 years. Now **one in seven boys** has received this **diagnosis** by the time he reaches the age of 18, according to the Centers for Disease Control and Prevention (Peper 2014)
  - The prevalence of **obesity** has nearly **tripled** over the last 25 years, with up to **26% of Canadian young people** (two to 17 years of age) **overweight or obese**, and 41% of their Aboriginal peers (Lipnowski 2012)
  - Research published in the journal Pediatrics found that **kids** who engaged in a **regular physical activity program** had **improved cognitive performance and brain function.** (Mercola October 2014)
  - Survey results at Hillcrest High School show 93.5% of teachers believed texting was a massive concern of cellphones and that students would rather play on their phones than pay attention in class (Ram, 2015).

## Illiteracy

- **Canada** dropped out of the top ten rankings **to 13<sup>th</sup>**, and the **U.S. 27<sup>th</sup>**, on the **2012 PISA world scores for math, reading and science (CBC 2013).**
- In 1994 and 2003, comparative literacy studies of Canada, Germany, the Netherlands, Poland, Sweden, Switzerland and the United States were completed covering four literacy domains – prose (reading and understanding text information e.g. stories, editorials), document (locating text information e.g. maps, schedules), and numeracy

- (understanding math embedded in text e.g. weather and loan interest charts) and problem solving. Participants were ranked on five levels, with level one being the lowest. **15% of Canadians scored in level one, and only 50% reached level three.** Canadians scored in the middle of the pack, and results were the same for 1994 and 2003 (Sloat E 2000).
- In the U.S., more than **eight million students in grades 4-12 read below grade level**, and while they can decode, they cannot comprehend what they read. Between 1971 and 2004, the reading level of America's 17 year olds showed no improvement at all. **40% of high school graduates lack the literacy skills employers seek.** Early exposure to print is largest predictor of reading ability (National Center for Education Statistics 2005).
  - **Literacy is defined as competency in handwriting, reading, math and communication skill.** A foundation in spoken language competence in the early years, is important for the successful achievement of literacy, academic and social competence. Printing is a precursor to reading and speech fluency, and **poor handwriting skill is related to language disorders.** Motor planning required for automatic letter production when printing "maps" the sensorimotor cortex for eventual visual letter recognition for reading, and word finding for oral sentence production (Shanahan T 2007, Goldberg E 1999, Tomblin B 2006).
  - **Teachers spend an average 14 minutes per day teaching handwriting**, far less than the 45 minutes per day spent in the 60's and 70's, and slightly less than the 15 minutes per day mandated in the 80's. A US study by Steven Graham reports that 90% of US primary school teachers college education did not adequately prepare them to provide lessons in penmanship, and therefore do not devote much time to teaching printing. Textbooks offer less information on teaching printing, and universities have less instruction. Handwriting teaching methods and methods for student evaluation are inconsistent and non-standardized. 100% of the 169 primary teachers who participated in this study reported they thought printing should be taught as a separate subject (Graham S 2008).
  - **Children who cannot print are illiterate.** Teacher misperception that the computer will replace the need to print, is unfounded and shortsighted. Slow printing speed resulting from inadequate teaching of letter and number formation, impacts on every subject and is the leading cause of illiteracy (Rowan C 2010).
  - Another study by Graham documents that in **1996 70% of teachers indicated that handwriting was "not as good as it should be", and expressed concern regarding the "downward plunge in the standards of handwriting legibility required of elementary school children"**. Authors also state that students who have difficulty with automaticity of writing, thus achieving poor quality and quantity of written output, results in avoidance and minimization of the writing process. Authors state that for beginning writers, both visual and verbal modeling appears to be the most effective means of introducing a letter prior to practice i.e. the teacher demonstrates how a letter is made while describing how it is formed (Graham S et al 1993). Graham goes on to report in 2000 study how **poor ability to produce quality and quantity of written output can result in a long term disability in written expression** (Graham S et al 2000).
  - In Steven Graham's 2006 book *Handbook of Handwriting Research*, this meta-analysis concludes that **printing strategy instruction is effective in improving student's writing performance in the areas of quality, elements, length, and revisions**, with results maintained over time and generalized to new tasks and situations.
  - Steven Graham's 2007 book *Best Practices in Handwriting Instruction* draws the **correlation between poor printing and subsequent difficulty with spelling, sentence composition, math, science and any subject requiring printing skill.** Graham states "Failure to develop legible and automatic letter and word formation interferes with content

in writing.” and “Because of the excessive labor and unattractive results involved in such writing, students are more likely to avoid or minimize the process when possible”. Graham instructs that for beginners, both visual and verbal modeling is the most effective means of introducing a letter prior to practice.

## “Education” Technology – The Learning Paradox

- “**The Learning Paradox**” is applicable for children and youth who overuse technology (over AAP and CSP recommended guidelines), e.g. **the more schools invest in technology, the less likely children are to pay attention and learn** (Rowan C, 2010).
- Multiple studies have shown **atrophy in gray matter brain processing areas** in internet/gaming addiction (Zhou 2011, Yuan 2011, Weng 2013, and Weng 2012). Areas affected included the important **frontal lobe**, which governs **executive functions, such as planning, planning, prioritizing, organizing, and impulse control**. Volume loss was also seen in the **striatum**, which is involved in **reward pathways** and the **suppression of socially unacceptable impulses**. A finding of particular concern was damage to an area known as the **insula**, which is involved in our capacity to **develop empathy and compassion for others** and our ability to **integrate physical signals with emotion**. Aside from the obvious link to violent behavior, these skills dictate the depth and quality of personal relationships.
- Research has also demonstrated **loss of integrity to the brain’s white matter** (Lin 2012, Yuan 2011, Hong 2013 and Weng 2013). “Spotty” white matter translates into **loss of communication within the brain, including connections to and from various lobes of the same hemisphere, links between the right and left hemispheres, and paths between higher (cognitive) and lower (emotional and survival) brain centers**. White matter also connects networks from the brain to the body and vice versa. Interrupted connections may slow down signals, “short-circuit” them, or cause them to be erratic (“misfire”).
- PET scan studies showed that **technology use of greater than 5 hours per day was consistent with neurological “pruning” of tracks to the frontal cortex**, known for executive functioning and impulse control (Gentile D 2009).
- Graphic imaging studies highlight how **gray matter, the working tissue of the brain’s cortex, diminishes, likely reflecting the pruning of unused neuronal connections during the teen years** (Thompson, 2004).
- Hong and colleagues found **reduced cortical thickness** in internet-addicted teen boys (Hong 2013), and Yuan et al found **reduced cortical thickness in the frontal lobe** of online gaming addicts **correlated with impairment of a cognitive task** (Yuan 2013).
- Imaging studies have found **less efficient information processing** and **reduced impulse inhibition** and **increased sensitivity to rewards and insensitivity to loss** (Dong & Devito 2013), as well as **abnormal spontaneous brain activity associated with poor task performance** in youth who have internet addiction (Yuan 2011).
- Internet Addiction Disorder demonstrated widespread **reductions** of fractional anisotropy in **major white matter pathways** and such abnormal white matter structure may be linked to some **behavioral impairments** (Lin *et al*, 2012).
- Brain scans on 12 adolescents diagnosed with internet addiction and 11 healthy controls found **reduced functional connectivity in the cortical and subcortical brain regions of the internet-addicted teens** (Abusson, 2013).
- Compared with healthy subjects, Online Gaming Addicts (OGA) individuals showed significant **gray matter atrophy in the right orbitofrontal cortex, bilateral insula, and right supplementary motor area**. According to tract-based spatial statistics analysis,

- OGA subjects had significantly reduced FA in the right genu of corpus callosum, bilateral frontal lobe white matter, and right external capsule (Weng et al., 2013).
- **Brain changes to both grey (processing) and white (connection) matter was detected on numerous studies** collated in this article (Dunckley 2014).
  - Participants who **multitasked on a laptop during a lecture scored lower on a test compared to those who did not multitask**, and participants who were in direct view of a multitasking peer scored lower on a test compared to those who were not. The results demonstrate that **multitasking on a laptop poses a significant distraction to both users and fellow students and can be detrimental to comprehension of lecture content** (Sana, 2013)
  - **Education technology is not evidenced based, yet - whole school districts are moving rapidly toward both virtual teaching.** Referred to as the “\$100 curriculum in a box”, TeacherMates, XO’s and iPad are replacing teaching, referencing the teacher as a “moderator” (Fast Company, April 2010).
  - **Canada dropped out of the top ten to 13<sup>th</sup> and the U.S. ranks 27<sup>th</sup>** on the international PISA which tests reading, math, and science performance in 15 year olds (CBC News, 2013).
  - In 2011, **42.3% of Canadian young adults aged 20 to 29 years lived with their parent(s)**. This is a significant increase from 30 years ago (Employment and Social Development Canada 2011). In 2010 the U.S., 53% of young adults aged 18-24 years lived with their parent(s) (Columbia University Mailman School of Public Health 2010).
  - Comparative study of digital (screen) reading vs. print reading reports the following **problems with screen reading**:
    - Attention: clicking and scrolling disrupt attention and disturb mental appreciation
    - Comprehension: reader lacks both completeness and constituent parts
    - Memory: change in physical surroundings has a negative effect on memory
    - Learning: doesn’t allow required time and mental exertion
    - Meaning: isn’t a physical dimension, loss of totality
- Mangen Quote: *“The digital hypertext technology and its use of multimedia are not open to the experience of a fictional universe where the experience consists of creating you own mental images. The reader gets distracted by the opportunities for doing something else”* (Mangen A 2008).
- Brain scans show that **more of the areas of the brain associated with memory formation are activated when writing than when typing** (Darling, 2014).
  - **Refuse to Use** is a world-wide *movement* by responsible and futuristic thinking parents and teachers to **ban all school-based technology for children under 12 years of age**, and bring back tried and true methods of teaching (Rowan, 2014).

## IMPLICATIONS AND SOLUTIONS

### Costs of Child Technology Overuse to the Canadian Health and Education Sectors

- **Total annual costs to the Canadian health and education sectors to address problems that strongly correlate with child technology addictions are \$35.5 billion.**
- Extrapolation from previously cited research indicates estimated annual costs to the Canadian health care system to support children with developmental disabilities, psychiatric and behavioral disorders are \$9.3 billion, obesity are \$3 billion and medication costs are \$0.3 billion, totaling \$12.5 billion.

- Estimated annual costs to the Canadian education system for failing literacy are \$10 billion, and educational support of children with developmental disabilities are \$13 billion, totaling \$23 billion.
- Treating child technology addictions will collapse both education and health budgets.

## Technology Screening and Management

- In 2001 the American Academy of Pediatrics issued a policy statement recommending that **children less than two years of age should not watch or be exposed to any TV or video games** (Children, adolescents and television. Committee on Public Education, AAP 2001), and further recommended that **children older than two should restrict usage to one hour per day if they have any physical, mental, social, or academic problems, and two hours per day maximum if they don't** (Children, adolescents and advertising. Committee on Communications, AAP 2006).
- Further evidence suggests **some parents may have technology addictions** (Horvath C 2004), and Adult Internet Addiction has been proposed for inclusion in the Diagnostic and Statistical Manual 5th Edition (Block J 2008).
- Mounting research evidence suggests that **childhood is the optimal time to influence determinants of social and emotional wellbeing** (Willms J 2002), with recent research demonstrating that prevention programs in childhood can reduce the prevalence of mental disorders, while also addressing causal factors. For example targeted parent training within disadvantaged families can significantly reduce subsequent prevalence of behavior disorders in children, while also improving educational and social outcomes (Waddell C 2007).
- These facts **support implementation of school based technology management programs, teaching children how to balance activities they need to grow and succeed, with technology use.** A randomized controlled trial of a 6-month classroom curriculum to reduce TV and video game use resulted in not only statistically significant reduction in technology use, but also showed relative decreases in obesity (Robinson R 1999).
- With researchers advocating for increased services for children to address increasing prevalence of child mental health disorders (McEwan K 2007), and solid evidence that many of these disorders may be related to technology overuse, it seems warranted that the health and education sectors participate in **routine technology screening and management programs** (Rowan C 2010).
- **Balanced Technology Management is a concept where adults manage balance between activities children need to optimize growth and success, with technology use** (Rowan C 2010 and [www.zonein.ca](http://www.zonein.ca)).
- Health and education professionals may want to consider an **Unplug – Don't Drug policy** where prior to costly diagnosis and medication of child behavior, the child and family undergo a three month supported technology unplug trial. Alternatively, the medical profession may consider routine technology usage histories for all their clients (Rowan C 2010).
- Pediatricians are encouraged to take **a media history and ask 2 media questions at every well-child visit, and reiterate 2004 AAP policy of no technology exposure for children 0-2 years of age, and 1-2 hours of total technology per day ages 2-18 years** ( American Academy of Pediatrics- Policy Statement, 2013).
- Results found that **Cognitive Behaviour Therapy-IA was effective at ameliorating symptoms associated with Internet addiction after twelve weekly sessions** and consistently over one-month, three months, and six months after therapy (Young, 2013).

- It has been found that **cyberbullying relates to internalizing, externalizing and substance abuse problems** in adolescents. Although correlational, results of a current study suggest that **family dinners (i.e, family contact and communication) are beneficial to adolescent mental health and may help protect adolescents** from the harmful consequences of cyberbullying (Elgar et al., 2014).
- A study has found that **after five days interacting face-to-face without the use of any screen-based media**, preteens' recognition of nonverbal emotion cues improved significantly. These findings indicate that **less screen time and more social interaction improves** preteen's **understanding of nonverbal emotional cues** (Uhls et.al., 2014).
- A study found that the number of cyberbullying occurrences continue to grow with 87% of youth having witnessed cyberbullying (Intel Security, 2014).
- Research shows cyberbullying victims are almost twice as likely to have attempted suicide compared to youth who had not experienced cyberbullying (Hinduja & Patchin, 2010).

