

# November, 2016 Updates

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AD/HD



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# AD/HD in the U.S. Military

**A recent study of U.S. Military members found that 7 to 9 percent of active duty service members of all ages have AD/HD. This was not expected in the older age groups to be such a high number.**

**Kok, B.C. et al. (October 16, 2016). Adult ADHD Symptomatology in Active Duty Army Personnel Results From the Army Study to Assess Risk and Resilience in Servicemembers. Journal of Attention Disorders. DOI: 10.1177/1087054716673451.**

# Adult AD/HD, Cognitive Behavioral Therapy, and Medication

**A group of Canadian and American scientists found that cognitive behavioral therapy (CBT) and medication controlled AD/HD symptoms in adults better than CBT alone. This included AD/HD symptoms, organizational abilities and self-esteem. However, over time the improvement over CBT alone was not as great.**

**Cherkasova, M.V. et al. (October 6, 2016). Efficacy of Cognitive Behavioral Therapy With and Without Medication for Adults With ADHD: A Randomized Clinical Trial. Journal of Attention Disorders. DOI: 10.1177/1087054716671197.**

# AD/HD and Medication

**“A plethora of studies attest to the effectiveness of stimulants in improving AD/HD symptomatology...as well as the safety of these medications when taken as prescribed...As with all medications, side effects exist, however, and may include sleep difficulties, reduced appetite, nausea, abdominal pain, headache, and cardiac symptoms” (p. 1).**

**Gyda, B. et al. (September, 2016). Prescription Stimulant Misuse: International Findings and Implications for Policy, Prevention, and Intervention. The ADHD Report, 24(6), 1-6.**

# Facts About Stimulant Misuse

- **Males are more likely to misuse stimulant medication prescriptions than females.**
- **Especially anglo males who are in fraternities, with higher restlessness than the norm, more psychological symptoms, and lower GPAs.**
- **Stimulants are abused for neurocognitive and grade enhancement as well as for recreation.**
- **The US has the highest stimulant misuse rate in college than any other country.**
- **Island has the highest rate of methylphenidate prescriptions per capita in the world.**

Gyda, B. et al. (September, 2016). Prescription Stimulant Misuse: International Findings and Implications for Policy, Prevention, and Intervention. The ADHD Report, 24(6), 1-6.

# Late Onset Adult AD/HD?

**Barkley believes the only kind of “adult onset AD/HD” is caused by brain injury during adulthood.**

**Barkley, R.A. (September, 2016). Is there an Adult Onset Type of AD/HD? Issues in Establishing Persistence and Remission of ADHD from Childhood to Adulthood. The ADHD Report, 24(6), 6-7, 13-14.**

# Autism Spectrum Disorder



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# Autism and Ultrasound

**Researchers from the University of Washington found that boys with autism spectrum disorder (ASD) who were exposed to three ultrasounds during their first trimester of gestation had significantly lower non-verbal IQ and more repetitive behaviors than boys with ASD who were not exposed to ultrasounds. The scientists believed this may demonstrate that ultra sound may exacerbate the symptoms of ASD in the children who are exposed to them. It may also cause multiple gene alterations.**

**Webb, S.J. et al. (September 1, 2016). Severity of ASD symptoms and their correlation with the presence of copy number variations and exposure to first trimester ultrasound. Autism Research. DOI: 10.1002/aur.1690.**

# Autism Instrument Gender Biased Norms

**Researchers from France and Sweden have found a possible gender bias towards diagnosing males with autism spectrum disorder in the Autism Diagnostic Interview -Revised. This they believe speaks to the need for the instrument to be renormed with male and female norms.**

**Beggiato, A. et al. (November 3, 2016). Gender differences in autism spectrum disorders: Divergence among specific core symptoms. Autism Research. DOI: 10.1002/aur.1715.**

# Autism Instrument Gender Biased Norms

**Another recent study of the Autism Spectrum Quotient Short Form found it did not have gender biased norms and could equally find females and males with the disorder.**

**Grove, R.A. et al. (November 2, 2016). Exploring sex differences in autistic traits: A factor analytic study of adults with autism. Autism. DOI: 10.1177/1362361316667283.**

# Autism and Oculomotor Control

**French scientists found that adults with autism have a problem with abnormal oculomotor control due to cerebellar anomalies and this points to some of their sensory motor issues.**

**Tiziana, Z. et al. (November 14, 2016). Saccadic eye movements in adults with high-functioning autism spectrum disorder. Autism. 10.1177/1362361316667057.**

# Autism Gender Difference in Mentalizing

**Australian researchers learned through fMRI imaging that males with autism mentalize with a hyperactivity in the bilateraltemporal-parietal junction and females have a hyperactivity in their medial prefrontal cortex, precuneus and right temporal-parietal junction.**

**Yang, J. et al. (November 8, 2016). Different aberrant mentalizing networks in males and females with autism spectrum disorders: Evidence from resting-state functional magnetic resonance imaging. Autism. DOI: 10.1177/1362361316667056.**

