

# THE LIFESPAN OF A DYSLEXIC: THE IGNORED SYMPTOMS AND YEARS

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# Announcements, Disclosures and Paperwork



# Disclaimer

**“Materials that are included in this seminar may include interventions and modalities that are beyond the authorized practice of mental health professionals. As a licensed professional, you are responsible for reviewing the scope of practice, including activities that are defined in law as beyond the boundaries of practice in accordance with and in compliance with your profession’s standards.”**

# Disclaimer

- None of the techniques described in this seminar will work for all persons with specific learning disorder of phonemic awareness, rapid automatized naming, and orthographic processing/dyslexia (dyslexia). Every person with dyslexia is different.
- There are no absolutes.
- All treatments have negative side effects. Some more than others. The presenter will do his best to cover the most common ones.
- The theories described in this webinar do not have the same amount of empirical evidence supporting each one of them. The presenter will do his best to describe the pros and cons of each.
- If you are concerned about a treatment technique described in this webinar ask the presenter about it.



# Disclaimer

- **Speaker Disclosure:**
- **Financial:** Kevin Blake maintains a private practice. He is a stockholder in Johnson & Johnson, Inc. and Amgen, Inc. Dr. Blake receives a speaking honorarium from TPN.Health and royalties from PESI, Inc.
- **Non-financial:** Kevin Blake is a member of the Children and Adults with Attention Deficit Disorders (CHADD), International Dyslexia Association (Orton Oak), Learning Disabilities Association of America, and American Psychological Association.

# Disclaimer

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# Please Note:

If you have a loved one, friend, client, and/or are Dyslexic and/or ADHD yourself from time to time you will hear information that may sound like extreme symptoms of Dyslexia and/or ADHD. Please note, only a small portion the adults with ADHD and/or Dyslexia ever seeks and/or receives treatment for their difficulties. Those that do are often the milder cases, have loved ones and friends that care enough to help them, and have recourses to get help. By the mere fact you are attending today tends to indicate you are less impaired by your disorder than the average person with ADHD and/or Dyslexia. Those with ADHD and/or Dyslexia who get clinical services tend to have milder ADHD and/or Dyslexia than the average case.

# The Primary Academic Symptoms of Dyslexia

**I believe the primary academic symptoms of dyslexia are as follows:**

- 1. Poor/weak phonemic awareness**
- 2. Slow rapid automatized naming**
- 3. Weak/poor orthographic processing**

**Lyon, G.R. (1999). In Celebration of Science in the Study of Reading Development, Reading Disorders and Reading Instruction. Paper presented at the International Dyslexia Association 50<sup>th</sup> Annual Anniversary Conference, November 4, 1999, Chicago, IL.**

**Wolf, M., and O'Brien, B. (2001). On Issues of Time, Fluency, and Intervention. In A.J. Fawcett (Ed.), Dyslexia: Theory and Good Practice. Philadelphia, PA: Whurr, pp. 124-140.**

**Roberts, R., and Mather, N. (1997). Orthographic Dyslexia: The Neglected Subtype. Learning Disabilities Research & Practice, 12 (4), pp. 236-250.**



# Secondary Symptoms of Dyslexia?

- **“Social problems. Left untreated, dyslexia may lead to low self-esteem, behavior problems, anxiety, aggression, and withdrawal from friends, parents and teachers.**
- **Problems as adults. The inability to read and comprehend can prevent children from reaching their potential as they grow up. This can have negative long-term educational, social and economic impacts.”**

Author (No Date). Dyslexia Overview. Mayo Clinic. From website: <https://www.mayoclinic.org/diseases-conditions/dyslexia/symptoms-causes/syc-20353552> .

# Lifespan

- **Question: Do people who live the average lifespan in the USA spend most of their life as a child, or as an adult?**
- **Question: Do people with Dyslexia who live the average lifespan for a dyslexic in the USA spend most of their life as a child, or as an adult?**
- **Answer to both questions: Adult**
- **What do we know about adults with Dyslexia in the USA?**
- **Answer: Pathetically little**



# Average Life Span in the USA as of August 2022

- **Males: 73.2 years**
- **Females: 79.1 years**
- **Overall: 76.1**
- **COVID-19 has done a “nice job” lowering life expectancy in our country.**

**Arias, E. et al. (August, 2022). Provisional Life Expectancy Estimates for 2021. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System. Report # 23. From website:**  
**<https://www.cdc.gov/nchs/data/vsrr/vsrr023.pdf>**

# Number of Adult Americans Reading at the 6<sup>th</sup> Grade Level

- In the United States those between the ages of 16 and 74, 54 percent score at level 1 of literacy, or at the 6<sup>th</sup> grade level.
- That is about 130,000,000 people!

Schmidt, E. (March 16, 2022). Reading the numbers: 130 million American adults have low literacy skills, but funding differs drastically by state. AMP Research Lab. From website: <https://www.apmresearchlab.org/10x-adult-literacy>.

Rothwell, J. (September 8, 2020). Assessing the Economic Gains of Eradicating Illiteracy Nationally and Regionally in the United States. Barbra Bush Foundation for Family Literacy. Gallup. From website: [https://www.barbarabush.org/wp-content/uploads/2020/09/BBFoundation\\_GainsFromEradicatingIlliteracy\\_9\\_8.pdf](https://www.barbarabush.org/wp-content/uploads/2020/09/BBFoundation_GainsFromEradicatingIlliteracy_9_8.pdf).



# Poor Literacy

**“Lack of literacy is a major national concern. Thirty million (14 percent) in this country score *below* basic reading level in prose literacy skills—skills needed to comprehend and use connected texts—even though 45 percent graduated from high school. These adults are extremely inefficient readers, reading about sixty words**

**a minute, a rate expected of *first-to second graders*. Interestingly, surveys report that many limited readers perceive themselves as reading well.” (p. 405)**

Shaywitz, S. (2020). Overcoming Dyslexia, Second Edition. New York, NY Vintage.

# Reading Levels Needed for Activities

- **Trade School Manuals: 10<sup>th</sup> grade**
- **Menus, ATM instructions, IRS forms: 10<sup>th</sup> grade**
- **Employment applications: 9<sup>th</sup> grade**
- **Many adult literacy programs believe 8<sup>th</sup> grade level is success**
- **In the coming years reading level requirements will go up significantly for jobs.**
- **Soon most jobs will require a 12<sup>th</sup> grade reading level**

Shaywitz, S. (2020). Overcoming Dyslexia, Second Edition. New York, NY Vintage, p. 405.

# Spontaneous Remission of Dyslexia

➤ **“Children with dyslexia neither spontaneously remit nor do they demonstrate a lag mechanism for catching up in the development of reading skills.”**

Shaywitz, S. et al. (January, 2000). Persistence of Dyslexia: The Connecticut Longitudinal Study at Adolescence. Pediatrics. DOI: [10.1542/peds.104.6.1351](https://doi.org/10.1542/peds.104.6.1351).



# Poor Reading Vs. Dyslexia

***“Adults who are poor readers and for whom English is their first language are for the most part dyslexic.” (p.406)***

Shaywitz, S. (2020). Overcoming Dyslexia, Second Edition. New York, NY Vintage.

# Dyslexia and Health Literacy

- **“Dyslexia is a high-prevalence condition. Patients with dyslexia may be more likely to experience challenges when learning and implementing complex, multi-step health behaviors, such as the tasks associated with medication adherence. However, there has been no research to assess the specific needs of patients with dyslexia, or design interventions to meet those needs.”**

Ritter, A. et al. (November 2019). Reassessing health literacy best practices to improve medication adherence among patients with dyslexia. Patient Education and Counseling. DOI: [10.1016/j.pec.2019.05.024](https://doi.org/10.1016/j.pec.2019.05.024).

# Literacy and Life Expectancy

- **“Literacy is linked to life expectancy through health. Those with low levels of literacy are more likely to have poor health, low health literacy and engage in harmful health behaviours, which in turn puts them at a higher risk of living a shorter life.”**
- **“43% of working-age adults in England don’t have the literacy skills they need to understand and make use of everyday health information (known as ‘health literacy’). Low health literacy is associated with a 75% increased risk of dying earlier than people who have high literacy levels.”  
(Page 4)**

Gilbert, L. et al. (February, 2018). Literacy and life expectancy: An evidence review exploring the link between literacy and life expectancy in England through health and socioeconomic factors. National Literacy Trust research report, page 5. From website: [http://cdn-literacytrust-production.s3.amazonaws.com/media/documents/National\\_Literacy\\_Trust\\_-\\_Literacy\\_and\\_life\\_expectancy\\_report.pdf](http://cdn-literacytrust-production.s3.amazonaws.com/media/documents/National_Literacy_Trust_-_Literacy_and_life_expectancy_report.pdf).

# Average Life Span of a Dyslexic

- **“A boy growing up in a ward with one of the highest vulnerabilities to literacy problems in the country has a life expectancy 26.1 years shorter than a boy growing up in a ward with one of the lowest vulnerabilities to literacy problems.”**
- **“A girl growing up in a ward with one of the highest vulnerabilities to literacy problems in the country has a life expectancy 20.9 years shorter than a girl growing up in a ward with one of the lowest vulnerabilities to literacy problems.”**

Gilbert, L. et al. (February, 2018). Literacy and life expectancy: An evidence review exploring the link between literacy and life expectancy in England through health and socioeconomic factors. National Literacy Trust research report, page 5. From website: [http://cdn-literacytrust-production.s3.amazonaws.com/media/documents/National\\_Literacy\\_Trust\\_-\\_Literacy\\_and\\_life\\_expectancy\\_report.pdf](http://cdn-literacytrust-production.s3.amazonaws.com/media/documents/National_Literacy_Trust_-_Literacy_and_life_expectancy_report.pdf).



# WHAT? WHY IS THIS?

**“In summary, the fact that the same areas of the country struggle with literacy, low life expectancy and economic wellbeing suggests that these variables are interrelated. People with poor literacy skills are more likely to be unemployed and have low incomes, which in turn can be linked to lower life expectancy.” (Page 14)**

Gilbert, L. et al. (February, 2018). Literacy and life expectancy: An evidence review exploring the link between literacy and life expectancy in England through health and socioeconomic factors. National Literacy Trust research report, page 5. From website: [http://cdn-literacytrust-production.s3.amazonaws.com/media/documents/National\\_Literacy\\_Trust -  
Literacy\\_and\\_life\\_expectancy\\_report.pdf](http://cdn-literacytrust-production.s3.amazonaws.com/media/documents/National_Literacy_Trust_-_Literacy_and_life_expectancy_report.pdf).

