SOCIAL DIFFICULTIES OF LEARNING, ATTENTIONAL AND AUTISTIC SPECTRUM DISORDER: DSM-5 EDITION

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Reading Centers in the Brain

"As a relatively recent cultural invention in human evolution, reading is an important gateway to personal development and socioeconomic success" (p. 12,835).

Quinghua, H.e. et al. (July 31, 2013). Decoding The Neuroanatomical Basis of Reading Ability: A Multivoxel Morphometric Study. The Journal of Neuroscience, 33(31), 12,835-12,843.

Reading Centers in the Brain

"…Our results revealed distinct neural regions that supported different aspects of reading ability: whereas phonological decoding was associated with the GMV (grey matter volume, sic.) in the left superior parietal lobe extending to the supramarginal gyrus, form-sound association was predicted by the GMV in the hippocampus and cerebellum. Naming speed was associated with GMV in distributed brain regions in the occipital, temporal, parietal, and frontal cortices…"

Reading Centers in the Brain

"…Phonological decoding and form-sound association were uncorrelated with general cognitive abilities. However, naming speed was correlated with intelligence and processing speed, and some of the regions that were predictive of naming speed also predicted these general cognitive abilities. These results provide further insights on the cognitive and neural architecture of reading and the structural basis of individual differences in reading abilities" (p. 12,835).

Reference

Quinghua, H.e. et al. (July 31, 2013). Decoding The Neuroanatomical Basis of Reading Ability: A Multivoxel Morphometric Study. The Journal of Neuroscience, 33(31), 12,835-12,843.

Ipad Aps for ASD Communication

"…a case study of the use of Apple iPod Touch and iPad mobile digital devices in a public elementary school in downtown Toronto, Canada. Researchers examined the consequences of handheld touch technologies on the communication and sociality of children with communicative disorders, with a primary emphasis on nonverbal autistic children. In the period between January 2010 and June 2010, touch devices were introduced into six elementary classrooms

Ipad Aps for ASD Communication

"… . While there were gains in communication for all participants, ranging from mild to significant, nine of the 12 students for whom we collected detailed data demonstrated statistically significant improvement in communication skills. Observations are made about the heightened levels of motivation, increased attention spans, and increased social interaction that students with ASD exhibited when using these devices."

Reference

McEwen, R. (August 2, 2013). Windows of Communication Through Mobile Applications for Children with Autism. Paper presented at the 121st Annual Conference of the American Psychological Association, Honolulu, HI. From website: http://www.apa.org/news/press/releases/2013/08/communication-autism.pdf.

Volunteering & Cardiovascular Health

"Preliminary analyses within the intervention group suggest that those who increased the most in empathy and altruistic behaviors, and who decreased the most in negative mood, also showed the greatest decreases in cardiovascular risk over time.

Adolescents who volunteer to help others also benefit themselves, suggesting a novel way to improve health" (p. 327).

Scheier, H.M.C., Schonert-Reichl, K.A., Chen, E. (2013). Effect of Volunteering on Risk Factors for Cardiovascular Disease in Adolescents. A Randomized Controlled Trial. Journal of the American medical Association, Pediatrics, 167(4), 327-332.doi:10.1001/jamapediatrics.2013.1100.

Isolation, Loneliness & Mortality

"However, after adjusting statistically for demographic factors and baseline health, social isolation remained significantly associated with mortality (hazard ratio 1.26, 95% confidence interval, 1.08–1.48 for the top quintile of isolation), but loneliness did not (hazard ratio 0.92, 95% confidence interval, 0.78–1.09). The association of social isolation with mortality was unchanged when loneliness was included in the model. Both social isolation and loneliness were associated with increased mortality…"

Isolation, Loneliness & Mortality

"… However, the effect of loneliness was not independent of demographic characteristics or health problems and did not contribute to the risk associated with social isolation. Although both isolation and loneliness impair quality of life and well-being, efforts to reduce isolation are likely to be more relevant to mortality".

