

August 2014 Website Update

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Specific Learning Disorder, with impairment in Reading, Spelling Mathematics

- **Impairment in Reading, Spelling and Mathematics occur a frequently in isolation as they do comorbidly with each other.**
- **There may be a relationship between Dyscalculia and Spelling Disorder that is different from the one often seen between Dyslexia and Spelling Disorder.**
- **It appears girls have a higher rate of Dyscalculia than boys and boys have a higher rate of Dyslexia than girls.**

Moll, K., et al. (July 29, 2014). Specific Learning Disorder: Prevalence and Gender Differences. [PLOS One](https://doi.org/10.1371/journal.pone.0103537). DOI: 10.1371/journal.pone.0103537.

Excellent Screener for ASD

Ritvo, R.A., et al. (August, 2011). The Ritvo Autism Asperger Diagnostic Scale-Revised (RAADS-R): A Scale to Assist the Diagnosis of Autism Spectrum Disorder in Adults: An International Validation Study. Journal of Autism and Developmental Disorders, 41(8), 1076-1089.
DOI: [10.1007/s10803-010-1133-5](https://doi.org/10.1007/s10803-010-1133-5)

Disruptive Behavior Disorder, AD/HD and Psychiatric Hospitalization

Adolescents with Disruptive Behavior Disorder with and without comorbid AD/HD are at high risk of psychiatric hospitalization during their lifetimes. Their rates of hospitalization is significantly higher than those adolescents without a diagnosis.

Nordström, T, Hurtig, T., Moilanen, I., Taanila, A., and Ebeling, H. (November, 2013). Disruptive behaviour disorder with and without attention deficit hyperactivity disorder is a risk of psychiatric hospitalization. Acta Paediatrica, 102 (11): 1100-1103.

AD/HD & Exercise

A group of German scientists recently reviewed the scientific literature related to the use of exercise as a treatment for AD/HD in children. They concluded that all the studies reviewed indicated exercise can significantly improve strength, motor skills, neuropsychological profile, and social behavior in AD/HD Children.

Kamp, C.F., Sperlich, B., and Hans-Christer, H. (March, 2014). Exercise reduces the symptoms of Attention Deficit Hyperactivity Disorder and improves social behaviour, motor skills, strength and neuropsychological parameters. [Acta Paediatrica](https://doi.org/10.1111/apa.12628). DOI: 10.1111/apa.12628.

Children, Math Facts and The Hippocampus

Scientists at Stanford using fMRI have recently discovered that children between the ages of 7 and 9 make a shift in using their fingers, prefrontal cortex and parietal cortex when solving math problems to using their hippocampus more. They do not rely as much on finger counting but drawing from their math facts in their hippocampus. Adults, however, do not activate their hippocampus as much as 9 year olds because it appears their hippocampuses form memory scaffoldings in their neocortex for storing math facts. The researchers speculate they may be able to learn more about specific learning disorder with impairment in math/dyscalculia by looking at the hippocampal function of such children to see how they store math facts.

Reference

Qin, S., Cho, S., Chen, T., Rosenberg-lee, M., Geary, D.C., and Menon, V. (August 17, 2014). Hippocampal-neocortical functional reorganization underlies children's cognitive development. Nature Neuroscience. DOI: 10.1038/nn.3788.

Music Education and Language

Researchers from Northwestern University reported recently that at-risk low SES children who take two years of musical instrument and/or voice instruction have significantly better skills of discriminating speech with distracting background noise, reading and brain processing of speech than similar students without such instruction. They commented that music education could be a low cost method of helping low SCS close the gap educationally with students of higher SCS.

Kraus, N. (Friday, August 8, 2014). Biological, behavioral, and Academic Impact of Musical Training in At-Risk Children. (PDF, 47KB) symposium, 10-11:50 a.m. EDT, Room 147B, Walter E. Washington Convention Center, 801 Mount Vernon Pl., NW, Washington, D.C., American Psychological Association Annual Convention. From website: <http://www.apa.org/news/press/releases/2014/08/musical-training.pdf>.