# COVID-19 and Health Literacy

- **“Better health literacy is associated with better attitudes towards preventive strategies against COVID-19. We should invest in ways to improve health literacy, so we can improve people’s attitudes and consequently reduce coronavirus’ transmission.”**

Silva, M.J. et al. (May 17, 2021). The Impact of Health Literacy on Knowledge and Attitudes towards Preventive Strategies against COVID-19: A Cross-Sectional Study. International Journal of Environmental Research and Public Health. DOI: [10.3390/ijerph18105421](https://doi.org/10.3390/ijerph18105421).

# WHAT? WHY IS THIS?

**“As our Literacy Changes Lives (2008) report highlighted, those with low literacy are:**

- **1.5 to 3 times more likely to have poorer health outcomes**
- **Up to 18 times more likely to take their prescriptions incorrectly**
- **Significantly less likely to understand symptoms of a medical condition, such as diabetes or asthma**
- **More likely to rate their health as ‘very poor’ than those with better literacy skills”**

Gilbert, L. et al. (February, 2018). Literacy and life expectancy: An evidence review exploring the link between literacy and life expectancy in England through health and socioeconomic factors. National Literacy Trust research report, page 5. From website: [http://cdn-literacytrust-production.s3.amazonaws.com/media/documents/National\\_Literacy\\_Trust\\_-\\_Literacy\\_and\\_life\\_expectancy\\_report.pdf](http://cdn-literacytrust-production.s3.amazonaws.com/media/documents/National_Literacy_Trust_-_Literacy_and_life_expectancy_report.pdf).

Dugdale, G. and Clark, C. (September, 2008). Literacy Changes Lives: An advocacy resource. London, Great Britton: National Literacy Trust. From website: [https://www.danskeforlag.dk/media/1648/114-f-ipa\\_2008\\_09\\_02\\_free\\_research\\_-\\_literacy\\_changes\\_lives\\_2008\\_ec8a7nj.pdf](https://www.danskeforlag.dk/media/1648/114-f-ipa_2008_09_02_free_research_-_literacy_changes_lives_2008_ec8a7nj.pdf).

# Dyslexia and Comorbid AD/HD

**“It is estimated that 30% of those with dyslexia have coexisting ADHD.”**

Dakin, K.A. and Erenberg, G. (2020). Attention-Deficit/Hyperactivity Disorder (AD/HD) and Dyslexia. International Dyslexia Association, Fact Sheet. From website: <https://dyslexiaida.org/attention-deficithyperactivity-disorder-adhd-and-dyslexia/>.



# Life Expectancy and AD/HD

- People with AD/HD have a ***significantly reduced life expectancy*** due to an impulsive lack of concern for health related issues, exercise, diet, drugs, etc. if their AD/HD is untreated. **On Average it is 9.6 to 12.7 years!**

Barkley, R.A. (January 14, 2018). Life Expectancy Slashed in Worst Cases of AD/HD. Paper presented at the American Professional Society of ADHD and Related Disorders, January 12-14, 2018. Washington, DC.

Inserro, A. (January 14, 2018). Psychologist Barkley Says Life Expectancy Slashed in Worst Cases for Those With ADHD.

American Journal of Managed Care. From website: <https://www.ajmc.com/conferences/apsard-2018/psychologist-barkley-says-life-expectancy-slashed-in-worst-cases-for-those-with-adhd>.

Barkley, R.A. (November 2022). High Time Preference Is a Key Cognitive Deficit in ADHD Impact on Daily Life, Impairments, and Life Expectancy. ADHD Report. 30(7), 1-5.

Chau, Y.C.Y. et al. (November 28, 2017). Oral Health of Children With Attention Deficit Hyperactivity Disorder: Systematic Review and Meta-Analysis. Journal of Attention Disorders. DOI: 10.1177/1087054717743331.

# Life Expectancy and AD/HD

- **Take the four biggest reducers of life-expectancy in the US:**
  - **Obesity**
  - **Smoking**
  - **Risk of diabetes**
  - **Exercise and Diet**
- **Untreated AD/HD lowers life-expectancy 2 1/2 times more than the combination of all four of the above combined!**
- **Why?: Little exercise, or sleep, poor nutrition, less education, more obesity, more smoking, alcohol, and drug use, as well as poor driving, poor dental hygiene, more STDs, more teen pregnancies, more antisocial behavior, more reactive aggression, etc.**

Barkley, R.A. (December 10, 2018). ADHD Likely Reduces Estimated Life Expectancy by Young Adulthood. Summary of paper presented at the 2018 American Professional Society of ADHD and Related Disorders (APSAD) Conference, Saturday, January 13, 2018, Washington, DC. Summary can be found on the APSAD website: <https://apsard.org/adhd-likely-reduces-estimated-life-expectancy-by-young-adulthood/>.



- So does that mean the average life expectancy of a boy with Dyslexia and comorbid AD/HD is 38.8 years less than their non-affected peers. That would put the average life expectancy of such a child at 34.4 years!
- So does that mean the average life expectancy of a girl with Dyslexia and comorbid AD/HD is 32.5 than their non-affected peers? That would put the average life expectancy of such a child at 42.5 years!
- Answer: **WE DO NOT KNOW!**

# Average Life Span of a Dyslexic

- “People with poor literacy skills are more likely to be unemployed and have low incomes, which in turn can be linked to lower life expectancy.”
- “There is a strong relationship between literacy and health. Indeed, literacy is one social determinant of health that can make access to healthcare more challenging for individuals.”
- “Health behaviours, such as smoking and alcohol use, are linked to literacy. For example, in the UK, men with low literacy skills are twice as likely to smoke regularly than men with higher literacy, while an Australian study into adolescent drug use found that low literacy levels were correlated with having smoked in the past month as well as high alcohol consumption.”

Gilbert, L. et al. (February, 2018). Literacy and life expectancy: An evidence review exploring the link between literacy and life expectancy in England through health and socioeconomic factors. National Literacy Trust research report, page 5. From website: [http://cdn-literacytrust-production.s3.amazonaws.com/media/documents/National\\_Literacy\\_Trust\\_-\\_Literacy\\_and\\_life\\_expectancy\\_report.pdf](http://cdn-literacytrust-production.s3.amazonaws.com/media/documents/National_Literacy_Trust_-_Literacy_and_life_expectancy_report.pdf).



# Average Life Span of a Dyslexic

**“Furthermore, limited health literacy has been found to predict behaviours such as poor diet, smoking and a lack of physical activity – independent of age, education, gender, ethnicity and income. It has also been linked to other health-related outcomes, such as increased hospitalisations, greater use of emergency care, and a lower ability to demonstrate taking medications appropriately and interpret labels and health messages.”**

Gilbert, L. et al. (February, 2018). Literacy and life expectancy: An evidence review exploring the link between literacy and life expectancy in England through health and socioeconomic factors. National Literacy Trust research report, page 5. From website: [http://cdn-literacytrust-production.s3.amazonaws.com/media/documents/National\\_Literacy\\_Trust\\_-\\_Literacy\\_and\\_life\\_expectancy\\_report.pdf](http://cdn-literacytrust-production.s3.amazonaws.com/media/documents/National_Literacy_Trust_-_Literacy_and_life_expectancy_report.pdf).

# Symptoms of Dyslexia

**But, this is unimportant, because we won the reading wars and everyone knows the symptoms of Dyslexia are:**

- **Poor Phonemic Awareness**
- **Slow Rapid Automatized Naming**
- **Poor Orthographic Processing**

**Question: Given what you just heard would it make sense to add SIGNIFICANTLY SHORTENED LIFESPAN TO THE LIST?**

**Question: Given the above do you think someone should look into this?**

# Dyslexia and The Cerebellum

# What The Cerebellum Does

**Allen indicated neuroimaging studies show the Cerebellum is involved in the following functions:**

- **Attention**
- **Forms of Learning**
- **Memory tasks**
- **Conditional anxiety**
- **Complex reasoning and problem solving**
- **Sensory and Motor Tasks**

**Allen, G. (March 11, 1998). Functional Diversity of the Cerebellum. Paper presented at the New Angles on Motor and Sensory Coordination in Learning Disabilities Topical Medical Workshop; Learning Disabilities Association, International Conference, Washington, DC; Infomedia, tape R130-W1A, Garden Grove, CA.**

# What The Cerebellum Does

**Allen continued deficits in the cerebellum impairs:**

- **Planning**
- **Reasoning**
- **Shifting of cognitive set**
- **Fluency naming**
- **Working memory**
- **Learning recall**

**Allen, G. (1998). Functional Diversity of the Cerebellum. Paper presented at the New Angles on Motor and Sensory Coordination in Learning Disabilities, Topical Medical Workshop: Learning Disabilities Association, International Conference, March 11, 1998, Washington, DC.**



# What The Cerebellum Does

## **Allen (Continued):**

- **It damaged changes in emotionality and emotional functioning**
  - **Inappropriate behavior**
  - **Flattened affect**
  - **Impulsivity**
  - **Behavioral aggression**

Allen, G. (1998). Functional Diversity of the Cerebellum. Paper presented at the New Angles on Motor and Sensory Coordination in Learning Disabilities, Topical Medical Workshop: Learning Disabilities Association, International Conference, March 11, 1998, Washington, DC.