## **Playgrounds and Nature – Epicenters for Development, Learning and Behavior**

- **Many of today's parents perceive outdoor play is 'unsafe'**, even though most crimes against children are instigated by family members (Burdette H 2005), limiting essential developmental components usually attained in outdoor rough and tumble play.
- **Exposure to "green space" results in a significant reduction in ADHD**, in both areas of impulse control and attention ability. Nature not only has attention restorative benefits, but also activates all the senses to enhance multi-sensory learning ability (Faber-Taylor A 2001, Kuo F 2004).
- Studies have shown that **access to "green space" for 20 minutes per day significantly reduced ADHD symptoms**, yet drug use continues to climb. Inner city children suffer from ADHD at three times the rate of children in rural areas (Kuo F 2004).
- **Participation in physical activity is positively related to academic performance in children** (Singh et al., 2012).
- **Teachers say daily time outside is changing the way young students, including those with special needs, learn and behave.** Muscle tone, balance and strength, which are often low in children with autism, improved as a result of physical activity. And **they were calmer, more affectionate and less prone to outbursts** (Gordon, 2014).
- The health effects of "forest bathing", or taking walks in the woods, are measured in several recent studies. Subjects in a study by Qing Li and his colleagues take a walk in a forest park in Saitama prefecture, north of Tokyo, Japan, in September 2010. The sample size is small, but the results indicate that **time spent in forests may have such salutary effects as lowered blood pressure and noradrenaline levels** (Philips, 2001).
- There is a **positive correlation between physical activity and seven categories of cognitive performance:** perceptual skills, intelligence quotient, achievement, verbal tests, math tests, developmental level, and academic readiness. Studies show that a reduction of 240 minutes per week of academic class time, replaced with increased time for PE, led to higher math scores. Adding PE time alone does not improve grades, it's vigorous exercise that improves cognition e.g. climbing walls, exercise bikes, tread mills, dancing (Ratey J 2008).
- **Students with greater than 15 minutes per day of recess had teacher reports of better classroom behavior.** 30% of 3<sup>rd</sup> graders had little or no recess (< 15 minutes per day) and 40% of schools surveyed had cut back at least one daily recess period. Since the 1970's, children have lost 12 hours per week in free time (Barros R 2009).

- **Licensing and fear of litigation has dramatically changed playgrounds to boring and developmentally unchallenging structures.** Merry-go-rounds, tall swings and slides are all a thing of the past. Many daycare and preschool environments have eliminated swings altogether (Rowan C 2010).
- Injury accounts for 40% of all childhood death, but - **environmental modifications reduce 50-75% of injuries and therefore playgrounds can be designed to be safe** (Howard A 2010).
- **Canadian Standards Association (www.csa.ca) sets rules for playgrounds and if followed, halves the injury rate.** Safe Kids Canada ([www.safekidsCanada.ca](http://www.safekidsCanada.ca)) has a number of resources and information (Howard A 2005).
- **U.S. Consumer Product Safety Commission has published detailed guidelines for playground safety,** which specifically address requirements for raised play platforms and protective playground surfaces. CPSC has produced a handbook for public playgrounds and a playground safety checklist (U.S. Consumer Product Safety Commission).
- **Risk factors for severe playground injuries are associated with falls from playground equipment.** Majority of playground injuries are sustained when falling from heights greater than 1.5 meters onto inadequate falling surface (MacArthur C 2000).
- Installing **Fitness Zones** appears to be cost-effective (10.5 cents/MET increase) and most successful in parks in **densely populated areas with limited facilities** (Cohen et.al., 2012).
- **Toddlers** (aged 1–2 years) and **preschoolers** (aged 3–4 years) should **accumulate at least 180 minutes of physical activity** at any intensity spread **throughout the day.** (ParticipAction & CSEP 2014)

## Biography

A frequent guest on both radio and television, Cris Rowan is a well known and impassioned speaker on the topic of the impact of technology on child development and learning. Cris has provided over 200 workshops to health and education professionals throughout North America, and authors the monthly Zone'in Child Development Series newsletter. Cris is CEO of Zone'in Programs Inc. offering products, workshops, training and consultation services to reverse the effects of technology on children. Cris is author of the following policy initiatives: Unplug – Don't Drug, Creating Sustainable Futures Program, and Linking Corporations to Communities. Cris recently completed her first book *Virtual Child – The terrifying truth about what technology is doing to children*. Cris promotes the concept "Balanced Technology Management" where adults manage balance between activities children need to grow and succeed with technology use.

## References

Active Healthy Kids Canada [2008 report card on the internet]. Available from:  
[http://www.activehealthykids.ca/Ophea/ActiveHealthyKids\\_v2/upload/AHKC-Short-Form-EN.pdf](http://www.activehealthykids.ca/Ophea/ActiveHealthyKids_v2/upload/AHKC-Short-Form-EN.pdf).

Active Healthy Kids Canada. *2014 Report Card on the Physical Activity of Children and Youth: Is Canada in the Running?* Retrieved from  
<http://www.activehealthykids.ca/ReportCard/2014ReportCard.aspx> on September 15, 2014.



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[www.zonein.ca](http://www.zonein.ca)

Aldad, T. S., Gan, G., Gao, X-B., Taylor, H. S. Fetal Radiofrequency Radiation Exposure From 800-1900 Mhz-Rated Cellular Telephones Affects Neurodevelopment and Behavior in Mice. (2012). *Nature: Scientific Reports*. 2012; 2(312): 1-7. DOI: 10.1038/srep00312

American Academy of Ophthalmology (2014); retrieved on November 12, 2014 from [http://www.aao.org/SearchResults.aspx?q=myopia\\_statistics&c=1](http://www.aao.org/SearchResults.aspx?q=myopia_statistics&c=1)

American Academy of Pediatrics, Committee on Public Education. *Children, adolescents and television*. Pediatrics. 2001; 107 (2): 423-426.

American Academy of Pediatrics, Committee on Communications. *Children, adolescents and advertising*. Pediatrics. 2006; 118 (6): 2562-2569.

American Academy of Pediatrics, Letter to Federal Communications Commission on August 29, 2013; retrieved on February 26, 2014 at <http://apps.fcc.gov/ecfs/document/view?id=7520941318>

American Academy of Pediatrics, Policy Statement - *Children, Adolescents, and the Media*, Council on Communications and Media; retrieved on February 26, 2014 from <http://pediatrics.aappublications.org/content/132/5/958.full>

Anderson, C.A., Sakamoto, A., Gentile, D.A. Longitudinal effects of violent video games on aggression in Japan and the United States. *Pediatrics* 2008 Nov;122(5):e1067-72.

Anderson, C.A., Shibuya, A., Ihori, N. Violent video game effects on aggression, empathy, and prosocial behavior in eastern and western countries: a meta-analytic review. *Psychology Bulletin*. 2010;136(2):151-73

Anderson CA, Berkowitz, L, Donnerstein E, Huesmann LR, Johnson JD, Linz D, Malamuth NM, Wartella E. The Influence of Media Violence on Youth. *Psychological Science in the Public Interest*. 2003; 4:81-110.

Anderson C, Gentile D. *Violent Video Game effects on Children and Adolescents*. Oxford: Oxford University Press; 2007.

Aubusson, K. Internet addiction affects brain. Retrieved from <http://www.psychiatryupdate.com.au/latest-news/internet-addiction-affects-brain> on March 6, 2013.

Autism Society of Canada. (2010). Retrieved April 30, 2010, from [http://www.autismsocietycanada.ca/asd\\_research/research\\_prevalence/index\\_e.html](http://www.autismsocietycanada.ca/asd_research/research_prevalence/index_e.html).

Autism Society. (2010). Retrieved April 30, 2010, from [http://www.autism-society.org/site/Clubs?club\\_id=1217&sid=9320&pg=news](http://www.autism-society.org/site/Clubs?club_id=1217&sid=9320&pg=news)

Avendano, C., Mata, A., Sanchez Sarmiento C. A., Doncel, C. F. Use of laptop computers connected to internet through Wi-Fi decreases human sperm motility and increases sperm DNA fragmentation. *Fertility and Sterility*. January 2012; 97(1): 39-45. Retrieved on March 18, 2014 from [http://www.fertstert.org/article/S0015-0282\(11\)02678-1/abstract](http://www.fertstert.org/article/S0015-0282(11)02678-1/abstract)

Ayres JA. *Sensory integration and learning disorders*. California: Western Psychological Services; 1972.

Baranek, G. T., David, F. J., Poe, M. D., Stone, W. L. & Watson, L. R. (2006). Sensory Experiences Questionnaire: discriminating sensory features in young children with autism, developmental delays, and typical development. *Journal of Child Psychology and Psychiatry*, 47 (6), 591–601.

Baranowski, T., Abdelsamad, D., Baranowski, J., O'Connor, M.T., Thompson, D., Barnett, A., Cerin, E and Chen, T.A. (2011) Impact of an Active Video Game on Healthy Children's Physical Activity. *Pediatrics online* (doi: 10.1542/peds.2011-2050)

Baron-Cohen S. Atypical sensory functioning in autism spectrum conditions. Research in progress at Autism Research Center, Cambridge, UK.  
<http://www.autismresearchcentre.com/research/project.asp?id=3>

Barr, R. & Lerner, C. (2014). Screen Sense: Setting the Record Straight. Research-Based Guidelines for Screen Use for Children Under 3 Years Old. Zero To Three.

Barros RM, Silver EJ, Stein RE. School Recess ad Group Classroom Behavior. *Pediatrics*. 2009; 123(2):431-436.

Bass, A. Side Effects: A Prosecutor, a Whistleblower, and the Truth about a Best Selling Antidepressant. New York: Algonquin Books, Workman Publishing Company; 2008.

Baughman F. There is No Such Thing as a Psychiatric Disorder/Disease/Chemical Imbalance. *Public Library of Science Medicine*. 2006; 3(7): e318. Available at:  
<http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.0030318>.

Baumgardner, J. Baumgardner: Pornography rewires boys' brains research says. Retrieved from <http://www.timesfreepress.com/news/2013/apr/28/pornography-rewires-boys-brains-research/>. On April 28, 2013.

BBC News. Computer Game Teenager Gets DVT. January 29, 2004. Retrieved August 9, 2010 from: <http://news.bbc.co.uk/2/hi/health/3441237.stm>

BBC News. Obesity's huge challenge for humans. September 9, 2002. By Jonathan Amos. Available at:  
[http://news.bbc.co.uk/2/hi/in\\_depth/sci\\_tech/2002/leicester\\_2002/2246450.stm](http://news.bbc.co.uk/2/hi/in_depth/sci_tech/2002/leicester_2002/2246450.stm)

Becker, M.W., Alzahabi, R., Hopwood, C.J. Media Multitasking Is Associated with Symptoms of Depression and Social Anxiety. *Cyberpsychology, Behavior, and Social Networking*. February 2013, 16(2): 132-135. doi:10.1089/cyber.2012.0291.

Ben-Sasson, A., Carter, A. S. & Briggs-Gowan, M. The Development of Sensory Over-Responsivity from Infancy to Elementary School. *Journal of Abnormal Child Psychology*. (2010). DOI 10.1007/s10802-010-9435-9.

Berkley News. (2013). New eye clinic to target youth amongst an epidemic of nearsightedness. Retrieved on July 31, 2015 from <http://news.berkeley.edu/2013/08/28/myopia-control-clinic/>

Beullens K, Roe K, Van den Bulck J. Excellent gamer, excellent driver? The impact of adolescents' video game playing on driving behavior: a two-wave panel study. *Accid Anal Prev.* 2011 Jan; 43(1):58-65.

Beutel, M.E., Brähler, E., Glaesmer, H., Kuss, D., Wöfling, K., Müller, K.W. (2010) Regular and Problematic Leisure-Time Internet Use in the Community: Results from a German Population-Based Survey. *Cyberpsychology, Behavior, and Social Networking.* May 2011, 14(5): 291-296. doi:10.1089/cyber.2010.0199.

Bigelow, A. (2006). Effects of Skin-to-Skin Contact on Early Mother-Infant Interaction: Preliminary Findings from a Canadian Sample of Full-Term Infants. Paper presented at the Sixth Biennial International Workshop of the International Network of Kangaroo Mother Care in Cleveland, Ohio, October 2006. Available at: [www.preciousimagecreations.com/files/still\\_face\\_studies.doc](http://www.preciousimagecreations.com/files/still_face_studies.doc)

Birmingham CL, Muller JL, Palepu A, Spinelli JJ, Anis AH. The cost of obesity in Canada. *Canadian Medical Association Journal.* 1999; 160:483-488.

Blank, M. & Goodman, R. (2009). Electromagnetic fields stress living cells. *Pathophysiology.* 16(2-3), 71-8. doi: 10.1016/j.pathophys.2009.01.006.

Blank, M. & Goodman, R. (2011). DNA is a fractal antenna in electromagnetic fields. *International Journal of Radiation Biology.* 87(4), 409-415. doi: 10.3109/09553002.2011.538130.

Block, JJ. Issues for DSM – V: Internet Addiction. *Journal of Clinical Psychiatry.* 2008; 67 (5): 821-826.

Blumenfeld SL. Can Dyslexia be artificially induced in school? Yes, says researcher Edward Miller. [http://donpotter.net/PDF/Miller-Blumenfeld\\_Dyslexia\\_Article.pdf](http://donpotter.net/PDF/Miller-Blumenfeld_Dyslexia_Article.pdf).

Bodycomb, Steve. Link me, Like me, Follow me.....do you need a digital detox? RSA action and research centre. Retrieved from <http://www.rsablogs.org.uk/2014/recovery/link-follow-medodigital-detox/> on September 5, 2014.

Boston College University; reported in BBC News May 8, 2013 by Sean Coughlin; retrieved on February 26, 2014 from <http://www.bbc.com/news/business-22209818>

Boyle CA, Decoufle' P, Yeargin-Alsopp M. Prevalence and health impact of developmental disabilities in US children. *Pediatrics.* 1994; 93 (3): 399-403.

Braithwaite SR, Coulson G, Keddington K, Fincham FD. The Influence of Pornography on Sexual Scripts and Hooking Up Among Emerging Adults in College. (Published September 20, 2014). <http://www.ncbi.nlm.nih.gov/pubmed/25239659>

Brand M., Young K. S., Laier C. Prefrontal control and Internet addiction: a theoretical model and review of neuropsychological and neuroimaging findings. Published in *Human Neuroscience* 27 May 2014 doi: 10.3389/fnhum.2014.00375. <http://journal.frontiersin.org/article/10.3389/fnhum.2014.00375/full>

Brasel A, Gips J. Media Multitasking Behavior: Concurrent Television and Computer Usage. *Cyberpsychology, Behavior and Social Networking.* March 15, 2011 DOI: 10.1089/cyber.2010.0350. Available at:

<http://www.liebertonline.com/doi/pdfplus/10.1089/cyber.2010.0350>.