# Alexithymia and Autism

**British researchers interested in the overlap of alexithymia and autism spectrum disorder found through skin concordance and self-report data of those with autism and those with alexithymia that both groups have a physiological disruption in the subjective experience of emotions. They suggested that mindfulness therapies may be able to help both groups learn to control anxiety and to tell the difference between a body sensation and emotion.**

**Gaigg, S.B. et al. (November 2, 2016). The psychophysiological mechanisms of alexithymia in autism spectrum disorder. Autism. DOI: 10.1177/1362361316667062.**

# Video Facial expression Training & Autism

**Israeli scientists used a Hebrew language translation of Simon Baron Cohen's The Transporters facial expression training video with a group of high functioning ASD children and found it help them significantly with their emotional facial expression recognition. They did find there was a negative correlation of amount of improvement and amount of impairment, however. They also found that a non-English language translation of the video can work also.**

**Gev, T. et al. (November 3, 2016). Unique effects of *The transporters* animated series and of parental support on emotion recognition skills of children with ASD: Results of a randomized controlled trial. Autism Research. DOI: 10.1002/aur.1717.**

# High School, Autism and Social Structure

**American researchers found ASD adolescents who had more structured social activities in high school were able to transition easier to the more unstructured social environment after high school. They also found those who had more internalizing problems in high school need more structured social interaction to be able to make the transition to adult life.**

**Taylor, J.L. et al. (October 14, 2016). Social participation and its relation to internalizing symptoms among youth with autism spectrum disorder as they transition from high school. Autism Research. DOI: 10.1002/aur.1709.**



# GABA and Tactile Defensiveness

**Researchers recently found that children with autism have reduced GABA which causes them difficulty in behavioral inhibition and tactile information processing (i.e., tactile defensiveness).**

**Puts, N. et al. (September 9, 2016). Reduced GABA and Altered Somatosensory Function in Children with Autism Spectrum Disorder. Autism Research. DOI: DOI: 10.1002/aur.1691.**

# Miscellaneous Update



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# Agoraphobia and Prey Animals

**German researchers discovered the symptoms of agoraphobia in humans with high anxiety sensitivity have enhanced “thigmotaxis”, or the behavior prey animals display to protect themselves from predators when approaching a forest clearing. In most animals this is an evolutionary advantage and it serves to protect them.**

**Waltz, N. et al. (September 1, 2016). A Human Open Field Test Reveals Thigmotaxis Related to Agoraphobic Fear. Biological Psychiatry. DOI: 10.1016/j.biopsych.2015.**

# Microsleep

**All multicelled animals need sleep. When you are asleep your entire brain is not asleep. Similarly, when you are awake your entire brain is not awake. Individual cells and/or networks of cells can be asleep when you are awake and vice versa. Researchers from New Zealand found when people were given a 50 minute boring visual tracking task they would experience microsleeps that lasted ½ to 15 seconds during which they would close their eyes and not be responsive. They also would not remember these periods later. These microsleeps occurred only parts of the brain. Aproximately, 70% of participants experienced these.**

Koch, C. (November/December, 2016). Sleeping While Awake. Scientific American Mind, 27(6), 20-23.

Govinda, R.P. et al. (September 24, 2012). Losing the struggle to stay awake: Divergent thalamic and cortical activity during microsleeps. Human Brain Mapping. DOI: 10.1002/hbm.22178.

# Sleep Deprivation to Treat Depression

**Scientists recently reviewed research literature investigating the use of sleep deprivation, changing sleep cycle and light therapy to treat major depressive disorder. They found these methods may be a viable alternative for those who do not respond to more traditional therapies.**

**Dallaspezia, S. et al. (October 19, 2015). Chronobiological Therapy for Mood Disorders. Current Psychiatry Reports. DOI: 10.1007/s11920-015-0633-6.**

# Sleep, Memory Consolidation and The Autonomic Nervous System

**Italian scientists discovered that heart rate increases and rapid eye movements controlled by the autonomic nervous system during sleep account for 73% improvement in associative learning over those who do not sleep.**

**Whitehurst, L.N. et al. (June 13, 2016). Autonomic activity during sleep predicts memory consolidation in humans. Proceedings of the National Academy of Sciences of the United States of America. DOI: [10.1073/pnas.1518202113](https://doi.org/10.1073/pnas.1518202113).**

# Places to Find Apps for Those with Mental Health Concerns

- **Northwestern University Center for Behavioral Intervention Technologies:**  
<http://cbits.northwestern.edu/>
- **National Center for Telehealth and Technology:**  
<http://t2health.dcoe.mil/>
- **iMedicalApps:**  
<http://www.imedicalapps.com/#>
- **Autism Speaks:**  
<https://www.autismspeaks.org/autism-apps>
- **AD/HD Apps:**  
<http://www.additudemag.com/adhd/article/11135.html>
- **Anxiety and Depression Association of America Mobile App Clearinghouse:**  
<https://www.adaa.org/finding-help/mobile-apps>
- **Substance Abuse and Mental Health Services Administration (SAMHSA):**  
<http://www.samhsa.gov/>
- **Add Warehouse:**  
[http://addwarehouse.com/shop-bin/sc/productsearch.cgi?storeid=\\*10dac218af07d6402e86](http://addwarehouse.com/shop-bin/sc/productsearch.cgi?storeid=*10dac218af07d6402e86)