# The Cerebellum & Executive Function

**“One such area is the cerebellum which contributes not only to motor coordination, but also to language, verbal working memory, processing of emotions, and other executive functions.” (p. 28).**

**Brown, T.E. (2013). A New Understanding of ADHD in Children and Adults: Executive Function Impairments 1st Edition. New York, NY: Routledge.**

# The Cerebellum

**“The Cerebellum has only recently been implicated in the normal functioning of social behavior...new research has shown that the cerebellum is important as a mediator in cognition. To perceive an object or event, we must pull together the various sensory qualities and any relevant memories or thoughts in a carefully timed way...the cerebellum assists in delaying or accelerating these associations, and regulates attentional states.**

**Coordinating associations and attention is essential to entering into a relationship with another human being. Communication, conversation, and graceful social interaction all depend on being able to pay attention to another person and to one’s own internal states and to alternate easily back and forth between them.” (p.305)**

**Ratey, J.J. (2001). A User’s Guide to the Brain: Perception, Attention, and the Four Theaters of the Brain. New York, NY: Vintage.**

# Damage to The Cerebellum

## **Damage to the Cerebellum can cause:**

- **Disturbances in balance and posture**
- **Limb rigidity**
- **Loss of muscle tone**
- **Lack of coordination**
- **Impaired pre-planned automatic movements**
- **Impaired automatization**

**Fawcett, A.J., Nicolson, R.I. (2001). Dyslexia and The Role of The Cerebellum. In A.J. Fawcett (Ed.), Dyslexia: Theory & Good Practice. Philadelphia, PA: Whurr, pp. 89-105.**

# Dyslexia And The Cerebellum

**“Our neuroanatomical analysis of the Orton Society brain bank showed differences in cell size and cell-size distribution in posterior and anterior cerebellar cortex, and inferior olive with no differences in the output areas (the dentate nucleus). The PET study of motor sequence learning showed that there were abnormalities in cerebellar activation in automatic processing and in new learning, for subjects in our panel who had cerebellar signs. Rather than the expected cerebellar activation in these tasks, the dyslexic subjects showed greater frontal lobe activation in new learning, suggesting they were by-passing the cerebellum to some extent, and relying on conscious strategies. These important findings confirm the behavioural evidence of cerebellar dysfunction, and suggest that the dyslexic subjects use different methods in sequential learning and automatic performance” (p. 98-99).**

**Fawcett, A.J., Nicolson, R.I. (2001). *Dyslexia and The Role of The Cerebellum*. In A.J. Fawcett (Ed.), *Dyslexia: Theory & Good Practice*. Philadelphia, PA: Whurr, pp. 89-105.**

# Dyslexia and The Cerebellum

**Anomalies on Chromosome 15 are related to problems with automaticity in dyslexics.**

**Lyon, G.R. (1999). In Celebration of Science in the Study of Reading Development, Reading Disorders and Reading Instruction. Paper presented at the International Dyslexia Association 50th Annual Anniversary Conference, November 4, 1999, Chicago, IL.**



# Dyslexia and The Cerebellum

**80% of dyslexics show signs of cerebellar problems!**

Fawcett, A. J. and Nicolson, R. I. (2001). Dyslexia and The Role of The Cerebellum. In A. J. Fawcett (Ed.), Dyslexia: Theory & Good Practice. Philadelphia, PA: Whurr, pp. 89-105.  
Fawcett, A. J. (August 11, 2010). Personal Communication.

# Dyslexia and The Cerebellum

**Fawcett and Nicolson reported research that dyslexic children have significant problems with phonology, working memory, speed of information processing, balance and motor skills.**

**Fawcett, A.J., Nicolson, R.I. (2001). Dyslexia and The Role of The Cerebellum. In A.J. Fawcett (Ed.), Dyslexia: Theory & Good Practice. Philadelphia, PA: Whurr, pp. 89-105.**

# Dyslexia and Automaticity

**“Based upon these results, we can suggest that dyslexic children use visual information to postural control with the same underlying processes as non-dyslexic children; however, dyslexic children show poorer performance and more variability while relating visual information and motor action even in a task that does not require an active cognitive and conscious motor involvement, which may be a further evidence of automaticity problem.”**

Barela, J.A. et al. (2011). Postural control and automaticity in dyslexic children: The relationship between visual information and body sway. Research in Developmental Disabilities. DOI: [10.1016/j.ridd.2011.03.011](https://doi.org/10.1016/j.ridd.2011.03.011).

# Dyslexia and The Cerebellum

## **Nicolson Said Bottom Line:**

**“...That means if you have a task that takes 4 hours for the non-dyslexic kid to learn, it will take twice as long for the dyslexic kid; 8 hours. But, its not linear. You have a task which takes 100 hours it will take 10 times as long. If you have a task that takes 10,000 hours it will take 100 times as long, and so on. Therefore if you have something like reading, writing and spelling which takes 100s of hours that’s the sort of thing in which dyslexic children are particularly adversely affected.”**

**Nicolson, R., and Fawcett, A. (November, 2000). Dyslexia, The Cerebellum and Phonological Skill. Paper presented at the International Dyslexia Association Annual Conference, Washington, DC.**

# Dyslexia and Procedural Training

## **The Square Root Rule:**

**“The extra time needed for a dyslexic child to master a task is proportional to the square root of the time a non-dyslexic child takes.” (Slide 45)**

**Fawcett, A. (November 5, 2004). Dyslexia and Learning. Paper presented at the 55<sup>th</sup> International Dyslexia Conference, Philadelphia, PA, from handout of slides, Number 45.**

# Dyslexia and Automaticity

## DAD: Dyslexia Automaticity Deficit -

- **Dyslexics get tired more quickly when learning and/or performing a new skill than the norm.**
- **CC: “This states that, despite their more limited automaticity of skill, dyslexic children are able to perform at apparently normal levels most of the time by ‘consciously compensating,’ that is consciously concentrating (controlled processing) on performance that would normally be automatic.” (pp. 68-69)**

Nicolson, R.I., and Fawcett, A.J. (2008). Dyslexia, Learning, and the Brain. Cambridge, MA: MIT Press, pp. 68-69.



# SLD-Dyslexia May Be Partially a Disorder of Procedural Memory

**“Deficits in dyslexia are attributed to an intact declarative learning system combined with an impaired procedural learning system –a network that includes prefrontal language systems, basal ganglia, parietal and cerebellar structures.” (p. 135)**

**Nicolson, R., and Fawcett, A. (2007). Procedural Learning Difficulties: Reuniting the Developmental Disorders. Trends in Neuroscience, 30 (4), pp. 135-141.**

**Nicolson, R. I., and Fawcett, A.J. (2008). Dyslexia, Learning and the Brain. Cambridge, MA: MIT Press.**

# Exhaustion and Learning Disorders

**Roffman wrote, “One final ongoing issue that is worthy of mention for many with LD/ADHD is the problem of fatigue. The extra effort required to cope with the continued social and academic demands of schooling can be chronically exhausting” (p. 217).**

**Roffman, A.J. (2000). Meeting The Challenge of Learning Disabilities In Adulthood. Baltimore, MD: Brookes.**

# Anxiety and Learning Disorders

**Roffman wrote, “Adults with LD/ADHD often experience pressure as they work to cope with their symptoms. Anxiety develops out of such day-to-day occurrences as the loss of yet another set of keys...” (p. 49).**

**Roffman, A.J. (2000). Meeting The Challenge of Learning Disabilities In Adulthood. Baltimore, MD: Brookes.**

# **I Believe This Automaticity Difficulty Dyslexics Can Have May Negatively Effect Their Ability To Socialize.**

**“If you have a neurosocial deficit (i.e., in the brain hardware for social interaction) you are forced to create software to compensate for it. That’s hard and takes time and energy. It also takes an action which is for most people unconscious and makes it conscious, hence it will never be as “automatic and efficient” as an ability. Such compensation skills divide attention and make tasks which are by their nature not conscious more onerous and less efficient creating frustration. When additional stimuli is added on an unpredictable basis this requires a cognitive shift and these learned skills tend to break down which may lead to a feeling of vulnerability and anxiety...”**

# **I Believe This Automaticity Difficulty Dyslexics Can Have May Negatively Effect Their Ability To Socialize.**

**“...People with such disabilities tend to fatigue faster in social situations and perform cognitively less efficiently when engaged in their social “skills” compensations. Those with neurosocial deficits are at risk of not being aware of and/or sensitive to cultural norms and symbols as well as their importance in social interaction. This unawareness may cause significant social rejection, anxiety and frustration for these individuals. An additional source of frustration and anxiety for individuals with these deficits is most peoples’ social interactions are automatic and thus they frequently do not understand the struggles of those who must socialize on a cognitive level.”**

# Two General Memory Systems

- **Declarative Memory**: Remembering the what, i.e. Facts and Events
- **Procedural Memory**: Knowing how to do something
- Proficient Reading is a skill and is a product of procedural memory.
- With procedural memory robust gains in knowledge are made after training is terminated.
- Train until the person's new behavior plateaus, stop training then allow to sleep. The next day they will have improved behavior and less errors.



# Two Memory Systems (Continued)

- **This will not happen if the person is not allowed to sleep and/or if they are then taught a competing task.**
- **If the training situation is considered novel, learning will continue to increase.**

Censor, N. et al. (November 2006). A link between perceptual learning, adaptation and sleep. Vision Research. DOI: [10.1016/j.visres.2006.07.022](https://doi.org/10.1016/j.visres.2006.07.022).

# Sleep and Memory

- “...sleep allows us to process and retain new memories and skills.” (p. 58)
- Deprive sleep/block training improvement in skill
- “Evidence for sleep’s effect on declarative memory is much weaker than its effect on procedural memory.” (p. 59)

Strickgold, R., et al. (February, 2013). Sleep-dependent memory triage: evolving generalization through selective processing. Nature Neuroscience. DOI: [10.1038/nn.3303](https://doi.org/10.1038/nn.3303).

Winerman, L. (January, 2006). Let's sleep on it: A good night's sleep may be the key to effective learning, says recent research. Monitor of the American Psychological Association. 37(1), 58. From website: <https://www.apa.org/monitor/jan06/onit>.

Strickgold, R. (2005). Sleep-dependent memory consolidation. Nature. DOI: [10.1038/nature04286](https://doi.org/10.1038/nature04286).

# Sleep and Memory

**“Over the last decade, it has become increasingly clear that the processes of learning and memory consolidation and integration can occur over extended periods of time, measured in days or even years. At the same time, evidence has continued to build supporting an important role for sleep in at least some aspects of these processes.”**

Strickgold, R. et al. (December 16, 2022). Linking brain and behavior in sleep-dependent learning and memory consolidation. PNAS. DOI: [10.1073/pnas.01268919](https://doi.org/10.1073/pnas.01268919).

# Automaticity, Sleep, & Dyslexia

- **Approximately 50% of dyslexics have failures of overnight sleep procedural memory consolidation of a simple motor skill.**

Nicolson, R. I. et al. (August, 2010). Procedural learning and dyslexia. Dyslexia. DOI: [10.1002/dys.408](https://doi.org/10.1002/dys.408).

- **Bruni and colleagues discovered dyslexics have irregular EEGs during non-REM sleep that appear to be related to their disability. The hippocampus is involved in this difference.**

Bruni, O. et al. (2009). Sleep Spindle Activity Is Correlated With Reading Abilities in Developmental Dyslexia. Sleep. DOI: [10.1093/sleep/32.10.1333](https://doi.org/10.1093/sleep/32.10.1333).