Braswell J, Rine R. Evidence that vestibular hypofunction affects reading acuity in children. *International Journal of Pediatric Otorhinolaryngology*. 2006; 70 (11): 1957-1965.

Breggin, P. *Medication Madness: The Role of Psychiatric Drugs in Cases of Violence, Suicide and Murder*. St. Martin's Press; New York, NY. 2008.

Breggin, P. New Research: Antidepressants can cause long-term depression. *The Huffington Post*, December 3, 2011. Retrieved from: [http://www.huffingtonpost.com/dr-peter-breggin/antidepressants-long-term-depression\\_b\\_1077185.html?ref=health-news&ir=Health%20News](http://www.huffingtonpost.com/dr-peter-breggin/antidepressants-long-term-depression_b_1077185.html?ref=health-news&ir=Health%20News)

Bristol University: School for Policy Studies News (2010). Available at: <http://www.bristol.ac.uk/sps/news/2010/107.html>

Bruser, D. (2012) Side effects of ADHD drugs shock parents. Retrieved from [http://www.thestar.com/news/canada/2012/09/26/side\\_effects\\_of\\_adhd\\_drugs\\_shock\\_parents.html](http://www.thestar.com/news/canada/2012/09/26/side_effects_of_adhd_drugs_shock_parents.html) on February 25, 2014.

Bryce J., Fraser, J. "It's Common Sense That It's Wrong": Young People's Perceptions and Experiences of Cyberbullying. *Cyberpsychology, Behavior, and Social Networking*. November 2013, 16(11): 783-787. doi:10.1089/cyber.2012.0275.

Buchanan AM, Gentile DA, Nelson DA, Walsh DA, Hensel J. What goes in must come out: Children's Media Violence Consumption at Home and Aggressive Behaviours at School. Paper presented at the International Society for the Study of Behavioural Development Conference, Ottawa, Ontario, Canada. Available online at: [www.mediafamily.org/research/report\\_issbd\\_2002.shtml](http://www.mediafamily.org/research/report_issbd_2002.shtml).

Buck N. Could WiFi in schools be harming our kids? Published *The Globe and Mail* May 11, 2014 <http://www.theglobeandmail.com/life/health-and-fitness/health/is-there-such-a-thing-as-too-much-wifi/article18592972/>

Bunim, J. Breakthrough Study Reveals Biological Basis for Sensory Processing Disorders in Kids. Retrieved from <http://www.ucsf.edu/news/2013/07/107316/breakthrough-study-reveals-biological-basis-sensory-processing-disorders-kids> on September 15, 2014.

Burdette, HL, Whitaker RC. A national study of neighborhood safety, outdoor play, television viewing, and obesity in preschool children. *Pediatrics*. 2005; 116: 657-662.

Burnet, K. Study Shows Classroom Decor Can Distract From Learning. Retrieved from <http://wesa.fm/post/study-shows-classroom-decor-can-distract-learning> on September 15, 2014.

Byun S, Ruffini C, Mills J, Douglas A, Niang M, Stepchenkova S, Lee SK, Loutfi J, Lee JK, Atallah M, Blanton M. Internet Addiction: Metasynthesis of 1996–2006 Quantitative Research. *Cyberpsychology and Behavior*; Vol 12 (2): 203-7.

Byun, T., Ha, M., Kwon, H., Hong, Y., Leem, J., Sakong, J., Kim, S., Lee, C., Kang, D., Choi, H. & Kim, N. (2013). Mobile phone use, blood lead levels, and attention deficit hyperactivity symptoms in children: a longitudinal study. *Plog One journal*. 8(3). 1-10. DOI: 10.1371/journal.pone.0059742



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[www.zonein.ca](http://www.zonein.ca)

C4ST. Symposium on Health Issues Associated with the Exposure to Electromagnetic Fields and Microwave Radiation. Toronto September 12, 2014. <http://www.c4st.org/MDSymposium>

Calamaro, C.J., Yang, K., Ratcliffe, S., Chasens, E.R. (2011) Wired at a Young Age: The Effect of Caffeine and Technology on Sleep Duration and Body Mass Index in School-Aged Children. *Journal of Pediatric Health Care* - July 2012 (Vol. 26, Issue 4, Pages 276-282, DOI: 10.1016/j.pedhc.2010.12.002).

Canadian Standards Association - Children's Playspaces and Equipment Standard, 4<sup>th</sup> Edition. (2007). Available at: <http://www.csa.ca/cm/ca/en/search/article/childrens-playspaces-and-equipment-standard-fourth-edition>

Carpenter, D. & Sage, C. (2012). A rationale for biologically-based exposure standards for low-intensity electromagnetic radiation. *BioInitiative Report*. Retrieved from: <http://www.bioinitiative.org/table-of-contents/>

Carson, V., Pickett, W., Janssen, I. (2011) *Screen time and risk behaviors in 10- to 16-year-old Canadian youth*. *Preventive Medicine* 52 (2) pg 97-98.

Castle, Lori. How to Digitally Detox This Summer. *Mobile Enterprise*. Retrieved from <http://mobileenterprise.edgl.com/news/How-to-Digitally-Detox-This-Summer94473> on September 5, 2014.

CBC News. France pulls plug on TV shows aimed at babies [CBC online article Wednesday, August 20, 2008]. Available from: <http://www.cbc.ca/world/story/2008/08/20/french-baby.html>.

CBC News. ADHD Drug Linked to Suicide Attempts: Health Canada. *CBC News* July 3, 2008. Available at: <http://www.cbc.ca/health/story/2008/07/03/adhd-drug-warning.html>.

CBC News. Tech addiction symptoms rife among students. *CBC News* on April 6, 2011 11:06. Available from: <http://www.cbc.ca/news/technology/story/2011/04/06/technology-addiction-students.html>

CBC News Dec. 3, 2013. Canada's students slipping in math and science, OECD finds. Retrieved on March 17, 2014 at <http://www.cbc.ca/news/canada/canada-s-students-slipping-in-math-and-science-oecd-finds-1.2448748>

CBC News, Amanda Ripley on PISA math scores. December 3, 2013. <http://www.cbc.ca/player/AudioMobile/Day+6/ID/2422663991/>

CBS News. Mar 13, 2008, Man Sentenced For Killing Toddler Over Broken Xbox. Available at: <http://cbs3.com/local/Tyrone.Spellman.Xbox.2.676702.html>

CBS News, Jim Edwards, May 21, 2010. Glaxo is Testing Paxil on 7-Year-Olds, Despite Well Known Suicide Risks. Available at: <http://industry.bnet.com/pharma/10008290/glaxo-is-testing-paxil-on-7-year-olds-despite-well-known-suicide-risks/>



6840 Seaview Road, Sechelt, BC V0N 3A4

[www.zonein.ca](http://www.zonein.ca)

Cellular Telecommunications and Internet Association. (2014). CTIA-The wireless association announces semi-annual wireless industry survey results, Washington DC. Retrieved from: <http://www.ctia.org/your-wireless-life/how-wireless-works/annual-wireless-industry-survey>

Center for Disease Control and Prevention – Diabetes Public Health Resource. (2010). Available at: <http://www.cdc.gov/diabetes/projects/cda2.htm>

Center on Media and Human Development, School of Communication, Northwestern University. June 2013. Parenting in the Digital Age. Available at: [http://web5.soc.northwestern.edu/cmhd/wp-content/uploads/2013/05/Parenting-Report\\_FINAL.pdf](http://web5.soc.northwestern.edu/cmhd/wp-content/uploads/2013/05/Parenting-Report_FINAL.pdf)

Cheslack-Postava K et al. Closely Spaced Pregnancies Are Associated With Increased Odds of Autism in California Sibling Births. *Pediatrics* 2011;127;246-253 on January 10, 2011.

Choliz, M. & Marco, C. Patterns of video game use and dependence in children and adolescents. *Anales de Psicología*, 2011, Vol 27(2), 418-426.

Christakis, D. A., Gilkerson, J., Richards, J. A., Zimmerman, F. J., Garrison, M. M., Xu, D., Gray, S. & Yapanel, U. (2009). Audible Television and Decreased Adult Words, Infant Vocalizations, and Conversational Turns. *Archives of Pediatrics & Adolescent Medicine*. 163(6):554-558. Available at: <http://archpedi.ama-assn.org/cgi/content/full/163/6/554#AUTHINFO>

Christakis DA, Zimmerman FJ. Violent Television During Preschool Is Associated With Antisocial Behavior During School Age. *Pediatrics*. 2007; 120: 993-999.

Christakis DA, Zimmerman FJ, DiGiuseppe DL, McCarty CA. Early television exposure and subsequent attentional problems in children. *Pediatrics*. 2004; 113 (4): 708-713.

Christakis, D.A. (2011) The effects of fast-paced cartoons. *PEDIATRICS* Vol. 128 No. 4 October 1, 2011, pp. 772 -774 (doi: 10.1542/peds.2011-2071) □

Clayton, R. B. (2014) The Third Wheel: The Impact of Twitter Use on Relationship Infidelity and Divorce. *Cyberpsychology, Behavior, and Social Networking* 17(7): 425-430. doi:10.1089/cyber.2013.0570.

Clayton, R.B., Nagurney, A., Smith, J.R. Cheating, Breakup, and Divorce: Is Facebook Use to Blame? *Cyberpsychology, Behavior, and Social Networking*. October 2013, 16(10): 717-720. doi:10.1089/cyber.2012.0424.

CLBB and the Boston Society for Neurology and Psychiatry. (2013). "Empathy: The Development and Disintegration of Human Connection". Retrieved from <http://clbb.mgh.harvard.edu/upcoming-empathy-insights-from-neurophysiology-neurology-and-psychiatry/> on September 15, 2014.

Clegg, F. EMFs & Dirty Electricity: Invisible Threat. The Link between Wireless Radiation and a Host of Serious Illnesses. Retrieved from <http://vitalitymagazine.com/article/invisible-threat/> on February 4, 2014.

Cohen, D.A., Marsh, T., Williamson, S., Golinelli, D., McKenzie, T.L. Impact and cost-effectiveness of family Fitness Zones: a natural experiment in urban public parks. *Health Place*. 2012 Jan;18(1):39-45. doi: 10.1016/j.healthplace.2011.09.008.



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[www.zonein.ca](http://www.zonein.ca)

Committee on Public Education. Media Violence. 2001; 108:1222-1226. Available at:  
<http://www.mediafamily.org/videogame2006summit/publications.shtml>.

Common Sense Media 2013; retrieved on February 26, 2014 from  
[http://cdn2-d7.ec.common sense media.org/sites/default/files/uploads/about\\_us/zero-to-eight-20131.pdf](http://cdn2-d7.ec.common sense media.org/sites/default/files/uploads/about_us/zero-to-eight-20131.pdf)

Conners-Burrow, N.A., McKelvey, L.M., Fussell, J.J. (2011) Social Outcomes Associated With Media Viewing Habits of Low-Income Preschool Children. *Early Education & Development* □ Vol. 22, Iss. 2, 2011

Coughlan, S. Lack of sleep blights pupil's education. Retrieved from  
<http://www.bbc.com/news/business-22209818> on May 8, 2013.

Coyne, S.M., Stockdale, L.A., Nelson, D.A., Fraser, A. (2011) Profanity in Media Associated With Attitudes and Behavior Regarding Profanity Use and Aggression. *Pediatrics* peds.2011-1062; doi:10.1542/peds.2011-1062

Crane, L., Goddard, L. & Pring, L. (2009). Sensory processing in adults with autism spectrum disorders. *Autism*, 13, 215-228.  
Columbia University Mailman School of Public Health. More than half of America's 18-24 year olds live with their parents. 2010. <http://www.mailman.columbia.edu/news/more-half-america%E2%80%99s-18-24-year-olds-live-parents>

Crittenden PM. (2008). *Raising Parents: Attachment, Parenting and Child Safety*. Willan Publishing; Oxfordshire, UK.

Crofton K. (2011). *Wireless Radiation Rescue: Safeguard Your Family from Electro-pollution*. Global Wellbeing Books, United States.

CTV News – My Health. Electronic babysitter? Fisher-Price's iPad baby seat sparks controversy. December 17, 2013. <http://www.ctvnews.ca/health/electronic-babysitter-fisher-price-s-ipad-baby-seat-sparks-controversy-1.1596989>

Cuellepper, L., Ghaemi, N. (2011) Are Antipsychotics Overprescribed? *Medscape Psychiatry & Mental Health*. Retrieved from:  
<http://www.creativeperspectives.org/files/Are%20Antipsychotics%20Overprescribed.pdf>

Darling, N. (2014) *Step Away From The Keyboard: How Our Hands Affect Our Brains*. Psychology Today. Retrieved from <http://www.psychologytoday.com/blog/thinking-about-kids/201407/step-away-the-keyboard-how-our-hands-affect-our-brains> on September 5, 2014.

Davidson, K. & Bressler, S. (2010). Piloting a points-based caseload measure for community based paediatric occupational and physiotherapists. *Canadian Journal of Occupational Therapy*. 77(3):174-180.

Davis, V. Interconnected But Underprotected? Parents' Methods and Motivations for Information Seeking on Digital Safety Issues. *Cyberpsychology, Behavior, and Social Networking*. December 2012, 15(12): 669-674. doi:10.1089/cyber.2012.0179.

Diagnosis and Statistical Manual, Fifth Edition. Available at [www.DSMV.org](http://www.DSMV.org).

DeBerardis D, D'Albenzio A, Gambi F, Sepede G, Valchera A, Conti CM, Fulcheri M, Cavuto M, Ortolani C, Salerno RM, Serroni N, Ferro FM. Alexithymia and Its Relationships with Dissociative Experiences and Internet Addiction in a Nonclinical Sample. *CyberPsychology & Behavior*. 2008; doi:10.1089/cpb.2008.0108.