Steptoe, A., Shankar, A., Demakakos, P., and Wardle, J. (March 25, 2013). **Social isolation, loneliness, and all-cause mortality in older men and women. Proceedings of the National Academy of Sciences of the United States of America.** doi: 10.1073/pnas.1219686110 .

Memory & Sleep

Researchers discovered during sleep hyppocampal neurons fire backwards. They suspect this happens to solidify memories, to free up space for new memories and to strengthen signals of the memory's neurons.

Bukalo, O. et al. (March 26,2013). Synaptic plasticity by antidromic firing during hippocampal network oscillations. Proceedings of the National Academies of Sciences of the United Sates of America, 110(13), 5175-5180. From website: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3612622/#!po=46.4286.

What Works to Learn While Studying

- **Self-testing: It helps learning lists of words, foreign language, spelling lists, learning names of objects; This is especially good when test takers get immediate feedback.**
- **Distributed practice: Cramming doesn't work, but learning the material over a month works; This works with foreign language, music, math, surgery skills, etc.**

What Works to Learn While Studying

- **Elaborative interrogation: Encourage the student to constantly ask "why" regarding what they are learning and then learning the answer to their question.**
- **Self-explanation: Constantly ask how the new information relates to what you have already learned and find the answer.**

What Works to Learn While Studying

- Interleaved practice: Students learn better when the study by alternating a variety of information and problems.

What Does Not Work to Learn While Studying

- **Highlighting**
- **Rereading**

Dunlosky, J. et al. (September/October, 2013). What Works, What Doesn't. Scientific American Mind, 24(4), 46-53.

Handwriting Vs. Typing & Learning

- **"Learning letters in an unfamiliar alphabet by hand rather than typing may lead to longer-term memories. One reason may be that seeing handwriting, but not typed letter, elicits motor memory activity in the brain" (p. 56).**
- **"This and other findings suggest that handwriting has unique cognitive properties that help to shape how children learn to read and write" (p. 56).**

Reference

Keim, B. (September/October, 2013). The Science of Handwriting. Scientific American Mind, 24(4), 54-59.

Anxiety and AD/HD

“Overall, our results indicate that children with ADHD + ANX (Anxiety, sic) do not apper to differ from children with ADHD in a systematic way on symptoms of ADHD and that children with ADHD + ANX do not appear to differ in a systematic way from children with pure anxiety. At the same time, we did find evidence that children with ADHD + ANX exhibited greater working memory deficits than children with ADHD…”

Anxiety and AD/HD

"…It appears that children with ADHD + ANX are a particularly impaired group of children in terms of cognitive function with additional deficits in working memory" (p. 3).

Jarrett, M.A. (August, 2013). Comorbidity of ADHD and Anxiety: From Basic to Applied Research. The ADHD Report, 21(5). 1-6.

Prenatal, Delivery and Early Postnatal Complications & Inattentive AD/HD

Barkley (August, 2013) reported that Ketzer et al. (2012) found results that make it clear that participants whose mothers experienced more PDPC (prenatal, delivery and early post natal complications, sic.) events had a greater likelihood of having ADHD-I (inattentive ADHD, sic.).

Barkley, R.A. (August, 2013). Preinatal Complications Linked to ADHD. The ADHD Report, 21(5), 10.

Ketzer, C.R., et al. (2012). Is There and Association Between Perinatal Complications and Attention-Deficit/Hyperactivity Disorder-Inattentive Type in Children and Adolescents? Review Brazilian Psiquiatria, 34(4), 321-328.

Perinatal Cyanosis & AD/HD

"On neuropsychological testing, data from the tests administered did not suggest any negative effects of a brief cyanotic episode. The cyanotic group was significantly more likely to have a developmental disorder (speech or motor delay) and subsequently be diagnosed with attention-deficit hyperactivity disorder (ADHD). Given the high incidence of ADHD in the cyanotic group, it may be reasonable to construe cyanosis as a risk factor" (p. 48).