# Automaticity and Executive Abilities in Developmental Dyslexia: A Theoretical Review

**“This paper has drawn together evidence to argue for the role of the Model of Control of Action as a key contributor to the development of reading abilities and broader cognitive deficits related to dyslexia. Impaired bi-directional instruction between the cerebellum and the PFC (Prefrontal Cortex, Sic.) has been proposed as one potential explanation for dyslexia-related deficits. This might account for documented impairments across a broad range of cognitive domains, from working memory, to strategy selection, to prospective memory, as well as literacy-related difficulties.”**

Smith-Spark, J.H. et al. (2022). Automaticity and Executive Abilities in Developmental Dyslexia: A Theoretical Review. Brain Sciences. DOI: [10.3390/brainsci12040446](https://doi.org/10.3390/brainsci12040446).

# Dyslexia, Sleep, and Automatization

**“Our results suggest specific alterations in local sleep EEG (i.e., sleep spindles) and in sleep-dependent memory consolidation processes in DD (Developmental Dyslexia, SIC.). We highlight the importance of a topographical approach, which might shed light on potential alteration in regional cortical oscillation dynamics in DD. The latter might represent a target for therapeutic interventions aimed at enhancing cognitive functioning in DD.”**

Reda, F. et al. (December 31, 2020). Sleep-Related Declarative Memory Consolidation in Children and Adolescents with Developmental Dyslexia. Brain Sciences. DOI: [10.3390/brainsci11010073](https://doi.org/10.3390/brainsci11010073).



# Dyslexia and The Cerebellum

**Automaticity is a problem for people with dyslexia!**

- **When multitasking and rapid processing are needed**
- **Thinking is a frontal lobe function**
- **It is a problem of fluency**
- **“...fluency is in essence the ability to repeat previous actions or thoughts more and more quickly without conscious thought.” (p. 101)**

**Fawcett, A.J. and Nicolson, R.I. (2001). Dyslexia and The Role of The Cerebellum. In A.J. Fawcett (Ed.), Dyslexia: Theory & Good Practice. Philadelphia, PA: Whurr, pp. 89-105.**

# Automaticity and Executive Abilities in Developmental Dyslexia: A Theoretical Review

**“The evidence presented in this paper provides a reasonable argument for theories of dyslexia to consider an interaction between procedural learned behaviour and higher-order abilities...and their subsequent impact on reading and spelling abilities.”**

Smith-Spark, J.H. et al. (2022). Automaticity and Executive Abilities in Developmental Dyslexia: A Theoretical Review. Brain Sciences. DOI: [10.3390/brainsci12040446](https://doi.org/10.3390/brainsci12040446).

# Procedural Learning and Dyslexia

- **For the first time, this report demonstrated equivalent performance deficits on the task across Parkinson's disease, SLI, dyslexia, schizophrenia, and DCD. Thus it appears that these disorders can be characterised as having a procedural learning impairment.**

Clark, G.M. et al. (October, 2017). Procedural learning in Parkinson's disease, specific language impairment, dyslexia, schizophrenia, developmental coordination disorder, and autism spectrum disorders: A second-order meta-analysis. Brain and Cognition. DOI: [10.1016/j.bandc.2017.07.004](https://doi.org/10.1016/j.bandc.2017.07.004).



# PLEASE NOTE:



# Differences in the Dyslexic Brain

Duane (1993); Riccio, and Hynd (1996); Fiedorowicz, et. al. (2001); Richardson (1994); Filipek, et.al. (1999); Livingstone (1999) Fawcett, and Nicolson (2001); Quinghua, et al. (July 31, 2013); Evans, et al. (April 13, 2013)

- An irregularity in the cellular architecture of the posterior planum temporale region of Wernike's area in the left temporal lobe
- They have ectopias and dysplasias in far greater numbers
- 2/3rds of normals have asymmetry of planum temporale (Lt > Rt)<sub>3</sub>
- Dyslexics' planum temporale are symmetrical
- Increased posterior symmetry<sub>4</sub>
- Dyslexics with severe language delay have reversed parietal-occipital asymmetry – RT planum > LT
- Dyslexics tend to have a larger right hemisphere than left in adulthood
- "...several studies on low-level visual processing have found that people with dyslexia show visual abnormalities that implicate a deficit in the transient (magnocellular) subdivision of the visual pathway" (p. 81)
- "...differences in cell size and cell-size distribution in posterior and anterior cerebellar cortex, and inferior olive with no differences in the output areas (the dentate nucleus)" (p. 98-99)
- Dyslexic female brains differ from Dyslexic male brains

# Perhaps We Should Add Two More Symptoms to Dyslexia?

**The Symptoms of Dyslexia are:**

- 1. Weak Phonemic Awareness**
- 2. Slow, Rapid Automated Naming**
- 3. Poor Orthographic Processing**
- 4. Exceptionally Poor Automatization**
- 5. Poor Coordination**

Fawcett, A.J. (2001). Dyslexia: Theory and Good Practice. Philadelphia, PA: Whurr.

Blake, K.. (2003) Personal Observation.

# Perhaps We Should Add Two More Symptoms to Dyslexia?

**Not all dyslexics have all the symptoms of dyslexia:**

- **Some Dyslexics had all the symptoms.**
- **Some only had one.**
- **Four had none of the aforementioned deficits.**

**This can be due to remediation, severity of symptoms, compensation, etc.**

**Reid, A.A. (November 11, 2006). Cognitive Profiles of Individuals with Developmental Dyslexia: Insights From a Large Sample Study. Preliminary Findings . Paper presented at the 57<sup>th</sup> Annual International Dyslexia Association Conference, Indianapolis, IN.**



# Perhaps Something Else To Research?

**“One of the precursors for language and reading acquisition is executive functions (EF). The present review aims to highlight the current atypicality found in individuals with dyslexia in the domain of EF using behavioral measures, brain mapping, functional connectivity, and diffusion tensor imaging along development. Individuals with dyslexia show EF abnormalities in both behavioral and neurobiological domains, starting in early childhood that persist into adulthood. EF impairment precedes reading disability, therefore adding an EF assessment to the neuropsychological testing is recommended for early intervention. EF training should also be considered for the most comprehensive outcomes.”**

Farah, R. et al. (August 23, 2021). Neuro-Behavioral Correlates of Executive Dysfunctions in Dyslexia Over Development From Childhood to Adulthood. Frontiers in Psychology. DOI: [10.3389/fpsyg.2021.708863](https://doi.org/10.3389/fpsyg.2021.708863).

# Perhaps Something Else To Research?

**“The results showed that adults with dyslexia-related impairments report more memory failures and attentional lapses in their everyday lives, even after accounting for co-occurring ADHD-related symptomatology. The findings enhance the understanding of the detrimental effects that dyslexia has on daily functioning and emphasise the need to raise awareness of the “hidden” effects of dyslexia in order to enhance the support given to individuals with dyslexia in educational and workplace settings.”**

**Protopapa, C. et al. (September 2022). Self-reported symptoms of developmental dyslexia predict impairments in everyday cognition in adults. Research in Developmental Disabilities. DOI: [10.1016/j.ridd.2022.104288](https://doi.org/10.1016/j.ridd.2022.104288).**

# Sleep, Procedural Memory & Dyslexia

**“Three studies—speeded single word reading, long-term response learning, and overnight skill consolidation—are reviewed which together provide clear evidence of difficulties in procedural learning for individuals with dyslexia, even when the tasks are outside the literacy domain. The educational implications of the results are then discussed, and in particular the potential difficulties that impaired overnight procedural consolidation would entail. It is proposed that response to intervention could be better predicted if diagnostic tests on the different forms of learning were first undertaken.”**

Nicolson, R.I. et al. (January 28, 2010). Procedural learning and dyslexia. Dyslexia. DOI: [10.1002/dys.408](https://doi.org/10.1002/dys.408).

# Sleep, Procedural Memory & Dyslexia

- **“The present study found alterations of procedural memory consolidation in children with developmental dyslexia despite a prolonged initial learning session.”**
- **“These findings suggest that the procedural learning problems previously observed in children with developmental dyslexia may be related to the overnight consolidation phase rather than to the initial learning phase. Understanding which aspects of learning that are particularly challenging in this condition is crucial to the development of effective intervention.”**

Hedenius, M., Lum, J. A. G., & Bölte, S. (2021). Alterations of procedural memory consolidation in children with developmental dyslexia. Neuropsychology. DOI: [10.1037/neu0000708](https://doi.org/10.1037/neu0000708).

# Social Skills and in Children with SLD

**“Reviews of the literature indicate that approximately 75% of the children with learning disabilities also experience problems with social skills.” (p. 76)**

Semrud-Clikeman, M. (2007). Social Competence in Children. New York, NY: Springer, p. 76.

# Social Skills in Adults with SLD

- **“...social skills deficits can be the most debilitating part of the learning-disabled experience.” (p. 201) “Failure at ‘office politics’ can lead to being fired. Many**
- **“people with learning disabilities, at high or low levels, reach a plateau and are unable to advance for reasons of personal matching.” (p. 201)**
- **Poor social skills are the reason for under-employment in many with LD.**  
Brown, D.S. and Gerber, P.J. (1994). Employing People with Learning Disabilities. In P.J. Gerber and H. B. Reiff (Eds.), *Learning Disabilities in Adulthood: Persisting Problems and Evolving Issues*. Austin, TX: Pro-Ed, pp. 194-203.  
McLoughlin, D., Fitzgibbon, G. and Young, V. (1994). The Adult Dyslexic: Assessment, Counseling and Training. San Diego, CA: Singular.

# Social Skills and in Children with SLD

- **LD children are less socially competent and less well liked.**
- **Typical social cognitive problems:**
  - **Interpretation and perception of faces, tone of voice, gesture and body language**
  - **Poor at social inference and poor social judgment**

Wren, C. (2000). Hanging By A Twig. New York, NY: Norton.

Semrud-Clikeman, M. (2007). Social Competence in Children. New York, NY: Springer, pp. 76-77.

# Dyslexia and Social Interaction

- **“At the brain level, dyslexia is associated with aberrant structure and function, particularly in left hemisphere reading/language networks. The neurocognitive influences on dyslexia are also multifactorial and involve phonological processing deficits as well as weaknesses in other oral language skills and processing speed.”**
- **Would this negatively effect social interaction?**

Peterson, R.L. and Pennington, B.F. (January 14, 2015). Developmental Dyslexia. Annual Review of Clinical Psychology. DOI: [10.1146/annurev-clinpsy-032814-112842](https://doi.org/10.1146/annurev-clinpsy-032814-112842).