Dellorto, D. (2011). WHO: Cell phone use can increase possible cancer risk. Retrieved from: <http://www.cnn.com/2011HEALTH/05/31/who.cell.phones/>

Diller LH. *Running on Ritalin: A Physician Reflects on Children, Society, and Performance of a Pill*. New York: Bantam Books; 1999.

Doan, A., (2012) The Perfect Storm for a Killer: Video game addiction and violent video games. <http://www.medrounds.org/main/medrounds-blog/medical-articles-by-doctors/170153-the-perfect-storm-for-a-killer-video-game-addiction-and-violent-video-games.html>. Accessed 11/03/14

Dobbin, J. Early day motion 951: Diagnosis of Attention Deficit Disorder. UK Parliament. Retrieved from <http://www.parliament.uk/edm/2013-14/951> on March 11, 2014.

Dong, Guangheng, Elise E Devito, Xiaoxia Du, and Zhuoya Cui. "Impaired Inhibitory Control in 'Internet Addiction Disorder': A Functional Magnetic Resonance Imaging Study." *Psychiatry Research* 203, no. 2–3 (September 2012): 153–158. doi:10.1016/j.psychres.2012.02.001.

Dong, Guangheng, Yanbo Hu, and Xiao Lin. "Reward/Punishment Sensitivities Among Internet Addicts: Implications for Their Addictive Behaviors." *Progress in Neuro-Psychopharmacology & Biological Psychiatry* 46 (October 2013): 139–145. doi:10.1016/j.pnpbp.2013.07.007.

DosReis S, Zito JM, Safer DJ, Gardner JF, Puccia KB, Owens PL. Multiple psychotropic medication use for youths: A two-state comparison. *Journal of Child and Adolescent Psychopharmacology*. 2005; 15(1): 68-77.

Dunkley, V. Gray Matters: Too Much Screen Time Damages the Brain - Neuroimaging research shows excessive screen time damages the brain. *Psychology Today*, Mental Wealth. Published online February 27, 2014. <http://www.psychologytoday.com/blog/mental-wealth/201402/gray-matters-too-much-screen-time-damages-the-brain>

Dwyer, S. (2014) Mobile Addicts on the Rise, According to Data Study. The Fix. Retrieved from <http://www.thefix.com/content/mobile-addicts-rise-according-data-study> on September 15, 2014.

Elgar F.J., Napoletano A., Saul G., et al. Cyberbullying Victimization and Mental Health in Adolescents and the Moderating Role of Family Dinners. *JAMA Pediatr*. Published online September 01, 2014. doi:10.1001/jamapediatrics.2014.1223.

Employment and Social Development Canada. 2011. <http://www4.hrsdc.gc.ca/.3ndic.1t.4r@-eng.jsp?iid=77>

Emre M, Cetiner S, Zencir S, Unlukurt I, Kahraman I, Topcu Z. Oxidative stress and apoptosis in relation to exposure to magnetic field. *Cell Biochemistry and Biophysics*. 2011; 59 (2): 71-77.

Engelen, L., Bundy, A. C., Bauman, A., Naughton, G., Wyver, S., Baur, L. (2014) *Young Children's After-School Activities - There's More to it Than Screen Time: A Cross-Sectional Study of Young Primary School Children*. Center on Media and Child Health.

Englander, E.K. (2012) Low risk associated with most Teenage Sexting: A Study of 617 18-Year-Olds, Massachusetts Aggression Reduction Centre, Bridgewater State College, Bridgewater, MA. Retrieved from:  
<http://webhost.bridgew.edu/marc/SEXTING%20AND%20COERCION%20report.pdf>

Eşmekaya MA, Seyhan N, Ömeroğlu S. (2010) Pulse modulated 900 MHz radiation induces hypothyroidism and apoptosis in thyroid cells: a light, electron microscopy and immunohistochemical study. *Journal of Radiat Biology*. 2010 Dec;86(12):1106-16.

Faber Taylor A, Kuo FE, Sullivan WC. Coping With ADD – The Surprising Connection to Green Play Settings. *Journal of Environment and Behavior*. 2001; 33(1):54-77.

Fast Company Magazine. (April, 2010). "A" is for App. By Anya Kamenetz.  
<http://www.fastcompany.com/magazine/144>.

Feldman R, Eidelman AI, Sirota L, Weller A. (2002). Comparison of Skin-to-Skin (Kangaroo) and Traditional Care: Parenting Outcomes and Preterm Infant Development. *Pediatrics*: 110(1);16-26.

Feng D, Reed DB, Esperat MC, Uchida M. Effects of TV in the bedroom on young Hispanic children. *Am J Health Promot*. 2011 May-Jun;25(5):310-8.

Field, T., Lasko, D., Mundy, P., Henteleff, T., Kabat, S., Talpins, S. & Dowling, M. (1997). Brief report: Autistic children's attentiveness and responsivity improve after touch therapy. *Journal of Autism and Developmental Disorders*, 27(3), 333-338.

Fioravanti, G., Dèttore, D., Casale, S. (2012) *Adolescent Internet Addiction: Testing the Association Between Self-Esteem, the Perception of Internet Attributes, and Preference for Online Social Interactions*. *Cyberpsychology, Behavior, and Social Networking* 15(6): 318-323. doi:10.1089/cyber.2011.0358.

Fitzgerald, B.R. Data Point: That's a Lot of People to Say They 'Never' Unplug. Digits. Retrieved from <http://blogs.wsj.com/digits/2014/08/15/data-point-thats-a-lot-of-people-to-say-they-never-unplug/> on September 05, 2014.

Flores, P. *Addiction as an Attachment Disorder*. Oxford, UK: Rowman & Littlefield Publishers Inc.; 2004.

Forbes. Why empathy is the force that moves businesses forward. May 30, 2013 by Jayson Boyers. <http://www.forbes.com/sites/ashoka/2013/05/30/why-empathy-is-the-force-that-moves-business-forward/>

Foss-Feig JH, Heacock JL, Cascio CJ. (2012) Tactile responsiveness patterns and their association with core features in autism spectrum disorders. *Research in Autism Spectrum Disorder* 6(1):337-344.

Fragopoulou, A., researcher at the Department of Biology and Biophysics at the University of



6840 Seaview Road, Sechelt, BC V0N 3A4

[www.zonein.ca](http://www.zonein.ca)

Athens, Greece on February 22, 2011. Are Mobile Phones and other Wireless Appliances Safe?

Fredrickson, B. Your phone vs. your heart. The New York Times retrieved from [http://www.nytimes.com/2013/03/24/opinion/sunday/your-phone-vs-your-heart.html?\\_r=0](http://www.nytimes.com/2013/03/24/opinion/sunday/your-phone-vs-your-heart.html?_r=0). On March 23, 2013.

Gandhi OP, Morgan LL, de Salles AA, Han YY, Herberman RB, Davis DL. (2011) Exposure limits: the underestimation of absorbed cell phone radiation, especially in children. *Electromagnetic Biology and Medicine, Early Online: 1-18, 2011.*

Gangwisch, J. E., Babiss, L. A., Malaspina, D., Turner J. B., Zammit, G. K. & Posner, K. (2010). Earlier Parental Set Bedtimes as a Protective Factor Against Depression and Suicidal Ideation. *Sleep*. 33(1):96-106.

Gaskin, C. J., Elsom, S. J. & Happell, B. (2007). Interventions for reducing the use of seclusion in psychiatric facilities. *British Journal of Psychiatry*. 191:298-303. DOI:10.1192/bjp.bp.106.834538

Gentile, D. Pathological Video-Game Use Among Youth Ages 8 to 18: A National Study. *Psychological Science*. 2009 May;20(5):594-602. doi: 10.1111/j.1467-9280.2009.02340.x.

Gentile D. Pathological Video-Game Use Among Youth Ages 8 to 18. *Journal of Psychological Science*. 2009; 3(2):1-9.

Gentile, D.A., Lynch, P.J., Linder, J.R., Walsh, D.A. The effects of violent video game habits on adolescent hostility, aggressive behaviors, and school performance. *Journal of Adolescence* 2004 Feb;27(1):5-22

Gentzler, A. L., Oberhauser, A. M., Westerman, D. and Nadorff, D. K. (2010). College Students' Use of Electronic Communication with Parents: Links to Loneliness, Attachment, and Relationship Quality *Cyberpsychology, Behavior, and Social Networking*. doi:10.1089/cyber.2009.0409.

Ghassemzadeh L, Shahraray M, Moradi A. Prevalence of Internet Addiction and Comparison of Internet Addicts and Non-Addicts in Iranian High Schools. *CyberPsychology & Behavior*. 2008; doi:10.1089/cpb.2007.0243.

Ghose, T., Live Science. Tiny Distractions Can Double Mistakes. *Scientific American*. Retrieved from <http://www.scientificamerican.com/article/tiny-distractions-can-double/> on Jan. 22, 2013

Gilbert RL, Murphy NA, Ávalos MC. Communication patterns and satisfaction levels in three-dimensional versus real-life intimate relationships. *Cyberpsychology, Behavior and Social Networking*. 2011 Oct;14(10):585-9.

Globe and Mail. (2010). By Zosia Bielski. Today's college kids are 40-per-cent less empathetic, study finds. June 1, 2010. Available at: <http://www.theglobeandmail.com/life/work/todays-college-kids-are-40-per-cent-less-empathetic-study-finds/article1587609/>

Goldberg E, Simner M. A Comparison of Children's Handwriting Under Traditional vs. Whole Language Instruction. *Canadian Journal of School Psychology*. 1999; 14(2): 11-30.

Goodier, R. Think your tween is just sexting? The Globe and Mail. Retrieved from <http://www.theglobeandmail.com/life/parenting/think-your-tween-is-just-sexting/article19448695/> on September 5, 2014.

Goodwin R, Gould MS, Blanco C, Olsson M. Prescription of psychotropic medications to youth in office-based practices. *Psychiatric Services*. 2001; 52(8):1081-1087.

Gordon, A. (2013) Kids with Autism benefit from outdoor classroom. Retrieved from [http://www.thestar.com/life/parent/2013/07/05/kids\\_with\\_autism\\_benefit\\_from\\_outdoor\\_classroom.html](http://www.thestar.com/life/parent/2013/07/05/kids_with_autism_benefit_from_outdoor_classroom.html) on February 24, 2014.

Graham S, Harris K, Mason L, Fink-Chorzempa B, Moran S, Saddler B (2008) *How Do Primary Grade Teachers Teach Handwriting? A National Survey*. *Reading and Writing: An Interdisciplinary Journal*. 2008: 21;49-69.

Graham S, and Weintraub N. (1996). *A Review of Handwriting Research: Progress and Prospects from 1980 to 1994*. *Educational Psychology Review*, 8, 7-87.

Graham S, Harris K and Fink B. (2000). *Is Handwriting Causally Related to Learning to Write? Treatment of Handwriting Problems in Beginning Writers*. *Journal of Educational Psychology* Vol 92, 620-633.

Graham S (2006) *Handbook of Writing Research, Ch 13 – Strategy Instruction and the Teaching of Writing*. Eds. MacArthur C, Graham S and Fitzgerald G. Guilford Press, New York.

Graham S, MacArthur C and Fitzgerald J (2007) *Best Practices in Writing Instruction*. Eds. MacArthur C, Graham S and Fitzgerald G. Guilford Press, New York.

Guardian News. August 26, 2010. Parents are forgetting how to play with their children, study shows. Available at: <http://uk.lifestyle.yahoo.com/family-parenting/parents-forgetting-play-children-study-shows-article-huib.html>

Guardian News. Are iPads and tablets bad for young children? January 8, 2014 by Paula Cocozza. <http://www.theguardian.com/society/2014/jan/08/are-tablet-computers-bad-young-children>

Hahn, J. (2003) Substance-induced psychotic disorder. *Gale Encyclopedia of Mental Disorders*. Accessed 11/03/14 from <http://www.encyclopedia.com/doc/1G2-3405700377.html>

Hamilton S. Screening for developmental delay: Reliable, easy-to-use tools. *Journal of Family Practice*. 2006; 55 (5): 416-422.

Han, Doug Hyun, Nicolas Bolo, Melissa A. Daniels, Lynn Arenella, In Kyoonyoung Lyoo, and Perry F. Renshaw. "Brain Activity and Desire for Internet Video Game Play." *Comprehensive Psychiatry* 52, no. 1 (January 2011): 88–95. doi:10.1016/j.comppsych.2010.04.004.

Hancox RJ, Milne BJ, Poulton R. Association of television during childhood with poor educational achievement. *Archives of Pediatric and Adolescent Medicine*. 2005; 159 (7): 614-618.

Hardell, L., Carlberg, M., Soderqvist, F., Hansson, K. Pooled analysis of case-control studies on acoustic neuroma diagnosed 1997-2003 and 2007-2009 and use of mobile and cordless phones *International Journal of Oncology*. 2013; 43(4); 1036-1044. DOI: 10.3892/ijo.2013.2025

Harvey-Berino J, Rourke J. Obesity Prevention in Preschool Native-American Children: A Pilot Study Using Home Visiting. *Obesity Research*. 2001; 11:606-611.

He, J.B., Liu, C.J., Guo, Y.Y., Zhao, L. (2009) Deficits in Early-Stage Face Perception in Excessive Internet Users. *Cyberpsychology, Behavior, and Social Networking* 14(5): 303-308. doi:10.1089/cyber.2009.0333.

Heffler K. F. and Oestreicher O. M. Causational model of autism: Audiovisual brain specialization in infancy competes with social brain networks. *Med Hypotheses* (2015); retrived on July 31, 2015 from [http://www.medical-hypotheses.com/article/S0306-9877\(15\)00238-8/abstract](http://www.medical-hypotheses.com/article/S0306-9877(15)00238-8/abstract)

Healthy Early Learning Partnership – Early Development Inventory Maps for British Columbia, University of British Columbia; retrieved on February 26, 2014 from <http://earlylearning.ubc.ca/maps/edi/bc/>

Hinduja, S., & Patchin, J.W. (2010). Bullying, cyberbullying, and suicide. *Archives of Suicide Research*, 14(3), 206-221.

Ho BC, Andreasen NC, Ziebell S, Pierson R, Magnotta V. Long-term Antipsychotic Treatment and Brain Volumes. *Archives of General Psychiatry*. 2011; 68 (2); 128-137.