Perna, R., and Cooper, D. (2012). Perinatal Cyanosis: Long-Term Sequelae and behavioral Consequences. Applied Neuropsychology—Children, 1(1), 48-52.

Neuropsychology & Persistent AD/HD

"These data confirm the presence of neuropsychological deficits in late childhood/early adolescence among those previously diagnosed with ADHD. The data also suggest that greater cognitive impairment is a feature of persistent ADHD" (p. 154).

Robinson, T., and Tripp, G. (April, 2013). Neuropsychological functioning in children with ADHD: Symptom persistence is linked to poorer performance on measures of executive and nonexecutive function. Japanese Psychological Research, 55(2), 154-167.

Inattention, Single Word Reading & AD/HD

"School entry inattentiveness predicted unique variance in word reading at the end of first grade, after controlling for verbal ability, letter knowledge, and phonological processing. End-of-first-grade inattention predicted a small but significant amount of unique variance in second-grade word reading and word-reading efficiency. Inattention, however, was not a reliable predictor of phonological processing in either first or second grade. Conclusion: Early classroom inattentiveness influences learning to read independent of critical developmental precursors of word-reading development."

Dittman, C.K. (March 8, 2013). The Impact of Early Classroom Inattention on Phonological Processing and Word-Reading Development. Journal of Attention Disorders, doi: 10.1177/1087054713478979 .

SCT and Metacognition

"This study provides preliminary evidence for the importance of SCT symptoms in relation to metacognitive EF deficits among adolescents with ADHD and the need to further investigate the overlap and distinctiveness of SCT/ADHD. Further research is needed to replicate and extend these findings".

Becker, S.P., and Langberg, J.M. (2013). Attention-Deficit/Hyperactivity Disorder and Sluggish Cognitive Tempo Dimentions in Relation to Executive Function in Adolescents with AD/HD. Child Psychiatry and Human Development. Doi: 10.1007/s10578-013-0372-z.

AD/HD Teen Satisfaction with Stimulants

Results indicated that the effect of stimulant medication on adolescent functioning is smaller in naturalistic settings than in previous analogue studies. Long-acting pemoline produced greater adherence than the short-acting methylphenidate (MPH), but parents and adolescents preferred the short-acting MPH. Conclusions: Overall, adolescents reported very low satisfaction with stimulant medication.

Reference

Pelham, W.E., et al. (March 4, 2013). The Effectiveness of Short- and Long-Acting Stimulant Medications for Adolescents With ADHD in a Naturalistic Secondary School Setting. Journal of Attenion Disorders. DOI: 1087054712474688 .

Suicide & Adult AD/HD

"Childhood ADHD is a chronic health problem, with significant risk for mortality, persistence of ADHD, and long-term morbidity in adulthood."

Barbaresi, W.J., et al. (April, 2013). Mortality, ADHD, and psychosocial adversity in adults with childhood ADHD: a prospective study.

Pediatrics 131(4), 637-644. DOI: 1542/peds.2012-2354.

Gene Predicts Medication Side Effects

"These data provide preliminary evidence that genetic variation in the NTF3 gene is related to susceptibility to emotional side effects in response to MPH treatment in Korean children with ADHD."

Park, S. (March 7, 2013). Neurotrophin 3 genotype and emotional adverse effects of osmotic-release oral system methylphenidate (OROS-MPH) in children with attention-deficit/ hyperactivity disorder. Journal of Psychopharmocology. DOI: 10.1177/0269881113480989.

ADHD Adult Planning Deficits

"A large-scale impairment could be observed in task planning abilities in patients with ADHD. Only negligible to small effects were found for plan recall, self-initiation and execution. Inhibition was identified to contribute significantly to performance on task planning…The present findings suggest that four cognitive components contribute to the performance of prospective memory. Impairments of prospective memory mainly emerged from deficient planning abilities in adults with ADHD. Implications on behavioral based intervention strategies are discussed."