# Adults with Dyslexia

- **“An adult with dyslexia may be slightly slow in reading but otherwise competent. The chief characteristics of dyslexia in adulthood are weaknesses in phonology, auditory short-term memory (working memory), and visual processing skills. These weaknesses stand in contrast to strong verbal reasoning abilities.”**
- **“The second is that dyspraxia in adulthood is characterised chiefly by poor motor coordination. This is also often not the case. Adults with dyspraxia often have improved their motor coordination skills over the years, and their chief difficulties in education and employment are more likely to be related to the cognitive aspects of dyspraxia, such as difficulty with sequencing and structuring information, organisational skills, time-keeping, and sometimes social skills.”**

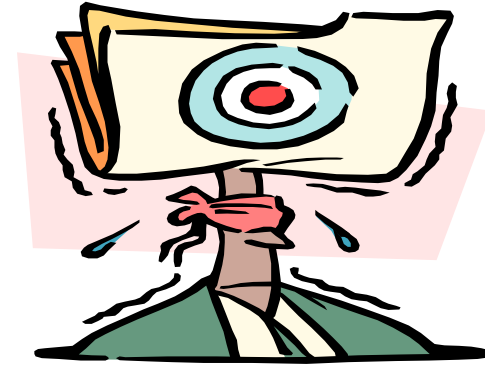
Moody, S. (2014). Dyslexia, dyspraxia, and ADHD in adults: what you need to know. British Journal of General Practice. DOI: [10.3399/bjgp14X679859](https://doi.org/10.3399/bjgp14X679859).

# Remembering Faces, Dyslexia and ADHD

**SLD and AD/HD people often have problems remembering faces.**

**Roffman, A.J. (2000). Meeting The Challenge of Learning Disabilities In Adulthood. Baltimore, MD: Brookes.**

# Facial Expression and Social Ability



- **Most and Greenbank (2000) stated LD children are less accurate in identifying emotional expressions than non-LD children.**
- **Brown (2001) indicated AD/HD children are less accurate in facial expression identification than their non-AD/HD peers.**

**Most, T., and Greenbank, A. (2000). Auditory, Visual, and Auditory—Visual Perception of Emotions by Adolescents With and Without Learning Disabilities, and their Relationship to Social Skills. Journal of Learning Disabilities, 15 (4), pp. 171-178.**

**Brown, T. E. (2001). Social Ineptness & “Emotional Intelligence” in ADHD. Paper Presented at the 13<sup>th</sup> Annual Children and Adults With Attention Deficit Disorders International Conference, October 18-20 2001, Anaheim CA.**

# Face Processing in Dyslexics

**“People with dyslexia are impaired in their recognition of faces and other visually complex objects. Their holistic processing of faces appears to be intact, suggesting that dyslexics may instead be specifically impaired at part-based processing of visual objects.”**

Sigurdardottir, H.M. et al. (February 2015). Impaired Recognition of Faces and Objects in Dyslexia: Evidence for Ventral Stream Dysfunction? Neurology. DOI: [10.1037/neu0000188](https://doi.org/10.1037/neu0000188).

# Face Processing in Dyslexics

**Researchers for Denmark examined and tested 24 high school students with dyslexia. They did not find a problem at the group level with their facial processing, however, they found 4 students who had face recognition problems.**

**Kuhn, C.D. et al. (November 26, 2020). Face recognition in developmental dyslexia: evidence for dissociation between faces and words. Cognitive Neuropsychology. DOI: [10.1080/02643294.2020.1847060](https://doi.org/10.1080/02643294.2020.1847060).**

# Face Processing in Dyslexics

**Irish scientists found that young adults (average age 25) with dyslexia show mild impairment in visual processing in non-reading tasks like face perception.**

**Brady, N. et al. (December 15, 2021). Holistic processing of faces and words predicts reading accuracy and speed in dyslexic readers. PLOS ONE. DOI: [10.1371/journal.pone.0259986](https://doi.org/10.1371/journal.pone.0259986).**

# My Belief

**People who are born in preliterate stone age cultures that have never encountered an European can be born with the same neuroanatomy as a dyslexic. Although they would not have a problem in their culture with reading caused by that “dyslexic neuroanatomy”, because reading does not exist for them, their “dyslexic cerebellar, and executive function differences” will cause them problems in the activities of daily living for their culture due to their balance, coordination, and automaticity problems. This may even shorten their life spans.**

# My Belief

**I believe this is the same for highly literate, technologically advanced 21<sup>st</sup> Century cultures, too. However, Dyslexics in these cultures have the additional burden of poor literacy that significantly negatively affects their activities of daily living, too.**



# Add AD/HD To Dyslexia

# AD/HD & Sleep

## ❖ Children with AD/HD:

- Up to 39% sleep walk
- 56% have trouble going to sleep
- Have fewer sleep hours than non-AD/HD children
- Have more movement during sleep
- Have more periods of sleepiness during the day

- Stimulant medications can lengthen sleep onset
- Sleep problems may exacerbate academic/work problems, but if academic/work problems not caused by Sleep problem, better sleep may not translate to fewer waking problems.

Barkley, R.A. (2012). ADHD: Cutting Edge Understanding & Management. Seminar presented through J & K Seminars, 1861 Wickersham Lane, Lancaster, PA 17603-2327, [www.jkseminars.com](http://www.jkseminars.com).

Craig, S.G. et al. (February, 2020). The Functional Impact of Sleep Disorders in Children With ADHD. Journal of Attention Disorders. DOI: [10.1177/1087054716685840](https://doi.org/10.1177/1087054716685840).

# AD/HD & Sleep

**“In recent research, the importance of night to night variability and effects on attention has been highlighted. The role of circadian rhythm sleep disorders causing or exacerbating ADHD have been demonstrated, linking hyperarousal in the evening and attention impairment during the day. ADHD and sleep are not just comorbid, but the day and night manifestations of underlying physiological and neuropsychiatric deficits.”**

Weiss, G.M. et al. (April 23, 2015). New Research on the Complex Interaction of Sleep and ADHD. Sleep and Psychological Disorders. DOI: [10.1007/s40675-015-0018-8](https://doi.org/10.1007/s40675-015-0018-8).

# Sleep Disorders and ADHD

**“Evidence from published studies comparing sleep in individuals with ADHD with typically developing controls is most concordant for associations of ADHD with: hypopnea/apnea and peripheral limb movements in sleep or nocturnal motricity in polysomnographic studies; increased sleep onset latency and shorter sleep time in actigraphic studies; and bedtime resistance, difficulty with morning awakenings, sleep onset difficulties, sleep-disordered breathing, night awakenings and daytime sleepiness in subjective studies. ADHD is also frequently coincident with sleep disorders (obstructive sleep apnea, peripheral limb movement disorder, restless legs syndrome and circadian-rhythm sleep disorders).”**

**Hvolby, A. (August 17, 2014). Associations of sleep disturbance with ADHD: implications for treatment. Attention Deficit Hyperactivity Disorder. DOI: [10.1007/s12402-014-0151-0](https://doi.org/10.1007/s12402-014-0151-0).**



# Employment



# Employment and Learning Disabilities



**Brown and Gerber (1994) wrote there were 3 types of LD people in the world of work:**

- **those whose LD does not interfere with work;**
- **those who struggle long hours to overcome their LD in the workplace; and**
- **those with LD who are chronically unemployed.**

**Brown, D.S, and Gerber, P.J. (1994). Employing People with Learning Disabilities. In P.J. Gerber and H. B. Reiff (Eds.), Learning Disabilities in Adulthood: Persisting Problems and Evolving Issues. Austin, TX: Pro-Ed, pp. 194-203.**

# Employment and Learning Disabilities



**“Even residual difficulties, such as slow reading and writing, would make some occupations onerous” (p. 84).**

McLoughlin, D., Fitzgibbon, G., and Young, V. (1994). The Adult Dyslexic: Assessment Counseling and Training. San Diego,CA: Singular.

# LD Life Insight

**“...a person with learning disabilities must work harder than a nondisabled peer to accomplish the same learning” (p. 185).**

**McGrady, H., Lerner, J., and Boscardin, M.L. (2001). The Educational Lives of Students with Learning Disabilities. In P. Rodis, A. Garrod, and M.L., Boscardin (Eds.), Learning Disabilities & Life Stories. Boston, MA: Allyn and Bacon, p. 185.**





## LD Life Insight



**“The process of continually compensating can be deeply tiring. Betty notes that she often is exhausted as a direct result of the enormous effort that she expends on building on her strengths and working around her weaknesses. She notes, ‘You’re always compensating and you’re tired a lot’ (p. 261).**

**Roffman, A. (2000). Meeting the Challenge of Learning Disabilities in Adulthood. Baltimore, MD: Brookes.**

# Social Disorders



- **“...social skills deficits can be the most debilitating part of the learning-disabled experience” (p. 201).**
- **“Failure at ‘office politics’ can lead to being fired. Many people with learning disabilities, at high or low levels, reach a plateau and are unable to advance for reasons of personal matching” (p. 201).**
- **Poor social skills are the reason for under-employment in many with LD.**

Brown, D.S, and Gerber, P.J. (1994). Employing People with Learning Disabilities. In P.J. Gerber and H. B. Reiff (Eds.), Learning Disabilities in Adulthood: Persisting Problems and Evolving Issues. Austin, TX: Pro-Ed, pp. 194-203.)

McLoughlin, D., Fitzgibbon, G., and Young, V. (1994). The Adult Dyslexic: Assessment Counseling and Training. San Diego,CA: Singular.)