Hong, Soon-Beom, Jae-Won Kim, Eun-Jung Choi, Ho-Hyun Kim, Jeong-Eun Suh, Chang-Dai Kim, Paul Klauser, et al. "Reduced Orbitofrontal Cortical Thickness in Male Adolescents with Internet Addiction." *Behavioral and Brain Functions* 9, no. 1 (2013): 11. doi:10.1186/1744-9081-9-11.

Hong, Soon-Beom, Andrew Zalesky, Luca Cocchi, Alex Fornito, Eun-Jung Choi, Ho-Hyun Kim, Jeong-Eun Suh, Chang-Dai Kim, Jae-Won Kim, and Soon-Hyung Yi. "Decreased Functional Brain Connectivity in Adolescents with Internet Addiction." Edited by Xi-Nian Zuo. *PLoS ONE* 8, no. 2 (February 25, 2013): e57831. doi:10.1371/journal.pone.0057831.

Horvath C.W. Measuring television addiction. *Journal of Broadcasting and Electronic Media*. 2004; 48 (3): 378-398.

Hou, Haifeng, Shaowe Jia, Shu Hu, Rong Fan, Wen Sun, Taotao Sun, and Hong Zhang. "Reduced Striatal Dopamine Transporters in People with Internet Addiction Disorder." *Journal of Biomedicine & Biotechnology* 2012 (2012): 854524. doi:10.1155/2012/854524.

Houtrow, A. J., Larson K., Olson, L. M., Newacheck, P. W., Halfon, N. Changing Trends of Childhood Disability, 2001-2011. *Pediatrics*. Available at <http://pediatrics.aappublications.org/content/early/2014/08/12/peds.2014-0594.abstract>

Howard AW. Keeping children safe: rethinking how we design our environments. *Canadian Medical Association Journal*. 2010; 182(6); 573-577.



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[www.zonein.ca](http://www.zonein.ca)

Howard AW, MacArthur C, Willan A, et al. The effect of safer play equipment on playground injury rates among school children. *Canadian Medical Association Journal*. 2005; 172: 1443-1446.

Hu, E. *Facebook makes us sadder and less satisfied, study finds*. Retrieved from <http://www.npr.org/blogs/alltechconsidered/2013/08/19/213568763/researchers-facebook-makes-us-sadder-and-less-satisfied> on March 11, 2014.

Huesmann LR. *The Impact of Electronic Media Violence* Scientific Theory and Research. *Journal of Adolescent Health*. 2007; 41: S6-13.

Huffington Post. *Ten reasons why handheld devices should be banned in children under 12 years of age*. March 6, 2014 by Cris Rowan. [http://www.huffingtonpost.com/cris-rowan/10-reasons-why-handheld-devices-should-be-banned\\_b\\_4899218.html](http://www.huffingtonpost.com/cris-rowan/10-reasons-why-handheld-devices-should-be-banned_b_4899218.html)

Innis, G. *Kids and Technology, is it ever too much of a good thing?* Michigan State University. Retrieved from [http://msue.anr.msu.edu/news/kids\\_and\\_technology\\_is\\_it\\_ever\\_too\\_much\\_of\\_a\\_good\\_thing](http://msue.anr.msu.edu/news/kids_and_technology_is_it_ever_too_much_of_a_good_thing) on September 5, 2014.

Insel TR, Young LJ. The neurobiology of attachment. *Nature Reviews Neuroscience*. 2001; 2: 129-136.

Intel Security. (2014). 2014 Teens and the screen study: exploring online privacy, social networking and cyber bullying. McAfee. Retrieved from: <http://www.mcafee.com/us/about/news/2014/q2/20140603-01.aspx>

Irwin M. Proceedings presented at the 2009 International Center for the Study of Psychiatry and Psychology. New York.

James K, Miller LJ, Schaaf R, Nielsen DM, Schoen SA. (2011) *Phenotypes within sensory modulation dysfunction*. *Comprehensive Psychiatry* 52(6):715-724.

Jennings JT. Conveying the message about optimal infant positions. *Physical and Occupational Therapy in Pediatrics*. 2005; 25 (3); 3-18.

Jeong EJ, Kim DH. Social Activities, Self-Efficacy, Game Attitudes, and Game Addiction. *Cyberpsychology, Behavior, and Social Networking*. April 2011, 14(4): 213-221

Jensen PS, Cooper JR. Attention Deficit Hyperactivity Disorder: State of Science – Best Practices. 2002. Chapter 10. Public Health and Toxicological Issues Concerning Stimulant Treatment for ADHD. Rowland, AS, Umbach DM, O'Callaghan JP, Miller DB, Dunnick JK.

Joiner, R., Gavin, J., Brosnan, M., Cromby, J., Gregory, H., Guiller, J., Maras, P., Moon, A. (2012) *Gender, Internet Experience, Internet Identification, and Internet Anxiety: A Ten-Year Followup*. *Cyberpsychology, Behavior, and Social Networking*. July 2012, 15(7): 370-372. doi:10.1089/cyber.2012.0033.

Joseph, J. *The Gene Illusion: Genetic Research in Psychiatry and Psychology Under the Microscope*. 2003. PCCS Books Publishing, Herefordshire, UK. Website [www.jayjoseph.net](http://www.jayjoseph.net).

Kaiser Foundation Report. 2010. Retrieved on April 30, 2010 from <http://kff.org/other/event/generation-m2-media-in-the-lives-of/>

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[www.zonein.ca](http://www.zonein.ca)

Kaplan S. The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*. 1995; 15: 169-182.

Kasteleijn-Nolst Trenite, D. G., Martins da Silva, A. & Ricci, S. (2002). Video Games are Exciting: A European Study of Video Game-Induced Seizures and Epilepsy. *Epileptic Disorders*. 4; 121-128.

Kershaw P. British Columbia Business Council and University of British Columbia researchers with the Human Early Learning Partnership. A Comprehensive Policy Framework for Early Human Capital Investment in BC. 2009. Retrieved on Sept. 29, 2013 from <http://earlylearning.ubc.ca/documents/27/>.

Kessler RC, Adler L, Barkley R, Biederman J, Conners CK, Demler O, Faraone SV, Greenhill LL, Howes MJ, Secnik K, Spencer T, Ustun TB, Walters EE, Zaslavsky AM. The Prevalence and Correlates of Adult ADHD in the United States: Results for the National Comorbidity Survey Replication. *American Journal of Psychiatry*. 2006; 163:716-723.

Khurana VG, Teo C, Kundi M, Hardell L, Carlberg M. Cell phones and brain tumors: a review including long-term epidemiologic data. *Surgical Neurology*, 2009; 72 (3), 214-215.

Kim, K.J., Sundar, S.S. Can Interface Features Affect Aggression Resulting from Violent Video Game Play? An Examination of Realistic Controller and Large Screen Size. *Cyberpsychology, Behavior, and Social Networking*. May 2013, 16(5): 329-334. doi:10.1089/cyber.2012.0500.

Kim, Sang Hee, Sang-Hyun Baik, Chang Soo Park, Su Jin Kim, Sung Won Choi, and Sang Eun Kim. "Reduced Striatal Dopamine D2 Receptors in People with Internet Addiction." *Neuroreport* 22, no. 8 (June 11, 2011): 407–411. doi:10.1097/WNR.0b013e328346e16e.

Kirsch I, Antonuccio D. FDA testimony on the efficacy of antidepressants with children. February 2004. Available from: <http://www.ahrp.org/risks/SSRI0204/KirschAntonuccio.php>.

Kittinger, R., Correia, C.J., Irons, J.G. (2012) *Relationship Between Facebook Use and Problematic Internet Use Among College Students*. *Cyberpsychology, Behavior, and Social Networking* 15(6): 324-327. doi:10.1089/cyber.2010.0410

Klein C, Kennedy MA, Gorzalka BB. Rape myth acceptance in men who completed the prostitution offender program of British Columbia. *International Journal of Offender Therapy and Comparative Criminology*; 2009 Jun;53(3):305-15

Klintwall, L., Holm, A., Eriksson, M., Carlsson, L. H., Olsson, M. B., Hedvall, A., Gillberg, C., et al. (2011). Sensory abnormalities in autism. A brief report. *Research in Developmental Disabilities*, 32(2), 795-800.

Ko, Chih-Hung, Gin-Chung Liu, Sigmund Hsiao, Ju-Yu Yen, Ming-Jen Yang, Wei-Chen Lin, Cheng-Fang Yen, and Cheng-Sheng Chen. "Brain Activities Associated with Gaming Urge of Online Gaming Addiction." *Journal of Psychiatric Research* 43, no. 7 (April 2009): 739–747. doi:10.1016/j.jpsychires.2008.09.012.

Koo C, Wati W, Lee C, Oh H. Internet-Addicted Kids and South Korean Government Efforts: Boot-Camp Case. *Cyberpsychology, Behavior and Social Networking*. 2010; 14 (6):391-4.

Korkman M. Introduction to the special issue on normal neuropsychological development in the school-age years. *Developmental Neuropsychology*. 2001; 20 (1):325-330.

Kowalski RM, Limber SP. Electronic Bullying Among Middle School Students. *Journal of Adolescent Health*. 2007; 41:S22-30.

Kühn, S, A Romanowski, C Schilling, R Lorenz, C Mörsen, N Seiferth, T Banaschewski, et al. "The Neural Basis of Video Gaming." *Translational Psychiatry* 1 (2011): e53. doi:10.1038/tp.2011.53.

Kuo FE, Faber Taylor A. A Potential Natural Treatment for Attention-Deficit/Hyperactivity Disorder: Evidence from a National Study. *American Journal of Public Health*. 2004; 94(9):1580-1586.

Kuo FE, Faber Taylor A. Children with Attention Deficits Concentrate Better After a Walk in the Park. *Journal of Attention Disorders*. 2009; 12; 402: originally published online Aug 25, 2008.

Kuss, D.J., Griffiths, M.D., Binder, J.F. (2013) Internet addiction in students: Prevalence and risk factors. *Computers in Human Behaviour* (29); 959-966.

Lam, L.T., Cheng, Z., Liu, X. Violent Online Games Exposure and Cyberbullying/Victimization Among Adolescents. *Cyberpsychology, Behavior, and Social Networking*. March 2013, 16(3): 159-165. doi:10.1089/cyber.2012.0087.

Lane, S. J., Reynolds, S. & Thacker L. (2010). Sensory over-responsivity and ADHD: differentiating using electrodermal responses, cortisol, and anxiety. *Frontiers in Integrative Neuroscience*. 4 (8), 1-11. doi: 10.3389/fnint.2010.00008.

Lang, R., Koegel, L. K., Ashbaugh, K., Regester, K., Ence, W. & Smith, W. (2010). Physical exercise and individuals with autism spectrum disorders: A systematic review. *Research in Autism Spectrum Disorders*. DOI:10.1016/j.rasd.2010.01.006

LAUSD. Los Angeles Unified School District Accommodates Teacher Who Fell Ill After Wireless Installation. Press release October 10, 2014 <http://www.prlog.org/12381499-los-angeles-unified-school-district-accommodates-teacher-who-fell-ill-after-wireless-installation.html>

Hae Woo Lee, Jung-Seok Choi, Young-Chul Shin, Jun-Young Lee, Hee Yeon Jung, and Jun Soo Kwon. *Impulsivity in Internet Addiction: A Comparison with Pathological Gambling*. *Cyberpsychology, Behavior, and Social Networking*. July 2012, 15(7): 373-377. doi:10.1089/cyber.2012.0063.

Lee, S.J., Chae, Y.J. (2011) *Balancing Participation and Risks in Children's Internet Use: The Role of Internet Literacy and Parental Mediation*. *Cyberpsychology, Behavior, and Social Networking* 15(5): 257-262. doi:10.1089/cyber.2011.0552.

Li D, Chen H, Odouli R. Maternal Exposure to Magnetic Fields During Pregnancy in Relation to the Risk of Asthma in Offspring. *Arch Pediatr Adolesc Med*. 2011;165(10):945-950.

doi:10.1001/archpediatrics.2011.135.

Liberatore KA, Rosario K, Colon-De Marti LN, Martinez KG. Prevalence of Internet Addiction in Latino Adolescents with Psychiatric Diagnosis. *Cyberpsychology, Behavior, and Social Networking*. June 2011, 14(6): 399-402.

Lin F, Zhou Y, Du Y, Qin L, Zhao Z, et al. (2012) Abnormal White Matter Integrity in Adolescents with Internet Addiction Disorder: A Tract-Based Spatial Statistics Study. *PLoS ONE* 7(1): e30253. doi:10.1371/journal.pone.0030253

Lipnowski S. Healthy active living: Physical activity guidelines for children and adolescents Canadian Paediatric Society, Abridged version: *Paediatric Child Health* 2012;17(4):209-10 <http://www.cps.ca/documents/position/physical-activity-guidelines>

Louv, R. *Last child in the woods: Saving our children from Nature-Deficit Disorder*. New York: Algonquin Books; 2005.

Lu DW, Wang JW, Huang ACW. Differentiation of Internet Addiction Risk Level Based on Autonomic Nervous Responses: The Internet-Addiction Hypothesis of Autonomic Activity. *Cyberpsychology, Behavior, and Social Networking*. 2010; 13 (4): 371-378.

MacArthur C, Hu X, Wesson DE. Risk factors for severe injuries associated with falls from playground equipment. *Accident Analysis and Prevention Journal*. 2000: 32(3); 377-382.

MacLeans. UBC students reject paying for sexual assault counselling. November 3, 2013. <http://www.macleans.ca/education/uniandcollege/ubc-students-reject-pledge-for-sexual-assault-counselling/>

Mandell DS, Morales KH, Marcus SC, Stahmer AC, Doshi J, and Polsky DE. Psychotropic medication use among medicaid-enrolled children with Autism Spectrum Disorders. *Pediatrics*. 2008; 121 (3): 441-449.

Mangen, A. (2008). Hypertext fiction reading: haptics and immersion. *Journal of Research*. 31(4):404-419.

Markman, A. (2010) *Ulterior Motives- How goals seen and unseen drive behaviours*. Psychology Today. Retrieved from <http://www.psychologytoday.com/blog/ulterior-motives/201003/the-broad-view-research-video-games-and-aggression> on March 11, 2014.