Reference

Fuermaier A.B.M., et al. (March 6, 2013) Complex Prospective Memory in Adults with Attention Deficit Hyperactivity Disorder. PLoS ONE , 8(3): e58338. doi:10.1371/journal.pone.0058338.

Nonmedical Use of Stimulants

"These data suggest that nonmedical use of prescription ADHD stimulants is not commonly an initiating factor leading to the nonmedical use of other prescription medications or abuse of illicit drugs. Rather, nonmedical use of prescription ADHD stimulants appears to be adopted by individuals already engaged in broader patterns of drug abuse and misuse" (p. 1).

Reference

Sweeney, C.T., et al. (January, 2013). Nonmedical Use of Prescription ADHD Stimulants and Preexisting Patters of Drug Abuse. Journal of Addictive Disorders, 32(1), 1-10. From website: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3630453/.

AD/HD and Processing Fearful Verbal Data

Conclusions During IF (instructed fear, sic.), ADHD patients showed deficits in regions centrally involved in fear learning and expression in terms of diminished CS+-related dACC (CS=Conditioned Stimuli; dACC=dorsal anterior cingulate cortex, sic) and increased CS–-related amygdala signals. This suggests an impaired processing of verbally transmitted aversive information, which is central for conveying fear information in social contexts. This result extends the growing literature on emotional alterations in ADHD.

Reference

Maier, S.J., et al. (March 13, 2013). Further Evaluation of Associations between altered Cingulate and Amygdala Response Towards Threat and Safe Cues in Attention Deficit Hyperactivity Disorder. Psychological Medicine. DOI: org/10.1017/S0033291713000469

Diagnosing Dyslexia with MRI

"The volume and fractional anisotropy of the left arcuate showed a particularly strong positive correlation with a phoneme blending test. Whole-brain regressions of behavioral scores with diffusion measures confirmed the unique relation between phonological awareness and the left arcuate…"

Diagnosing Dyslexia with MRI

These findings indicate that the left arcuate fasciculus, which connects anterior and posterior language regions of the human brain and which has been previously associated with reading ability in older individuals, is already smaller and has less integrity in kindergartners who are at risk for dyslexia because of poor phonological awareness. These findings suggest a structural basis of behavioral risk for dyslexia that predates reading instruction" (p. 13, 251).

Reference

Saygin, Z., et al. (August 14, 2013). Tracking the Roots of Reading Ability: White Matter Volume and Integrity Correlate with Phonological Awareness in Prereading and Early-Reading Kindergarten Children. Journal of Neuroscience, 33(33), 13,251-13,258. DOI: 10.1523/JNEUROSCI.4383-12.2013.

AD/HD & Allergies

"Despite possible limitations inherent to observational studies, this study lends support to the emerging evidence that childhood ADHD is associated with atopic diseases and impetigo."

Hak, E., et al. (August 14, 2013). Association of childhood attention-deficit/hyperactivity disorder with atopic disease and skin infections? A matched case-control study using the General Practice Research Database. Annals of Allergy, Asthma & Immunology, 111(2), 102-106. DOI: 10.1016/j.anai.2013.05.023.

Seniors with AD/HD

- **2.8% of people over 50 in the Netherlands meet criteria for AD/HD**
- **Only 1 in 5 memory clinics in the US screen for AD/HD**
- **Things that need to be ruled out in seniors: hypothyroidism, post cardiac surgery cognitive problems, peri- and post menopause cognitive issues, results of prolonged substance abuse and post concussion syndrome.**
- **Rule out dementia and mild neurocognitive disorder**

Seniors with AD/HD

- **Often seniors with undiagnosed AD/HD will complain to doctors about anxiety.**
- **Seniors with AD/HD have higher rates of lung disease and cardiovascular disorders than the general public.**
- **Check for and treat high blood pressure before treating with AD/HD medications.**

Reference

Goodman, D.W. (August, 2013). ADHD in Adults Over Fifty. Attention!, 20(4), 26-29.