Letter Position and Word Reading

British scientists discovered recently that children 8 to 10 year old are able to decode anagrams of words where the first and last letter are in the correct place with the same speed as skilled adult readers. They tend to make more error than their adult counterparts, however. They believe this demonstrates the importance of the first and last letter of words while reading and these results may have relevance to dyslexic readers.

Patterson, K. B., et al. (July 23, 2014). New insights into how young and developing readers make sense of words. Developmental Science. DOI: 10.1111/desc.12222.

ASD and Periodic Reassessment

Research conducted in Sweden indicates preschool children with Autism Spectrum Disorder should be reassessed frequently to determine how their symptomatology changes with their development. This will also help professionals to design specific programs to meet the needs of each child.

Hedval, A, et al. (November 18, 2013). Autism and developmental profiles in preschoolers: stability and change over time. Acta Paediatrica. DOI: 10.1111/apa.12455.

Evoked Potentials, Dyslexia, & and Neurological Profiles

A team of German researchers recently found that children with Specific Learning Disability-Dyslexia may have the same cognitive test profile, but it can be caused by differing neurology. These difference can cause differing responses to the same treatment.

Hasko, S., et al. (June 26, 2014). What Does The Brain of Children With Developmental Dyslexia Tell Us About Reading Improvement? ERP Evidence From an Intervention Study. Frontiers in Human Neuroscience. DOI: 10.3389/fnhum.2014.00441.

Fetal Brain Development & ASD

University of California at San Diego scientists discovered focal disruptions of cortex formation architecture in most young children with Autism Spectrum Disorder that appear to have occurred during fetal development.

Rich, S., et al. (March 27, 2014). Patches of Disorganization in the Neocortex of Children with Autism. New England Journal of Medicine. DOI: 10.1056/NEJMoa1307491.

Areas of The Brain That Operate Differently in Those with ASD

- Amygdala: processing emotions/underactivity with other brain regions
- Temporal Cortex: empathy/disorganization of cells
- Corpus Callosum: connects hemispheres/smaller
- Posterior Parietal Cortex: visual-special processing/more efficient
- Prefrontal Cortex: social communication & abstract thinking/disorganized cells and extra cells
- Ventromedial Prefrontal Cortex: processing emotions/underconnected to other brain areas

Reference

Author (September/October, 2014). The Autistic Brain. Scientific American Mind, 25(5), 20.

ASD & Probiotics?

Researchers were able to create an “autistic” mouse by creating a mouse equivalent of leaky gut syndrome by introducing a virus in them while they were fetuses. The scientists were able to alleviate some of the mice’s autistic-like symptoms with probiotic therapy.

Gilbert, J.A., et al. (December 19, 2013). Toward Effective Probiotics for Autism and Other Neurodevelopmental Disorders. *Cell*. DOI: <http://dx.doi.org/10.1016/j.cell.2013.11.035>.

Suicide & ASD

Scientists lead by British researcher, Simon-Baron Cohen, found significantly increased rates of suicidality, depression, and a higher risk of successfully committing suicide in adults with Asperger's Disorder (Autism Spectrum Disorder, Level of Severity 1). This appears to be due to their social isolation and unemployment. The researchers concluded the proper service planning and support should be giving to these individuals to reduce their risk of suicide.

Cassidy, S., Bradley, P., Robinson, J., Allison, C., McHugh, M., Baron-Cohen, S. (June 25, 2014). Suicidal ideation and suicide plans or attempts in adults with Asperger's syndrome attending a specialist diagnostic clinic: a clinical cohort study. Lancet. DOI: <http://dx.doi.org/10.1016>.

Oxytocin, ASD & Happy Faces

Baron-Cohen's group recently reported that those with ASD who were administered oxytocin Vs. placebo were found to receive dramatically less reward from seeing happy faces than those who received placebo. Apparently, oxytocin significantly reduces in those with ASD the ability to learn by seeing a happy face and knowing it is a reward for behaving correctly.

Clark-Elford, R., et al. (2014). The effects of oxytocin on social reward learning in humans. International Journal of Neuropsychopharmacology, 17, 199-209. DOI: 10.1017/S1461145713001120.