Martin, R.C., Coyier, K.R., VanSistine, L.M., Schroeder, K.L. Anger on the Internet: The Perceived Value of Rant-Sites *Cyberpsychology, Behavior, and Social Networking*. February 2013, 16(2): 119-122. doi:10.1089/cyber.2012.0130.

Mate', G. *Scattered Minds: A New Look at the Origins and the Healing of Attention Deficit Disorder*. (2000). Vintage Canada.

May-Benson, T. A., & Cermak, S. A. (2007). Development of an assessment for ideational praxis. *American Journal of Occupational Therapy*, 61, 148–153.

McEwan K, Waddell C, Barker J. Bringing Children's Mental Health "Out of the Shadows". *Canadian Medical Association Journal*. 2007; 176(4): 471-472.



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[www.zonein.ca](http://www.zonein.ca)

Meier, E.P., Gray, J. Facebook Photo Activity Associated with Body Image Disturbance in Adolescent Girls. *Cyberpsychology, Behavior, and Social Networking*. -Not available-, ahead of print. doi:10.1089/cyber.2013.0305.

Mental Health: A Report of the Surgeon General, Overview of Mental Disorders in Children [report on the internet]. Available from: [http://www.surgeongeneral.gov/library/mentalhealth/chapter2/sec2\\_1.html](http://www.surgeongeneral.gov/library/mentalhealth/chapter2/sec2_1.html).

Mental Health in the United States: Prevalence of Diagnosis and Medication Treatment for Attention Deficit/Hyperactivity Disorder. Centre for Disease Control and Prevention. 2003. Available from: [www.cdc.gov/mmwr/preview/mmwrhtml/mm5434a2.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5434a2.htm).

Mentzoni, RA, Brunborg, GS, Molde H, Myrseth H, Mar Skouveroe KJ, Hetland J, Pallesen S. Problematic Video Game Use: Estimated Prevalence and Associations with Mental and Physical Health. *Cyberpsychology, Behavior, and Social Networking*. 2011;110306113133023.doi:10.1089/cyber.2010.0260.

Mercola Dr. Exercise Can Be an ADHD Medication published October 17, 2014 [http://fitness.mercola.com/sites/fitness/archive/2014/10/17/exercise-adhd-medication.aspx?e\\_cid=20141017Z1\\_DNL\\_art\\_2&utm\\_source=dnl&utm\\_medium=email&utm\\_content=art2&utm\\_campaign=20141017Z1&et\\_cid=DM59815&et\\_rid=696114441](http://fitness.mercola.com/sites/fitness/archive/2014/10/17/exercise-adhd-medication.aspx?e_cid=20141017Z1_DNL_art_2&utm_source=dnl&utm_medium=email&utm_content=art2&utm_campaign=20141017Z1&et_cid=DM59815&et_rid=696114441)

Merrow, J. *Below C Level: How American Education Encourages Mediocrity and What We Can Do about It*. (2010). Kindle Edition.

Montagu, A. *Touching: the Human Significance of the Skin* 2<sup>nd</sup> Edition. New York: Harper and Row; 1972.

Miller LJ et al. Attention deficit hyperactivity disorder and sensory modulation disorder: A comparison of behavior and physiology. *Research in Developmental Disabilities*, 2012; 33 (3), 804-818

Mlot,S. Infographic: Are you addicted to the Internet? Retrieved from <http://www.pcmag.com/article2/0,2817,2416474,00.asp> on Mar. 11, 2013

Moms Demand Action for Gun Sense in America. Analysis of School Shootings December 15, 2012 to February 10, 2014. <https://s3.amazonaws.com/s3.mayorsagainstilllegalguns.org/images/SchoolShootingsReport.pdf>

Moore, E.A. Metastudy: Violent video games raise aggression CNET on March 2, 2010.

Mossle T, Kleimann M, Rehbein F, Pfeiffer C. Media use and school achievement – boys at risk? *British Journal of Developmental Psychology*. 2010; 28 (3); 699-725.

MSU News (2012) Multiple media use tied to depression anxiety. Retrieved from <http://research.msu.edu/stories/multiple-media-use-tied-depression-anxiety> on December 4, 2012.

Mukaddes NM, Bilge S, Alyanak B, Kora ME. Clinical characteristics and treatment responses in cases diagnosed as Reactive Attachment Disorder. *Child Psychiatry and Human Development*. 2000; 30 (4): 273-287.



6840 Seaview Road, Sechelt, BC V0N 3A4

[www.zonein.ca](http://www.zonein.ca)

Muralidharan, S. & Fenton, M. (2009). Containment strategies for people with serious mental illness (Review). The Cochrane Collaboration, published in *The Cochrane Library*, Issue 4. John Wiley and Sons, Ltd.

Murray J, Liotti M, Ingmundson P, Mayberg H, Pu Y, Zamarripa F, Liu Y, Woldorff M, Gao J, Fox P. Children's brain activations while viewing televised violence revealed by fMRI. *Media Psychology*. 2006; 8 (1): 25-37.

Naish, J. (2013) How gadgets and the internet are turning us into a nation of emotional basket cases. Retrieved from <http://www.dailymail.co.uk/sciencetech/article-2175674/How-gadgets-internet-turning-nation-emotional-basket-cases.html#ixzz2PSK3NAev> on March 11, 2013.

National Association for Sport and Physical Education. NASPE Releases First Ever Physical Activity Guidelines for Infants and Toddlers. February 6, 2002. Available at: <http://www.aahperd.org/naspe/template.cfm?template=toddlers.html>.

National Center for Education Statistics (2010). United States Department of Education: Institute of Education Sciences. Available at: <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2000071>

The National Center on Addiction and Substance Abuse at Columbia University. (2011) National Survey of American Attitudes on Substance Abuse XVI: Teens and Parents.

National Institutes of Health News Release - June 28, 2010. Available at: <http://www.nih.gov/news/health/jun2010/niddk-28.htm>

National Institute of Mental Health. Press Release, December 14, 2009. National Survey Tracks Rates of Common Mental Disorders Among American Youth. Available at: <http://www.nimh.nih.gov/science-news/2009/national-survey-tracks-rates-of-common-mental-disorders-among-american-youth.shtml>

National Post. Monday, Aug. 16, 2010. School board rejects concern Wi-Fi makes kids sick. By Linda Nguyen. Available at: <http://www.nationalpost.com/news/School+board+rejects+concern+makes+kids+sick/3404752/story.html>

Nelson MC, Neumark-Sztainer DR, Hannan PJ, Sirard JR, Story M. Longitudinal and secular trends in physical activity and sedentary behavior during adolescence. *Pediatrics*. 2006; 118 (6): 1627-1634.

Neuroscience News. Researchers identify risk factors for addictive video game use among adults. Retrieved from <http://neurosciencenews.com/neuropsychology-video-game-addiction-risk-factors-431/> on September 23, 2013.

News.com.au. Ohio teenager Daniel Petric killed mother over Halo 3 video game. By staff writers on January 13, 2009. Available at: <http://www.news.com.au/technology/teen-killed-mother-over-video-game/story-e6frfo0-1111118553464>

New York Magazine. Snooze or Loose. By Po Bronson Published Oct 7, 2007. Available at: <http://nymag.com/news/features/38951/>

New York Times. Researchers Fail to Reveal Full Drug Pay. The New York Times June 8, 2008.  
Available at: <http://www.nytimes.com/2008/06/08/us/08conflict.html>.

New York Times. No Einstein in Your Crib? Get a Refund. The New York Times October 23, 2009.  
Available at: [http://www.nytimes.com/2009/10/24/education/24baby.html?\\_r=1](http://www.nytimes.com/2009/10/24/education/24baby.html?_r=1).

Nielsen Quarterly Report [http://it.nielsen.com/site/documents/A2M2\\_3Screens\\_1Q09\\_FINAL.pdf](http://it.nielsen.com/site/documents/A2M2_3Screens_1Q09_FINAL.pdf).

Nunez-Smith M, Wolf E, Mikiko Huang H, Chen P, Lee L, Emanuel EJ, Gross, CP. Media and Child and Adolescent Health: A Systematic Review. Available online at [http://www.common sense media.org/sites/default/files/NunezSmith%20CSM%20media\\_review%20Dec%204.pdf](http://www.common sense media.org/sites/default/files/NunezSmith%20CSM%20media_review%20Dec%204.pdf)

O'Connor, E. (2014) B.C. kids are under-reporting cyberbullying, survey shows. The Province. Retrieved from <http://www2.canada.com/theprovince/news/story.html?id=4a4db819-3c7d-45aa-bcde-3af7c43c39f9> on September 5, 2014.

O'Meara, K.P. Three-fold Increase in Mass Shootings in Step with Increased Psychiatric Drugging. Citizens Commission on Human Rights International. Retrieved from <http://www.cchrint.org/2013/11/19/three-fold-increase-in-mass-shootings-in-step-with-increased-psychiatric-drugging/> on November 19, 2013.

Ogden C. L., Carroll, M. D., Kit, B.K., & Flegal K. M. (2014). Prevalence of childhood and adult obesity in the United States, 2011-2012. *Journal of the American Medical Association*, 311(8), 806-814.

Okita, S.Y. Self-Other's Perspective Taking: The Use of Therapeutic Robot Companions as Social Agents for Reducing Pain and Anxiety in Pediatric Patients. *Cyberpsychology, Behavior, and Social Networking*. June 2013, 16(6): 436-441. doi:10.1089/cyber.2012.0513.

Paavonen EJ, Pennonen M, Roine M. Passive Exposure to TV Linked to Sleep Problems in Children. *Journal of Sleep Research*. 2006; 15: 154-161.

Pagani LS, Fitzpatrick MA, Barnett TA, Dubow E. Prospective Associations Between Early Childhood Television Exposure and Academic, Psychosocial, and Physical Well-being by Middle Childhood. *Archives of Pediatric and Adolescent Medicine*. 2010; 164(5): 425-431.

Pall, M.L. (2013). Electromagnetic fields act via activation of voltage-gated calcium channels to produce beneficial or adverse effects. *Journal of Cellular and Molecular Medicine*. 17(8). 958-965. doi: [10.1111/jcmm.12088](https://doi.org/10.1111/jcmm.12088)

participACTION. Retrieved on March 18, 2014 from <http://www.participaction.com/>.

Parush, S., Sohmer, H., Steinberg, A. and Kaitz, M. Somatosensory function in boys with ADHD and tactile defensiveness. (2007). *Physiology & Behavior* 90; 553-558.



6840 Seaview Road, Sechelt, BC V0N 3A4

[www.zonein.ca](http://www.zonein.ca)

PaticipAction and The Canadian Society for Exercise Physiology (CSEP). Canadian Physical Activity Guidelines (0-4 year age range). Published online 2014.  
[http://www.csep.ca/CMFiles/Guidelines/CSEP\\_PAGuidelines\\_early-years\\_en.pdf](http://www.csep.ca/CMFiles/Guidelines/CSEP_PAGuidelines_early-years_en.pdf)

PaticipAction and The Canadian Society for Exercise Physiology (CSEP). Canadian Sedentary Behaviour Guidelines (0-4 year age range). Published online 2014.  
[http://www.csep.ca/CMFiles/Guidelines/CSEP\\_SBGuidelines\\_early-years\\_en.pdf](http://www.csep.ca/CMFiles/Guidelines/CSEP_SBGuidelines_early-years_en.pdf)

Pathways Awareness (2011) National Survey: Pediatric Therapists Report Sensory Issues Commonly Mistaken for ADHD - Recommended Treatment is Therapy, Not Medication. Retrieved from:  
[http://www.pathways.org/images/press\\_center/Press\\_Release\\_Sensory\\_integration\\_1.27.11.pdf](http://www.pathways.org/images/press_center/Press_Release_Sensory_integration_1.27.11.pdf)

Pelligrini AD, Bohn CM. The role of recess in children's cognitive performance and school adjustment. *Educational Researcher*. 2005; 34(1): 13-19.

Tiffany A. Pempek, Heather L. Kirkorian & Daniel R. Anderson (2014) The Effects of Background Television on the Quantity and Quality of Child-Directed Speech by Parents, *Journal of Children and Media*, 8:3, 211-222, DOI: [10.1080/17482798.2014.920715](https://doi.org/10.1080/17482798.2014.920715)

PENT Forum (2008). Available at: <http://www.pent.ca.gov/beh/rst/restraintresources.pdf>

Peper E. Support Healthy Brain Development: Implications for Attention Deficit/Hyperactivity Disorder published in *Somatics* 2014 <http://www.zoneinworkshops.com/pdf/Somatics%202014-Peper.pdf>

Peskin, M.F., Markham, C.F., Addy, R.C., Shegog, R., Thiel, M., Tortolero, S.R. Prevalence and Patterns of Sexting Among Ethnic Minority Urban High School Students. *Cyberpsychology, Behavior, and Social Networking*. June 2013, 16(6): 454-459. doi:10.1089/cyber.2012.0452.

Petersen MC, Kube DA, Palmer FB. High prevalence of children with developmental disabilities admitted to a general pediatric inpatient unit. *Journal of Developmental and Physical Disabilities*. 2006; 18 (3): 307-318.

Phillips C. Medicine Goes to School: Teachers as Sickness Brokers for ADHD. *Public Library of Science Medicine*. 2006; 3(4): e182. Available at:  
<http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.0030182>.

Philips, A.L. (2001) A Walk in the Woods - Evidence builds that time spent in the natural world benefits human health. *American Scientist*, Volume 99, Number 4 □ Page: 301 □ DOI: [10.1511/2011.91.301](https://doi.org/10.1511/2011.91.301)

Pollet T, Roberts S, Dunbar R. Use of Social Network Sites and Instant Messaging Does Not Lead to Increased Offline Social Network Size, or to Emotionally Closer Relationships with Offline Network Members. *Cyberpsychology, Behavior, and Social Networking*. April 2011, 14(4): 253-258

Primack BA, Swanier B, Georgiopoulos AM, Land SR, Fine MJ. Association Between Media Use in Adolescence and Depression in Young Adulthood. *Archives of General Psychiatry*. 2009; 66(2):181-188.