# Employment and Learning Disabilities



- **41% of LD adults have problems completing a job application.**
- **Job placement tests cause problems, too.**
- **Applying for accommodations can bypass these.**

**Brown, D.S, and Gerber, P.J. (1994). Employing People with Learning Disabilities. In P.J. Gerber and H. B. Reiff (Eds.), Learning Disabilities in Adulthood: Persisting Problems and Evolving Issues. Austin, TX: Pro-Ed, pp. 194-203.**

# Employment and Learning Disabilities



**Those who are over 40 years of age have the most problems because:**

- **they were typically diagnosed late in life;**
- **often they have no accommodations and do not know about them.**

**Roffman, A. (February 14, 2003). Working with LD: The Impact of Learning Disabilities on the Job. Paper presented at the 40<sup>th</sup> Annual Learning Disabilities Association International Conference, Chicago, IL, session T58.**

# Adults with Learning Disabilities, Mental Health, Employment, and Education

**Finnish investigators compared adults with a childhood history of Dyslexia, Dyscalculia, and/or Dyslexia & Dyscalculia (n = 430) to adults with no such childhood histories (n = 2149), found they had significantly more mental health problems, less education, and more extended times unemployed than their nondisabled peers. Those with Dyslexia were the least likely to be unemployed, followed by those with Dyscalculia, and those with comorbid Dyscalculia & Dyslexia.**

**Tuija, A et al. (May 8, 2018). Associations Between Childhood Learning Disabilities and Adult-Age Mental Health Problems, Lack of Education, and Unemployment. Journal of Learning Disabilities. DOI: [10.1177/0022219418775118](https://doi.org/10.1177/0022219418775118).**

# Dyslexia and Homelessness

**“This article presents evidence that dyslexia is overrepresented within the homeless sample. As demonstrated, a number of statistically significant relationships have appeared that seem to suggest that, for respondents with dyslexia, once they become homeless, they have an increased risk of spiraling into the episodic and chronic homeless population. For respondents with dyslexia, there was an increased risk of mental health problems relating to increased anxiety and depression, self-harm, and suicide attempts.” (p. 18)**

MacDonald, S.J. et al. (2016). ‘Too Far Gone’: Dyslexia, Homelessness and Pathways in to Drug Use and Drug Dependency. In sights on Learning Disabilities, 13 (2). p p. 117-134. ISSN1949-1212. From website: <https://sure.sunderland.ac.uk/id/eprint/6898/1/4.%20dyslexia%20homelessness%20and%20drug%20use%20-%20revision%208%20October%2010.pdf>.

# Does Impairment Caused By Dyslexia Snowball?

**“In this literature review, we found 318 factors associated with participation in work of employees with developmental dyslexia. The following factors were mentioned most: persistent difficulties in reading or writing/spelling; the participants'—mostly negative—feelings and emotions about dyslexia; or difficulty in acquiring a job and, once acquired, keeping it, be it a blue- or white-collar job...The adjective ‘developmental’ in the term ‘developmental dyslexia’ is salient. DD start small and initially affect the activities of writing/spelling and reading. But over the lifespan, DD affect more domains of human functioning: the personal and environmental domains and participation. And within each domain the impact of DD increases over the life course. In the context of work, all domains of functioning can be influenced by DD, as has been made visible in the main results of this review...” (Note: DD=Developmental Dyslexia)**

**De Beer, J. et al. (January 24, 2014). Factors influencing work participation of adults with developmental dyslexia: a systematic review. BMC Public Health. DOI: [10.1186/1471-2458-14-77](https://doi.org/10.1186/1471-2458-14-77).**

# Burnout & Dyslexia

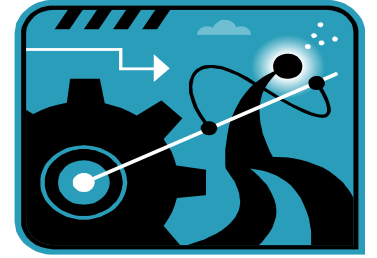
**“Our research highlighted challenges for adults with dyslexia in seeking work, starting and retaining employment, retaining employment and progressing a career...Once employed in a role, people with dyslexia face a myriad of challenges trying to keep up with workplace demands, particularly when their disability was unsupported...we could not determine whether those with dyslexia faced additional job burnout because of their disability compared to the general population, or differences in job burnout based on specific industries...For those with dyslexia their difficulties were compounded by participants’ reluctance to disclose their disability or self-advocate for support for fear of discrimination, stigmatization and retribution...Although preliminary, our results seem to suggest that employees with dyslexia face challenges in the workplace related to their disability including excessive mental exhaustion, and fatigue, leaving them vulnerable to workplace stress and job burnout.”**

**Wissell, S. et al. (June 16, 2022). “You Don’t Look Dyslexic”: Using the Job Demands—Resource Model of Burnout to Explore Employment Experiences of Australian Adults with Dyslexia. International Journal of Environmental Research and Public Health, 19(17). From website: <https://www.mdpi.com/1660-4601/19/17/10719>.**

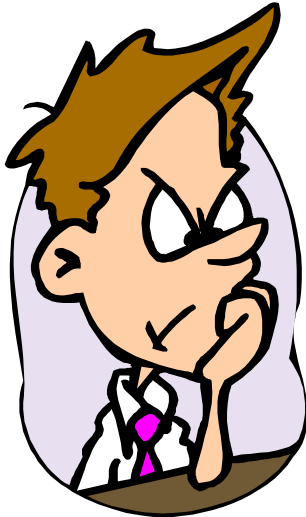


# And If ADHD

# AD/HD and Employment



**Difficulty with others is one of the main reasons AD/HD adults loose their jobs.**

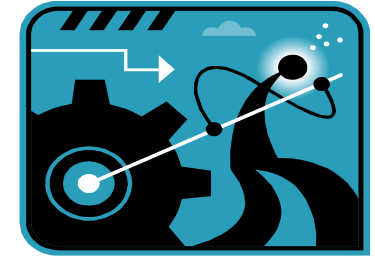


**Ratey, N., and Griffith - Haynie, M. (1998). Coaching to Improve Workplace Performance. Paper presented at the Fourth Annual ADDA Adult ADD Conference, March 26-28, Washington, DC.**

**One-half of AD/HD adults are unemployed.**

**Biederman, J. (October 27, 2006). Advances in the Neurobiology of AD/HD. Paper presented at the 18<sup>th</sup> Annual CHADD International Conference, Chicago, IL.**





# Employment & ADHD

- ADHD workers have significantly lower salaries.
- They are absent from the job more and significantly more underproductive than non-ADHD workers.
- They have more on the job accidents.
- On average ADHD costs the household \$10,000 per year of income.

**A 33 year follow-up study of boys diagnosed with AD/HD, now adults found they were 6 times more likely to be homeless than their non-impaired peers. Approximately, 24% of these AD/HD men were homeless.**

Murillo, L.G., et al. (November, 2016). Childhood Attention-Deficit/Hyperactivity Disorder and Homelessness: A 33-Year Follow-Up Study. Journal of the American Academy of Child and Adolescent Psychiatry, 55(11), 931-936.

Ramsay, R. (2010). Nonmedication Treatments for Adult ADHD. Washington, DC: American Psychological Association Press.

# ADHD and Social Rejection

- **AD/HD Children live a lifetime of social rejection.**
- **Around 80% of Combined Type ADHD children are socially rejected because of poor social skills by 2nd grade.**
- **AD/HD children often are not aware of their poor social skills and blame others for their problems.**

**Barkley, R.A. (2008). Advances in ADHD: Theory, Diagnosis and Management. J & K Seminars, L.L.C., 1861 Wickersham Lane, Lancaster, PA 17603; 800-801-5415; [www.jkseminars.com](http://www.jkseminars.com).**



# Driving While Dyslexic



# Driving While Dyslexic

**“Learning to drive isn’t that easy for anybody, but for someone with dyslexia, it can be even more daunting. Some people with dyslexia can struggle with things like quickly determining lefts and rights or reading overly wordy road signs. It can also affect processes like remembering which order to do things in, using your hands and feet at the same time, or even affecting your short-term memory.”**

Author (February 18, 2021). Learning to Drive with Dyslexia. #Succeed with Dyslexia. From website: <https://www.succeedwithdyslexia.org/blog/learning-to-drive-with-dyslexia/>.

# Driving While Dyslexic

**“Situation awareness was lowest at the level of projection. Further, dyslexia was negatively associated with road sign comprehension, and road sign situation awareness, suggesting that the disorder may be detrimental for multiple forms of road sign processing.”**

Taylor B. et al. (2016). Reading the situation: The relationship between dyslexia and situational awareness for road sign information. Transportation Research Part F: Traffic Psychology and Behaviour. DOI: [10.1016/j.trf.2015.11.005](https://doi.org/10.1016/j.trf.2015.11.005)

# Driving While Dyslexic

**“Individuals with dyslexia showed lower levels of performance in the reading task, the roles of word frequency and word length were more influential for them, and there was larger variability of the vehicle’s speed during the time they were attempting to read the traffic sign, which did not occur during their driving on similar segments that did not present the targeted traffic signs. Therefore, the specific needs of individuals with dyslexia on the road should be considered in plans aimed at increasing traffic safety and fluidity.”**

Tejero, P. et al. (2019). Difficulties of Drivers With Dyslexia When Reading Traffic Signs: Analysis of Reading, Eye Gazes, and Driving Performance. Journal of Learning Disabilities. DOI: 10.1177/0022219418765766.



# Driving While Dyslexic

**“In particular, we examined the extent to which drivers with dyslexia are at a disadvantage in reading traffic signs while driving, considering reading measures, eye gazes, and driving performance as well as whether two word properties, namely, word frequency and word length, modulate the difficulties of drivers with dyslexia in this particular context. Altogether, the results suggested that individuals with dyslexia are at a disadvantage in reading traffic signs while driving, at least in circumstances such as the ones we simulated in the experiment, that is, when reading single, unanticipated words.”**

**Tejero, P. et al. (2019). Difficulties of Drivers With Dyslexia When Reading Traffic Signs: Analysis of Reading, Eye Gazes, and Driving Performance. Journal of Learning Disabilities. DOI: 10.1177/0022219418765766.**

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# ADHD while Driving





# ***Barkley's 30% Rule for Combined AD/HD***

**People with Combined Type AD/HD tend to be on average 30% less mature in controlling their hyperactivity, impulsivity, and inattentiveness than their non-disabled age peers.**

Barkley, R.A. (1998). ADHD in Children, Adolescents and Adults: Diagnosis, Assessment and Treatment. New England Educational Institute, Cape Cod Symposium (August), Pittsfield, MA.

Barkley, R.A. (2008). Advances in ADHD: Theory, Diagnosis and Management. J & K Seminars, L.L.C., 1861 Wichersham Lane, Lancaster, PA 17603; 800-801-5415; [www.jkseminars.com](http://www.jkseminars.com).

# Warning for Driver's Education Instructors with AD/HD Combined Types Students!

- The average 16 year old with Combined Type AD/HD functions like an 11 year old when it comes to controlling their hyperactivity, impulsivity and inattentiveness.
- How many of you would want an 11 year old behind the wheel of a car?



Barkley, R.A., Murphy, K.R. and Fischer, M. (2008). ADHD In Adults: What The Science Says. New York, NY: Guilford.