# Bipolar Disorder and Uric Acid

**Italian researchers discovered that patients with bipolar disorder have high uric acid levels. This may indicate that part of bipolar disorder is related to a metabolic dysfunction. Those with bipolar disorder tend to be males, with large waist size and high triglyceride levels. The researchers speculated that controlling uric acid may in part reduce manic symptoms.**

**Bartoli, F., et al. (May, 2016). Exploring the association between bipolar disorder and uric acid: A mediation analysis. Journal of Psychosomatic Research, 84, 56-59.**



# Childhood brain Injury and Mental Health

**Swedish research found that adults who had suffered a traumatic brain injury in childhood were 50% more likely to be admitted to a hospital for mental health disorders in adulthood than those that did not have such injuries. They were 70% more likely to die before age 41 and 60% more likely to be receiving government benefits than their non-injured peers.**

Sariaslan, A. et al. (August 23, 2016). Long-Term Outcomes Associated with Traumatic Brain Injury in Childhood and Adolescence: A Nationwide Swedish Cohort Study of a Wide Range of Medical and Social Outcomes. PLOS Medicine. DOI: <http://dx.doi.org/10.1371/journal.pmed.1002103>.

# How Your Heartbeat Regulates What You See

**Swiss researchers found that internal feelings suppress visual stimuli when the heartrate increases. The insula is thought to be the part of the brain that processes internal feelings and brings them into self-awareness. These researchers found that it is sensitive to both internal feelings and external visual stimuli. When visual stimuli is presented in synchrony with one's heartbeat it appears it becomes invisible by interocular masking.**

Salomon, R. et al. (May 4, 2016). The Insula Mediates Access to Awareness of Visual Stimuli Presented Synchronously to the Heartbeat. Journal of Neuroscience, 36(18) 5115-5127.

# Forgiveness and Health

**Researchers from Stanford after doing research which included people in conflicts in Northern Ireland and Sierra Leone found that situation specific forgiveness, learning how to forgive in future similar situations, and having empathy for the transgressor reduced negative thoughts about the transgression, and increased positive thoughts. When paired with relaxation techniques it reduced feelings of flight or fight and reduced cardiovascular load.**

**Harris, A.H. et al. (June, 2006). Effects of a group forgiveness intervention on forgiveness, perceived stress, and trait-anger. Journal of Clinical Psychology, 62(6):715-33.**

# Mathematics Education in the U.S.

**Every three years the Program for International Student Assessment (PISA) publishes achievement rates of school children around the world, and the US tends to be at the bottom in mathematics. The PISA has found three types of math learning styles:**

- 1. Memorization**
- 2. Trying to relate new math concepts to one's already learned**
- 3. Routine self-monitoring of one's own understanding**

**US students tend to use memorization and they are taught to use memorization by their teachers. Children who use the memorization method are typically  $\frac{1}{2}$  year behind those who use the other methods in math achievement around the world. Researchers believe teaching number sense is very important.**

**Boaler, J. et al. (November/December, 2016). Why Math Education in The U.S. Doesn't Add UP? Scientific American Mind, 27 (6), 18-19.**

# Mathematics Education in the U.S.

**They also believe that timed testing of math learning should not be done because it lowers achievement levels and increases math anxiety, particularly in girls. It also impairs memory recall.**

**Boaler, J. et al. (November/December, 2016). Why Math Education in the U.S. Doesn't Add UP. Scientific American Mind, 27(6). 18-19.**

# New Synesthesia Data

**Martha Zaraska (November/December, 2016) recently reported some research on synesthesia indicated it occurs in 1 in 23 people, that grapheme-color synesthesia is the most common, and there are somewhere between 60 and 150 types. They are believed to be caused due to neurological and immune system differences. True synesthesias appear to occur automatically, and the people with them tend to have significantly more neuroconnections between the sensory areas involved. There is evidence such people have more gray and white matter in those areas, too. If you have a person with a synesthesia in your family as many as 40% of your 1<sup>st</sup> and 2<sup>nd</sup> cousins will have one, also. There may be a “synesthesia genotype” which includes...**

# New Synesthesia Data

**...parts of the second and sixteenth chromosomes which code for neuroconnectivity in the brain. Parts of chromosome two also codes for autism spectrum disorder (ASD) and those with ASD are three times more apt to have synesthesias than neurotypicals. People with multiple sclerosis are more likely to experience synesthesias as are those with migraines and irritable bowel syndrome. This may indicate there is a connection between the immune system and synesthesias. In infancy through childhood and adolescence the immune system controls the pruning of unused synapses. It may be those with synesthesias have immune systems that do not as efficiently prune unneeded connections, hence developing the condition.**

Zaraska, M. (November/December, 2016). Hear The Violet, Taste The Velvet. Scientific American Mind, 27(6), 64-69.