Przybylski, A.K. (2014) Electronic Gaming and Psychosocial Adjustment. *Pediatrics*; originally published online. DOI: 10.1542/peds.2013-4021

Psychiatric Times. June 26, 2009. By Allen Francis. A Warning Sign On the Road to the DSMV: Beware of its Unintended Consequences. Available from: <http://www.psychiatrictimes.com/dsm-5/content/article/10168/1425378>

Rabin, R.C.(2011) Video Games and the Depressed Teenager. Retrieved from <http://well.blogs.nytimes.com/2011/01/18/video-games-and-the-depressed-teenager/> on January 11, 2014.

Radesky JS, Kistin CJ, Zukerman B, Nitzberg K, Gross J, Kaplan-Sandoff M, Augustyn M, Silverstein M. Patterns of Mobile Device Use by Caregivers and Children During Meals in Fast Food Restaurants. *Pediatrics*. Published online March 10, 2014 doi: 10.1542/peds.2013-3703. <http://pediatrics.aappublications.org/content/early/2014/03/05/peds.2013-3703.abstract>

Raine ADHD Study: Government of Western Australia - Department of Health. Long-term outcomes associated with stimulant medication in the treatment of ADHD in children. [http://www.health.wa.gov.au/publications/documents/MICADHD\\_Raine\\_ADHD\\_Study\\_report\\_02\\_2010.pdf](http://www.health.wa.gov.au/publications/documents/MICADHD_Raine_ADHD_Study_report_02_2010.pdf).

Ram, E. (2015). Hillcrest Highschool Staff Survey. The Highlander. Retrieved from: <http://www.hillcresthighlighter.com/editorial-lifted-the-ban-on-cell-phones.html>

Rappoport MD, Bolden J, Kofler MJ, Sarver DE, Raiker JS, Alderson RM. Hyperactivity in Boys with Attention-Deficit/Hyperactivity Disorder (ADHD): A Ubiquitous Core Symptom or Manifestation of Working Memory Deficits? *Journal of Abnormal Child Psychology*. 2008; DOI 10.1007/s10802-008-9287-8.

Ratey JJ, Hagerman E (2008). *Spark: The Revolutionary New Science of Exercise and the Brain*. Little, Brown and Company, New York.

Rehbein, F., Kleimann, M. & Mobie, T. (2010). Prevalence and Risk Factors of Video Game Dependency in Adolescence: Results of a German Nationwide Study. *Cyberpsychology, Behavior and Social Networking*. 13(3): 269-277. DOI: 10.1089/cyber.2009.0227

Reilly JJ, Jackson DM, Montgomery C, Kelly LA, Slater C, Grant S, Paton JY. Total Energy Expenditure and Physical Activity in Young Scottish Children: Mixed Longitudinal Study. 2004; 363:211-212.

Reinblatt SP, Riddle MA. (2006) Selective serotonin reuptake inhibitor-induced apathy: a pediatric case series. *Journal of Child Adolescent Psychopharmacology* 16(1-2):227-33.

Rideout VJ, Vandewater EA, Wartella EA. Zero to six: electronic media in the lives of infants, toddlers and preschoolers. Menlo Park (CA): Kaiser Family Foundation; Fall 2003.

Rine RM, Braswell J, Fisher D, Joyce K, Kalar K, Shaffer M. Improvement of motor development and postural control following intervention in children with sensorineural hearing loss and vestibular impairment. *International Journal of Pediatric Otorhinolaryngology*. 2004; 68, 1141-1148.



6840 Seaview Road, Sechelt, BC V0N 3A4

[www.zonein.ca](http://www.zonein.ca)

- Roberts DF, Foehr UG, Rideout VJ, Brodie M. Kids and media @ the millennium: A comprehensive national analysis of children's media use. Menlo Park (CA): Kaiser Family Foundation; 1999.
- Robinson JP, Martin S. What Do Happy People Do? *Journal of Social Indicators Research*. 2008; 89:565-571.
- Robinson T. Reducing children's television viewing to prevent obesity. *JAMA*. 1999; 282 (16): 1561-1567.
- Rodgers, R.F., Melioli, F., Laconi, S., Bui, E., Chabrol, H. Internet Addiction Symptoms, Disordered Eating, and Body Image Avoidance. *Cyberpsychology, Behavior, and Social Networking*. January 2013, 16(1): 56-60. doi:10.1089/cyber.2012.1570.
- Rosack J. Prescription data on youth raise important questions. *American Psychiatric Foundation – Clinical and Research News*. 2003; 38 (3): 1-3.
- Rosenberg, S. (2013). Cell phones and children: follow the precautionary road. *Pediatric Nursing*. 39(2). 65-70.
- Ross, C. A. Biology and Genetics in *DSM-5*. *Ethical Human Psychology and Psychiatry*, Volume 15, Number 3, 2013 , pp. 195-198(4)
- Rowan, C. (2014) Ten reasons to NOT use technology in schools for children under the age of 12 years. Moving to learn. Retrieved from <http://movingtolearn.ca/2014/ten-reasons-to-not-use-technology-in-schools-for-children-under-the-age-of-12-years> on September 5 2014.
- Rowan, C. (2010). Unplug – Don't Drug: A Critical Look at the Influence of Technology on Child Behavior With an Alternative Way of responding Other Than Evaluation and Drugging. *Ethical Human Psychology and Psychiatry*. 12 (1): 60-67.
- Ruff, ME. Attention Deficit Disorder and stimulant use: An epidemic of modernity. *Clinical Pediatrics* 2005; 44 (7): 557-563.
- Russell, C. (2013). *Shallow Minds: How the Internet and WiFi in Schools Can Effect Learning*. Santa Clara County Medical Association. Retrieved from: <http://www.sccma-mcms.org/Portals/19/assets/docs/Wi-Fi%20in%20Schools%20rev.pdf>
- Saleem, M., Anderson, C.A., Gentile, D.A. Effects of Prosocial, Neutral, and Violent Video Games on College Students' Affect. *Aggressive Behaviour*, 2012. doi: 10.1002/ab.21427.
- Sana, F., Weston, T., Cepeda, N.J. Laptop multitasking hinders classroom learning for both users and nearby peers. *Computers and Education*, Volume 62, March 2013; 24-31.
- Sax, L, Kauta K. Who First Suggests the Diagnosis of Attention-Deficit/Hyperactivity Disorder? *Annals of Family Medicine*. 2003; 1(3):171-174. Available at: <http://www.annfammed.org/cgi/reprint/1/3/171>.
- Schaaf RD, McKeon Nightlinger K. Occupational therapy using a sensory integrative approach: A case study of effectiveness. *American Journal of Occupational Therapy*. 2007; 61 (2): 239-246.

Schwarz, A. The Selling of Attention Deficit Disorder. The New York Times. Retrieved from [http://www.nytimes.com/2013/12/15/health/the-selling-of-attention-deficit-disorder.html?\\_r=1&](http://www.nytimes.com/2013/12/15/health/the-selling-of-attention-deficit-disorder.html?_r=1&) on December 15, 2013.

Sellers, T.S. Today's Porn – What all adults, teens and parents need to understand about high speed internet porn. Retrieved from <http://blog.tinaschermersellers.com/2013/10/06/todays-porn-what-all-adults-teens-and-parents-need-to-understand-about-high-speed-internet-porn/> on October 6, 2013.

Shanahan, T. (2007). Early literacy development: Sequence of acquisition. *Encyclopedia of Language and Literacy Development* (pp. 1-6). London, ON: Canadian Language and Literacy Research Network. Retrieved [insert date] from <http://www.literacyencyclopedia.ca/pdfs/topic.php?topId=225>.

Shao-I C, Jie-Zhi L, Der-Hsiang H. Video Game Addiction in Children and Teenagers in Taiwan. *CyberPsychology and Behavior*. 2004; 7(5):571-581.

Sherwin, J.C., Reacher, M.H., Keogh, R.H., Khawaja, A.P., Machev, D. A., & Foster, P.J. (2012). The association between time spent outdoors and myopia in children adolescents. *Ophthalmology*. 119 (10), 2141-2151. <http://dx.doi.org/10.1016/j.ophtha.2012.04.020>

Shin S-E, Kim, N-S, Jang E-Y. Comparison of Problematic Internet and Alcohol Use and Attachment Styles Among Industrial Workers in Korea. *Cyberpsychology, Behavior, and Social Networking* on May 19, 2011. doi:10.1089/cyber.2010.0470. Available at: <http://www.liebertonline.com/doi/abs/10.1089/cyber.2010.0470>.

Siddique, A. Children with Autism more prone to video game addiction. Retrieved from <http://www.medicaldaily.com/children-autism-more-prone-video-game-addiction-245087> on April 17, 2013.

Sigman A. (2012). The impact of screen media on children: a Eurovision for parliament. In: Clouder C, et al., eds. *Improving the quality of childhood in Europe 2012*. Vol 3. European Parliament Working Group on the Quality of Childhood in the European Union, 88–121.

Singh R, Bhalla A, Lehl SS, Sachdev A. Video game epilepsy. *Neurology India*. 2001; 49 (4): 411-412.

Singh A, Uijtdewilligen L, Twisk JR, van Mechelen W, Chinapaw MM. Physical Activity and Performance at School: A Systematic Review of the Literature Including a Methodological Quality Assessment. *Arch Pediatr Adolesc Med*. 2012;166(1):49-55. doi:10.1001/archpediatrics.2011.716

Singh, M, (2014) Less Sleep, More Time Online Raise Risk for Teen Depression. Retrieved from <http://www.npr.org/blogs/health/2014/02/06/272441146/less-sleep-more-time-online-amp-up-teen-depression-risk> on February 6, 2014.

Siomos K, Floros G, Fisoun V, Evaggelia D, Farkonas N, Sergentani E, Lamprou M, Geroukalis D. (2012) *Evolution of Internet addiction in Greek adolescent students over a two-year period: the impact of parental bonding*. *European Child & Adolescent Psychiatry* 21 (4) pg 211-219.

Sloat E, Willms JD. The International Adult Literacy Survey: Implications for Canadian Social Policy. *Canadian Journal of Education*. 2000; 25(3):218-233. Available at: <http://www.csse.ca/CJE/Articles/FullText/CJE25-3/CJE25-3-sloat.pdf>.

Small G and Vorgan G. *iBrain – Surviving the technological alteration of the modern mind*. New York, NY: Harper Collins Publishers. 2008.

Solan H, Shelley-Tremblay J, Larson S. Vestibular Function, Sensory Integration, And Balance Anomalies: A Brief Literature Review. *Journal of Optometry and Vision Development*. 2007; 38(1); 1-5.

Statistics Canada. 2010. Fitness of Canadian Children and Youth: Results from the 2007-2009 Canadian Health Measures Survey. Retrieved on April 30, 2010 from <http://www.statcan.gc.ca/pub/82-003-x/2010001/article/11065/key-cle-eng.htm>.

Steffgen G, Konig MS, Pfetsch J, Melzer A. Are Cyberbullies Less Empathic? Adolescents' Cyberbullying Behavior and Empathic Responsiveness. *Cyberpsychology, Behavior and Social Networking* on May 9, 2011. Available at: <http://www.liebertonline.com/doi/abs/10.1089/cyber.2010.0445>

Strauss RS, Pollack HA. Epidemic increase in childhood overweight, 1986-1998. *JAMA*. 2001; 286 (22) 2845-2848.

Sudan, M., Kheifets, L., Arah, O., Olsen, J., & Zeltzer, L. (2012). Prenatal and postnatal cell phone exposures and headaches in children. *The Open Pediatric Medicine Journal*. 6, 46-52.

Swanson, J. M., Elliot, G. R., Greenhill, L. L., Wigal, T., Arnold, L. E. & Vitiello, M., Hechtman, L., Epstein, J. N., Pelham, W. E., Abikoff, . B., Newcorn, J., H., Molina, B. S. G., Hinshaw, S., G., Swing, E. L., Gentile, D. A., Anderson, C. A. & Walsh, D. A. (2010). Television and Video Game Exposure and the Development of Attention Problems. *Pediatrics*. 126: 214-221. doi: 10.1542/peds.2009-1508

Swing, E.L., Gentile, D.A., Anderson, C.A., Walsh, D.A. (2010) Television and Video Game Exposure and the Development of Attention Problems. *Pediatrics Online 2010; 126, 214*.

Tandon, P.S., Zhou, C., Lozano, P., Christakis, D.A. (2011) Pre-schoolers total daily screen time at home and by type of childcare. *The Journal of Pediatrics* - February 2011 (Vol. 158, Issue 2, Pages 297-300, DOI: 10.1016/j.jpeds.2010.08.005)

Tannock MT. Rough and tumble play: an investigation of the perceptions of educators and young children. *Journal of Early Childhood Education*. 2008; 35: 357-361.

Telegraph, UK. March 5, 2010. Korean couple let baby starve to death while caring for virtual child. Available at: <http://www.telegraph.co.uk/news/worldnews/asia/southkorea/7376178/Korean-couple-let-baby-starve-to-death-while-caring-for-virtual-child.html>

Thakkar, V. Diagnosing the wrong Deficit. Retrieved from <http://www.nytimes.com/2013/04/28/opinion/sunday/diagnosing-the-wrong-deficit.html?pagewanted=1&ref=general&src=me> On April 28, 2013.

The well-being of Canada's young children [report on the internet]. Government of Canada; 2003. Cat. No.: RH64-20/2003, ISBN: 0-662-67443-X. Available from: <http://www.socialunion.gc.ca/ecd/2003/RH64-20-2003E.pdf>.

The Telegraph. February 12, 2014. Six-year-old children acting out sex and drug scenes from Grand Theft Auto, says headteacher. <http://www.telegraph.co.uk/technology/video-games/10632958/Six-year-old-children-acting-out-sex-and-drug-scenes-from-Grand-Theft-Auto-says-headteacher.html>

Think Progress. There has been an average of one school shooting every other day so far this year. January 23, 2014. <http://thinkprogress.org/justice/2014/01/23/3192911/normal-school-shootings/>

Thomas CP, Conrad P, Casler R, Goodman E. Trends in the use of psychotropic medications among adolescents, 1994 to 2001. *Psychiatric Services*. 2006; 57 (1): 63-69.