# Warning for Driver's Education Instructors with AD/HD Combined Type Students!



- **AD/HD teens are more likely to have driven a car illegally before they have their drivers license.**
- **They are less likely to be employing good driving habits.**
- **They will incur many more traffic citations, especially for speeding.**
- **They are four times more likely to be in an accident.**
- **They will have even more problems if they have Oppositional Defiant Disorder and/or Conduct Disorder with their AD/HD.**
- **Unmedicated people with AD/HD who are sober handle a car as well as a person who is not AD/HD who is legally drunk!**

**Barkley, R.A. (2006). Attention Deficit Hyperactivity Disorder, Third Edition. New York, NY, Guilford.**



# Warning for Driver's Education Instructors with AD/HD Combined Type Students!

- They have their licenses suspended more often: approximately 25% for AD/HD and 5% percent for non-AD/HD
- 60% of the crashes those with AD/HD have injuries, compared to 17% for the non-AD/HD
- Those with AD/HD are more likely to be rated by instructors, self and parents as being a worse driver than their peers.

Barkley, R.A. (2012). ADHD: Cutting Edge Understanding & Management. Seminar presented through J & K Seminars, 1861 Wickersham Lane, Lancaster, PA 17603-2327, [www.jkseminars.com](http://www.jkseminars.com).



# Possible Ways To Mitigate This





# Summary of What May Cause Shorter Life Spans in People with Dyslexia

- Unemployment/underemployment
- Stress/anxiety/depression
- Homelessness
- Fear of stigmatization/disclosure
- Burnout/mental fatigue, executive function difficulty, poor memory
- Poor healthcare literacy/literacy in general
- Less access to healthcare
- Balance and coordination problems
- Slow automatization
- Slow recognition
- poor diet
- smoking
- and a lack of physical activity
- Poor health practices
- Drug and alcohol use/abuse/dependence
- Increased hospitalizations
- Greater use of emergency care lower ability to demonstrate taking medications appropriately and interpret labels and health messages

# Summary of What Causes Shorter Life Spans in People with Dyslexia

**Gilbert, L. et al. (February, 2018). Literacy and life expectancy: An evidence review exploring the link between literacy and life expectancy in England through health and socioeconomic factors. National Literacy Trust research report, page 5. From website:**

**[http://cdn-literacytrust-production.s3.amazonaws.com/media/documents/National\\_Literacy\\_Trust\\_-\\_Literacy\\_and\\_life\\_expectancy\\_report.pdf](http://cdn-literacytrust-production.s3.amazonaws.com/media/documents/National_Literacy_Trust_-_Literacy_and_life_expectancy_report.pdf)**

# Life Expectancy and AD/HD

- Take the four biggest reducers of life-expectancy in the US:
  - Obesity
  - Smoking
  - Risk of diabetes
  - Exercise and Diet
- Untreated AD/HD lowers life-expectancy 2 1/2 times more than the combination of all four of the above combined!

Barkley, R.A. (December 10, 2018). ADHD Likely Reduces Estimated Life Expectancy by Young Adulthood. Summary of paper presented at the 2018 American Professional Society of ADHD and Related Disorders (APSAD) Conference, Saturday, January 13, 2018, Washington, DC. Summary can be found on the APSAD website: <https://apsard.org/adhd-likely-reduces-estimated-life-expectancy-by-young-adulthood/>.

# ADHD and COVID-19

➤ **ADHD has been associated with worse outcomes for COVID-19 infections.**

**Merzon, E. et al. (February, 2022). The Association between ADHD and the Severity of COVID-19 Infection. Journal of Attention Disorders. DOI: [10.1177/10870547211003659](https://doi.org/10.1177/10870547211003659).**



# Suggestions From ADHD Research

**“Little exercise, or sleep, poor nutrition, less education, more obesity, more smoking, alcohol, and drug use, as well as poor driving, poor dental hygiene, more STDs, more teen pregnancies, more antisocial behavior, more reactive aggression, etc.”**

Barkley, R.A. (January 14, 2018). Life Expectancy Slashed in Worst Cases of AD/HD. Paper presented at the American Professional Society of ADHD and Related Disorders, January 12-14, 2018. Washington, DC.

Inserro, A. (January 14, 2018). Psychologist Barkley Says Life Expectancy Slashed in Worst Cases for Those With ADHD. American Journal of Managed Care. From website: <https://www.ajmc.com/conferences/apsard-2018/psychologist-barkley-says-life-expectancy-slashed-in-worst-cases-for-those-with-adhd>.

# Suggestions From ADHD Research

- It is useful to spend significantly more time with them emphasizing the importance of good health and developing ways to ensure they follow through with annual check-ups, etc.

Barkley, R.A. (January 14, 2018). Life Expectancy Slashed in Worst Cases of AD/HD. Paper presented at the American Professional Society of ADHD and Related Disorders, January 12-14, 2018. Washington, DC.

Inserro, A. (January 14, 2018). Psychologist Barkley Says Life Expectancy Slashed in Worst Cases for Those With ADHD. American Journal of Managed Care. From website: <https://www.ajmc.com/conferences/apsard-2018/psychologist-barkley-says-life-expectancy-slashed-in-worst-cases-for-those-with-adhd>.

# My Additional Observations

- **Especially with people with ADHD, but with Dyslexia, too:**
  - **Never assume they have had gone to a dentist, had their vision checked, their hearing checked, had a physical, gone to the hospital when they should have, had a vaccination, been checked for diseases that run in the family, etc.**
  - **Substance and alcohol abuse runs rapid in these populations. Do not trust self-report of clients regarding substance use. People with ADHD are very poor historians. Use the Pain Clinic approach if possible (i.e., blood tests and urinalysis).**
  - **Since both Dyslexia and ADHD are genetic disorders the parents/guardians may have them, so you may have to treat them so they can be able to help their children.**



# Driving Mitigation



## Warning: Driving and AD/HD



**“Fortunately, the driving performance of adults with ADHD has been shown to improve with medication management, at least those aspects of poor driving likely to derive from ADHD itself.” (p. 376)**

**Barkley, R.A., Murphy, K.R. and Fischer, M. (2008). ADHD In Adults: What The Science Says. New York, NY: Guilford.**

# Driving While ADHD

➤ **Take the medication that works for your ADHD as directed.**

**Barkley, R.A. et al. (August, 2022). Driving in young adults with attention deficit hyperactivity disorder: Knowledge, performance, adverse outcomes, and the role of executive functioning. Journal of the International Neuropsychological Society. DOI: [10.1017/S1355617702801345](https://doi.org/10.1017/S1355617702801345).**



# Other Suggestions Regarding AD/HD and Driving

- **Use a very graduated approach to get access to driving: 1<sup>st</sup> can only drive during daylight hours with adult in car; 2<sup>nd</sup> can only drive with adult in car (day or night); can drive 20 minutes by self during daylight, and only drive with adult at night, etc.**
- **Have a much longer learners permit period for those with AD/HD.**

**Barkley, R.A. (2012). ADHD: Cutting Edge Understanding & Management. Seminar presented through J & K Seminars, 1861 Wickersham Lane, Lancaster, PA 17603-2327, [www.jkseminars.com](http://www.jkseminars.com).**

# What Can One DO With The AD/HD Teen

## Who Is Driving?

- **Greater Supervision of car use by parents/guardians: Chart their car use and do random checking to check if they are driving where they say they are.**
- **Use medication management: long acting medications provide better coverage.**
- **No alcohol/drugs while driving**
- **Use manual transmission**

**Barkley, R.A. (2012). ADHD: Cutting Edge Understanding & Management. Seminar presented through J & K Seminars, 1861 Wickersham Lane, Lancaster, PA 17603-2327, [www.jkseminars.com](http://www.jkseminars.com).**

# Behavioral Techniques for AD/HD and Driving

**Behavioral Contracts between parents and teens with AD/HD for safe driving:**

- **Snyder, J.M. (2001). ADHD & Driving: A Guide for Parents with ADHD. Whitefish, MT: Whitefish Consultants. (Available through: [www.addwarehouse.com](http://www.addwarehouse.com)).**
- **Barkley, R.A. et al. (August, 2022). Driving in young adults with attention deficit hyperactivity disorder: Knowledge, performance, adverse outcomes, and the role of executive functioning. Journal of the International Neuropsychological Society. DOI: [10.1017/S1355617702801345](https://doi.org/10.1017/S1355617702801345).**

# Helpful Technology for AD/HD Teens While Driving

- **Allow no cell phone or texting in the car.**
- **How do you insure this does not happen? Put a cell signal jammer in the car.**
  - <https://www.phonejammer.com/>
  - <https://www.jammer-store.com/>

# Helpful Technology and Insurance for AD/HD & Driving

- Car mounted critical event cameras:

[https://www.amazon.com/s?k=driver+cameras&crid=JYNDZQB68K5T&s\\_prefix=driver+cameras%2Caps%2C280&ref=nb\\_sb\\_noss\\_1](https://www.amazon.com/s?k=driver+cameras&crid=JYNDZQB68K5T&s_prefix=driver+cameras%2Caps%2C280&ref=nb_sb_noss_1)

- American Family Insurance, Inc. uses an APP to determine if it can offer teens lower rates:

<https://www.amfam.com/insurance/car/teensafedriver>

- Article about car insurance and ADHD:

- <https://www.quickquote.com/life-insurance-with-adhd/>

- ADDitude Magazine article on ADHD and Car Insurance:

- <https://www.additudemag.com/when-adhd-affects-car-insurance-premiums/>

- Article on how to get car insurance with a mental health disorder:

- <https://www.policygenius.com/life-insurance/mental-health/#best-life-insurance-for-ADHD>

# Driving While Dyslexic and ADHD

- Does this mean that if you are Dyslexic and ADHD your driving record will be worse than someone with either of the disorders, or neither of them?
- **WE DON'T KNOW!!!**



# What Might Help with Driving While Dyslexic

- Using a GPS in vehicle that shows the road signs and speaks:
  - <https://www.garmin.com/en-US/>
- Encourage local, state and national transportation authorities to use more “dyslexic friendly” signage?

# How To Mitigate Sleep Problems

# Sleep Disorders and ADHD

**“The high prevalence of subjective complaints regarding sleep disturbances in individuals with ADHD across all age groups, and the prevalence of daytime symptoms of inattention and hyperactivity in individuals with primary sleep disorders, suggests that a baseline sleep evaluation during the initial assessment of ADHD as well as regular systematic screening for sleep problems is necessary component of ongoing ADHD management. This is of particular importance given that the presence of such sleep problems will likely decrease the efficacy of an intervention aimed solely at improving ADHD symptoms.”**

**Wajszilber, D. et al. (December 14, 2018). Sleep disorders in patients with ADHD: impact and management challenges. Nature and Sleep Science. DOI: [10.2147/NSS.S163074](https://doi.org/10.2147/NSS.S163074).**

# I Believe

- All people being evaluated for Dyslexia and/or ADHD regardless of age should be screened for comorbid Sleep Disorders due to the high prevalence of such disorders in these populations.
- An instrument like the Global Sleep Assessment Questionnaire (GSAQ) (<https://www.sleep.pitt.edu/wp-content/uploads/2020/08/GSAQ.pdf>) may be helpful with this.