Thompson, P. (2004) Imaging study shows brain maturing. National Institute of Mental health. Retrieved from <http://www.nimh.nih.gov/news/science-news/2004/imaging-study-shows-brain-maturing.shtml> on March 11, 2014.

Tomblin, B. Literacy as an Outcome of Language Development and its Impact on Children's Psychosocial and Emotional Development. Canadian Language and Literacy Research Network. 2006. Available at: <http://www.literacyencyclopedia.ca>.

Tomchek, S. D. & Dunn, W. Sensory Processing in Children With and Without Autism: A Comparative Study Using the Short Sensory Profile. *American Journal of Occupational Therapy*, 61 (2), 190-200.

Tremblay MS, Katzmarzyk PT, Willms JD. Temporal trends in overweight and obesity in Canada, 1981-1996. *International Journal of Obesity*. 2002; 26(4): 538-543.

Tremblay MS, Willms JD. Is the Canadian childhood obesity epidemic related to physical inactivity? *International Journal of Obesity*. 2005; 27: 1100-1105.

Tremblay, M.S., LeBlanc, A.G., Kho, M.E., Saunders, T.J., Larouche, R., Colley, R.C., Goldfield, G., Gorber, S.C. (2011) Systematic review of sedentary behaviour and health indicators in school-aged children and youth. *International Journal of Behavioral Nutrition and Physical Activity* 2011, 8:98 doi:10.1186/1479-5868-8-98

University of Bristol, School for Policy Studies News October 11, 2010. Screen time linked to psychological problems in children. Available at: <http://www.bristol.ac.uk/sps/news/2010/107.html>

Turcotte, Martin. Time spent with family during a typical workday 1986 to 2005. Statistics Canada. Catalogue No. 11-008. Available from: <http://www.statcan.ca/english/freepub/11-008-XIE/2006007/pdf/11-008-XIE20060079574.pdf>

Uhls Y.A., Michikyan M., Morris J., Garcia D., Small G.W, Zgourou E., Greenfield P.M. (2014) Five days at outdoor education camp without screens improves preteen skills with nonverbal emotion cues. *Computers in Human Behaviour*, Volume 39, October 2014, Pages 387–392



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[www.zonein.ca](http://www.zonein.ca)

University of North Carolina at Chapel Hill. (2013, July 29). Human cells respond in healthy, unhealthy ways to different kinds of happiness. *ScienceDaily*. Retrieved September 22, 2014 from [www.sciencedaily.com/releases/2013/07/130729161952.htm](http://www.sciencedaily.com/releases/2013/07/130729161952.htm)

US Consumer Product Safety Commission. Handbook for Public Playground Safety. Washington, DC. <http://www.cpsc.gov/cpscpub/pubs/325.pdf>.

US Consumer Product Safety Commission. Public Playground Safety Checklist. Washington, DC. <http://www.cpsc.gov/cpscpub/pubs/327.html>.

Vancouver Sun by Kim Pemberton March 29, 2010. Violence against school staff is on the rise: Injuries mount as teachers, principals and support workers become targets for assault by students. Retrieved on August 10, 2010 from <http://www.vancouversun.com/news/Violence+against+school+staff+rise/2733827/story.html>

Vancouver Sun by Amy Smart on November 22, 2013. Dozens of B.C. kids with special needs restrained or secluded at school: parents. Retrieved on February 26, 2014 from <http://www.vancouversun.com/mobile/news/vancouver/Dozens+kids+with+special+needs+restrained+secluded+school/9202263/story.html>

Van den Heuvel A., Van Den Eijnden R., van Rooij, A.J., van de Mheen D. (2012). *Meeting online contacts in real life among adolescents: The predictive role of psychosocial wellbeing and internet-specific parenting*. Computers in Human Behavior 28 (2) pg 465-472.

Vandewater E. A., Bickham, D. S., Lee, J. H., Cummings, H. M., Wartella, E. A. & Rideout, V. J. (2005). When the television is always on: Heavy television exposure and young children's development. *American Behavioral Scientist*, 48, 562-577.

Vandewater, E. A., Lee, J. H., & Shim, M. (2005). Family conflict and violent electronic media use among school-aged children. *Media Psychology*, 7, 73-86.

Viner, R. M., Roche, E., Maguire, S. A. & Nicholls, D. E. (2010). Childhood protection and obesity: framework for practice. *British Medical Journal*. 341:c3074; doi:10.1136/bmj.c3074

Vitiello, B. & Towbin, K. (2009). Stimulant Treatment of ADHD and Risk of Sudden Death in Children. *Journal of American Psychiatry*. 166; 955-957. doi: 10.1176/appi.ajp.2009.09050619

Volkow, N.D., Tomasi, D., Wang, G., Vaska, P., Fowler, J. S., Telang, F.,...Wong, C. (2011). Effects of Cell Phone Radiofrequency Signal Exposure on Brain Glucose Metabolism. *Journal of the Medical Association*. 305 (8). doi:10.1001/jama.2011.186.

Waddell C, Hua JM, Garland O, DeV. Peters R, McEwan K. Preventing Mental Disorders in Children: A Systematic Review to Inform Policy-Making. *Canadian Journal of Public Health*. 2007; 98(3): 166-173.

Waddell C. Improving the Mental Health of Young Children. Children's Health Policy Centre, Simon Fraser University, Vancouver BC, Canada. 2007. Available at: <http://www.firstcallbc.org/pdfs/Communities/4-alliance.pdf>.

Waldman, M. (December 2006). Does Television Cause Autism? Cornell University. Retrieved on April 30, 2010 from <http://www.johnson.cornell.edu/faculty/profiles/waldman/autism-waldman-nicholson-adilov.pdf>.

Wane, S.S. Studies Examine Autism's Link to Antidepressants, Other Factors. The Wall Street Journal, July 5, 2011. Retrieved from : <http://online.wsj.com/article/SB10001424052702304450604576419761141034324.html>

Ward S. *Baby Talk*. Arrow Books Ltd, Random House Publishers Group; London, UK. 2004.

Ward, V. Toddlers becoming so addicted to iPads they require therapy. Retrieved from <http://www.telegraph.co.uk/technology/10008707/Toddlers-becoming-so-addicted-to-iPads-they-require-therapy.html> on April 21, 2013.

Washington Post by Anthony Faiola May 27, 2006. When Escape Seems Just a Mouse Click Away. Available at: <http://www.washingtonpost.com/wpdyn/content/article/2006/05/26/AR2006052601960.html>

Weisskirch RS. No Crossed Wires: Cell Phone Communication in Parent-Adolescent Relationships. *Cyberpsychology, Behavior and Social Networking* on June 27, 2011 Available at: <http://www.liebertpub.com/contentframe.aspx?code=PTwO51UJtdLXj4PbCAAd%2b9O61QLd6H8GZ41xAX4QUr60XXFuL5J4PBhXzkH8HkRY27oEZ3lftKxPpFPzhlIWKeUmYqZytBcNc9vU%2b8cVSO9c%3d>

Welch MG, Northrup RS, Welch-Horan TB, Ludwig RJ, Austin CL, Jacobson JS. Outcomes of prolonged parent-child embrace therapy among 102 children with behavior disorders. *Complementary Therapies in Clinical Practice*. 2006; 12(1): 3-12.

Wells, K., C., Hoza, B., Jensen, P. S., Gibbons, R. D., Hur, K., Stehli, A., Davies, M., Marsh, J. S., Connors, C., K., Caron, M. & Volkow, N. D. (2007). Effects of Stimulant Medication on Growth Rates Across 3 Years in the MTA Follow-up. *Child and Adolescent Psychiatry*. 46(8);1015-1027. doi:10.1097/chi.0b013e3130686d7e

Weng, C.B., Qian, R.B., Fu, X.M., Lin, B., Han, X.P., Niu, C.S., Wang, Y.H. Gray Matter and white matter abnormalities in online game addiction. *Eur J Radiol*. 2013 Aug;82(8):1308-12. doi: 10.1016/j.ejrad.2013.01.031. Epub 2013 Mar 6.

Whitaker, R. (2011) Anatomy of an Epidemic Down Under: Psychiatric disability numbers rise in Australia and New Zealand. Retrieved from <http://www.psychologytoday.com/blog/mad-in-america/201109/anatomy-epidemic-down-under> on September 15, 2014.

Willard NE. The Authority and Responsibility of School Officials in Responding to Cyberbullying. *Journal of Adolescent Health*. 2007; 41:S64-65.

Willms JD. *Vulnerable Children*. University of Alberta Press; Edmonton. 2002.

Willoughby, T., Adachi, P.J., Good, M. A longitudinal study of the association between violent video game play and aggression among adolescents. *Developmental Psychology*, 2012 Jul;48(4):1044-57



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[www.zonein.ca](http://www.zonein.ca)

Winterstein AG, Gerhard T, Shuster J, Saidi A. Cardiac Safety of Methylphenidate Versus Amphetamine Salts in the Treatment of ADHD. *Pediatrics*. 2009; 124 (1): e75-e80.

WND Education. Psych Meds Linked to 90% of School Shootings. Dec. 18, 2012, by Jerome Corsi. <http://www.wnd.com/2012/12/psych-meds-linked-to-90-of-school-shootings/>

Woda, T. (2014). Is my child watching pornography online? Retrieved from: <http://resources.uknowkids.com/blog/is-my-child-watching-pornography-online>

Wolak J, Mitchell K, Finkelhor D (2007). Unwanted and Wanted Exposure to Online Pornography in a National Sample of Youth Internet Users *Pediatrics* 2007;119;247

World Health Organization - International Agency for Research on Cancer, Press Release No. 208, May 31, 2011. [http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208\\_E.pdf](http://www.iarc.fr/en/media-centre/pr/2011/pdfs/pr208_E.pdf)

World Health Organization. (2014). Global Strategy on Diet, Physical Activity and Health. Facts and Figures on Childhood Obesity. Retrieved from: <http://www.who.int/dietphysicalactivity/childhood/en/>

Worthen, B. (2012) The Perils of Texting While Parenting. *The Wall Street Journal*.

Worthen MR. Education Policy Implications from the Expert Panel on Electronic Media and Youth Violence. *Journal of Adolescent Health*. 2007; 41:S61-63.

Xiuquin, H., Huimin, Z., Mengchen, L., Jinan, W., Ying, Z. and Ran, T. (2010). Mental Health, Personality, and Parental Rearing Styles of Adolescents with Internet Addiction Disorder. *Cyberpsychology, Behavior, and Social Networking*. DOI: 10.1089/cyber.2009.0222

Yang, S. (2013). New eye clinic to target youth amid epidemic of nearsightedness. UC Berkeley News Center. Retrieved from: <http://newscenter.berkeley.edu/2013/08/28/myopia-control-clinic/>

Ybarra ML, Diener-West M, Leaf PJ. Examining the Overlap in Internet Harassment and School Bullying: Implications for School Intervention. *Journal of Adolescent Health*. 2007; 41:S42-S50.

Ybarra, M.L., Mitchell, K.J. (2005) Exposure to Internet Pornography among Children and Adolescents: A National Survey. *CyberPsychology and Behavior* 2005; Vol 8, No 5, 473-482.

Yen JY, Yen, CF, Chen CS, Tang TC, Ko CH. The Association between Adult ADHD Symptoms and Internet Addiction among College Students: The Gender Difference. *CyberPsychology & Behavior*. 2008: doi:10.1089/cpb.2008.0113.

Young, K.S. Treatment outcomes using CBT-IA with Internet-addicted patients. *Journal of behavioral Addictions* 2(4),pp.209-215 (2013). DOI:10.1556/JBA.2.2013.4.3.

Young, K. Reflections from the International Congress on Internet Addiction Disorders – Cultural and Clinical Perspectives. Retrieved from <http://netaddiction.com/internet-addiction-disorder/> on September 15, 2014.

Yuan, Kai, Ping Cheng, Tao Dong, Yanzhi Bi, Lihong Xing, Dahua Yu, Limei Zhao, et al. "Cortical



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[www.zonein.ca](http://www.zonein.ca)

Thickness Abnormalities in Late Adolescence with Online Gaming Addiction." Edited by Bogdan Draganski. *PLoS ONE* 8, no. 1 (January 9, 2013): e53055. doi:10.1371/journal.pone.0053055.

Yuan, Kai, Chenwang Jin, Ping Cheng, Xuejuan Yang, Tao Dong, Yanzhi Bi, Lihong Xing, et al. "Amplitude of Low Frequency Fluctuation Abnormalities in Adolescents with Online Gaming Addiction." Edited by Krish Sathian. *PLoS ONE* 8, no. 11 (November 4, 2013): e78708. doi:10.1371/journal.pone.0078708.

Yuan, Kai, Wei Qin, Guihong Wang, Fang Zeng, Liyan Zhao, Xuejuan Yang, Peng Liu, et al. "Microstructure Abnormalities in Adolescents with Internet Addiction Disorder." Edited by Shaolin Yang. *PLoS ONE* 6, no. 6 (June 3, 2011): e20708. doi:10.1371/journal.pone.0020708.

Zhou, Yan, Fu-Chun Lin, Ya-Song Du, Ling-di Qin, Zhi-Min Zhao, Jian-Rong Xu, and Hao Lei. "Gray Matter Abnormalities in Internet Addiction: A Voxel-Based Morphometry Study." *European Journal of Radiology* 79, no. 1 (July 2011): 92–95. doi:10.1016/j.ejrad.2009.10.025.

Zimmerman FJ, Christakis DA, Meltzoff AN. Television and DVD/video viewing in children younger than 2 years. *Archives of Pediatric Adolescent Medicine*. 2007; 161 (5): 473-479.

Zito JM, Safer DJ, dosReis S, Gardner JF, Boles M, Lynch F. Trends in the prescribing of psychotropic medications to preschoolers. *JAMA*. 2000; 283: 1025-1030.

Zito JM, Safer DJ, dosReis S, Gardner JF, Soeken K, Boles M, Lynch F. Rising prevalence of antidepressants among US youth. *Pediatrics*. 2002; 109 (5): 721-727.

Zito JM, Safer DJ, dosReis S, Gardner JF, Magder L, Soeken K, Lynch F, Riddle M. Psychotropic practice patterns for youth. *Archives of Pediatric and Adolescent Medicine*. 2003; 157(1): 17-25.

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