Klingman, K.J. et al. (April 2017). QUESTIONNAIRES THAT SCREEN FOR MULTIPLE SLEEP DISORDERS. Sleep Medicine Review. DOI: [10.1016/j.smrv.2016.02.004](https://doi.org/10.1016/j.smrv.2016.02.004).

- Those who screen for possible Sleep Disorders would be referred to a Sleep Disorder Clinic.
- By treating possible comorbid Sleep Disorders those with Dyslexia may see some relief of their procedural memory problems, etc.



# How to Mitigate Automaticity Problems

# Teaching Procedural Memory

- **Procedural Memory: Knowing how to do something:**
  - Proficient Reading is a skill and is a product of procedural memory.
  - With procedural memory robust gains in knowledge are made after training is terminated.
  - Train until the person's new behavior plateaus, stop training then allow to sleep. The next day they will have improved behavior and less errors.
  - This will not happen if the person is not allowed to sleep and/or if they are then taught a competing task.
  - If the training situation is considered novel, learning will continue to increase.

Karni, A. (November 3, 2004). Brain Basis of Skill Acquisition and Learning: How do they Relate to Reading? Paper presented during the Neural Basis of Reading and Other Forms of Skills Acquisition Symposium of the 55th Annual International Dyslexia Association Conference, Philadelphia, PA, Session W-1.

Karni, A., Tanne, D., Rubenstein, B.S., Askensay, J.J., and Saji, D. (1994). Dependence on REM Sleep of Overnight Improvement of A Perceptual Skill. Science, 265 (5172), pp. 679-682.



# I Believe

- **Encourage “overlearning” of new skills.**
- **Practice new skill as long as every time you rehearse it you improve and become more efficient. Once you plateau stop practicing. Then get a good night’s sleep. The next day you will be more efficient and accurate with the skill because the sleep consolidated the skill.**
- **Treat possible comorbid Sleep Disorders.**



# How to Mitigate Balance and Coordination Problems



## PLEASE NOTE:

**None of the methodologies described below will do anything to help the symptoms of Poor Phonemic Awareness, Slow Rapid Automatized Naming and Orthographic Processing in a Dyslexic! They MAY help with comorbid balance and coordination problems, though.**

# Dyslexia, Balance, & Coordination

**The area of dyslexia which is also prominent in child suffers, however not nearly as frequently addressed is physical coordination. Children suffering from dyslexia have trouble with their overall gross motor coordination. Furthermore they have trouble with their sense of left and right, sense of direction in relationship to body in space, short-term memory, scheduling, and getting to the right place at the right time. Movement Games, Activities and Dances are enrichment activities, which require the child's full body participation. These activities help to enhance the child's sense of direction, memory, sequencing, location of body in space, and overall gross motor coordination skills. Furthermore, these activities serve to enhance the child's social and emotional growth through participating in a group.**

# Reference

**Baranovich, D-L (2011). Using Dance and Movement Activities to Enhance the Coordination and Socialisation Skills of Primary School Children with Dyslexia. Journal of Special Needs Education. From website:**

**<https://journal.nase.org.my/index.php/jsne/article/view/28>.**

# Dyslexia, Coordination and Balance

**I believe there are adults with Dyslexia and/or ADHD that have untreated comorbid coordination and or balance difficulties. These difficulties can cause problems with driving, falling, lack of fitness etc. Such difficulties can be helped with physical therapy and occupational therapy. The following slides are old ones of mine written towards children, but could be used with adults. Why reinvent the wheel?**



# Balance and Coordination Disorders



**Children with Coordination Disorders tend to have:**

- Poor Social Competence**
- Low Self-Esteem**
- Reluctance to engage in Physical Activities**

**Fox, A.M. (Summer, 1998). Clumsiness In Childhood: Developmental Coordination Disorder. Learning Disabilities, 9 (2), pp. 57-64.**

# Developmental Coordination Disorder

**“I’ve always felt like a klutz. I’m not a good runner. I move quickly. I’m full of energy. But I’m not the most graceful person! Or if your talking sports, in grammar school, I got benched a lot because they didn’t want me for a team...Hitting the ball would be a fluke” (p. 150). – Hannah w/ NVLD**

- **Poor academics keep disabled children out of sports and clubs.**

**Wren, C. (2000). Hanging by a Twig. New York, NY: Norton.**



# Developmental Coordination Disorder

**“Learning to ride a bike, play board games, cards, and sports are all supposed to be fun and a normal part of growing up, but they are difficult for anyone with a spatial learning disability. Being accepted is paramount to any fourth grader. I desperately wanted to do the same things I saw the other kids doing...” (Britt Neff, p. 42).**

**Neff, B., Neff-Lippman, J., and Stockdale, C. (2002). The Source for Visual-Spatial Disorders. East Moline, IL: LinguSystems,**



# Developmental Coordination Disorder

**“It is further suggested...that clinicians be aware of the larger realm of possible health-related difficulties that may arise in adults with ADHD and perhaps inquire about them as part of the initial evaluation” (p. 64).**

**Barkley, R.A., and Gordon, M. (2002). Research on Comorbidity, Adaptive Functioning, and Cognitive Impairments in Adults with ADHD: Implications for Clinical Practice. In S. Goldstein and A. T. Ellison (Eds.), Clinician’s Guide to Adult ADHD: Assessment and Intervention. New York, NY: Academic Press, pp. 43-69.**



# Developmental Coordination Disorder

- People with Autism Spectrum Disorder often cannot relate to the feeling of satisfaction, etc. of being on a team.
- If they do participate in sports they will have a better chance in individual sports more often.



Attwood, T. (1998). Asperger's Syndrome: A Guide for Parents and Professionals. Philadelphia, PA: Jessica Kingsley, p. 103.



# Developmental Coordination Disorder (DCD)



- **These children have significant difficulty learning and internalizing tasks. It's not the timing of when they learn the tasks.**

Fox, A.M. (Summer, 1998). Clumsiness In Childhood : Developmental Coordination Disorder. Learning Disabilities, 9 (2), pp. 57-64.

# Subtypes of DCD

- **Ideational Motor Planning**
- **Nonverbal Learning Disorders**
- **Proprioception and Kinesthetic Disorders**
- **Minimal Cerebral Palsy (CP)**
  - **60% of children with CP outgrow their CP symptoms**



Blondis, T.A. (October 18, 2002). FC1-The Association of Developmental Coordination Disorder (DCD) and AD/HD. Lecture presented at the 14<sup>th</sup> Annual CHADD Conference, Miami Beach, FL.

# Comorbidity and DCD

- **80% of Dyslexics have coordination problems**
- **55% of those with AD/HD have DCD**
- **Those with NVLD often have psychomotor problems on their body's left side.**
- **50-90% of those with Autism Spectrum Disorder have coordination problems**



Fawcett, A.J., and Nicolson, R.I. (2001). The Role of the Cerebellum . In A. J. Fawcett (Ed.), Dyslexia: Theory and Good Practice. Philadelphia, PA: Whurr, pp. 89-106.

Gillberg, C. (2001). ADHD with Comorbid Developmental Coordination Disorder: Long-Term Outcome in a Community Sample. ADHD Report, 9 (2), pp. 5-9.

Wren, C. (2000). Hanging by a Twig. New York, NY: Norton, p, 150.

Attwood, T. (1998). Asperger's Syndrome: A Guide for Parents and Professionals. Philadelphia, PA: Jessica Kingsley, p. 103.

# Treatment and DCD



- **Children with DCD need to learn to verbally mediate to work around their coordination difficulties.**
- **Two large well designed Canadian studies have demonstrated Sensory Integration Training does not work. The same applies to the British “Kinesthetic Therapy”.**

**Blondis, T.A. (October 18, 2002). FC-1 The Association of Developmental Coordination Disorder (DCD) and AD/HD. Lecture presented at the 14<sup>th</sup> Annual CHADD International Conference, Miami, FL.**

# Treatment and DCD



## ➤ Other references on Sensory Integration Therapy and Sensory Integration Disorder:

- Pallack, N. (2000) Keeping Current In Sensory Integration. CanChild (Centre for Childhood Disability Research), McMaster University. From Website: [www.canchild.ca/default.aspx?tabid=128](http://www.canchild.ca/default.aspx?tabid=128)
- Heilbroner, P.L. (2006). Why “Sensory Integration Disorder” Is a Dubious Diagnosis.
- From Website: [www.quackwatch.org/01/QuackeryRelatedTopics/sid.html](http://www.quackwatch.org/01/QuackeryRelatedTopics/sid.html)



# Treatment and DCD



- **Cognitive Orientation to Occupational Performance (CO-OP):**
  - **Teaches cognitive strategies to overcome DCD**
  - **Hand over hand techniques**
  - **Repetition and corrective feedback**

Fox, A. M. (Summer, 1998). Clumsiness in Childhood: Developmental Coordination Disorder. Learning Disabilities, 9 (2), pp. 57-64.

Smith, I. (2000). Motor Functioning and Asperger's Syndrome. In A. Klin, F. Volkmar, and S.S. Sparrow (Eds.), Asperger's Syndrome. New York, NY: Guilford, pp. 97-124.

# DCD and Helpful Professionals



- American Occupational Therapy Association: [www.aota.org](http://www.aota.org)
- American Physical Therapy Association: [www.apta.org](http://www.apta.org)
- American Speech-Language Therapy Association: [www.professional.asha.org](http://www.professional.asha.org)
- Behavioral Neurologists: [www.anpaoline.org](http://www.anpaoline.org)
- Mental Health Professionals
- Neuro-Ophthalmologists: [www.ama-assn.org](http://www.ama-assn.org)
- Otolaryngologists: <https://www.entnet.org/>

# DCD and Balance



# DCD and Balance



- **Children with DCD have poor muscle tone and need to develop strength.**
- **Dyslexics have trouble with balance & motor skills, processing speed and working memory, especially with competing tasks.**

**Blondis, T.A. (October 18, 2002). FC-1 The Association of Developmental Coordination Disorder (DCD) and ADHD. Lecture presented at the 14<sup>th</sup> Annual CHADD International Conference, Miami Beach, FL.**

**Fawcett, A. (2001). Dyslexia: Theory and Good Practice. Philadelphia, PA: Whurr.**

# DCD and Balance



- **Dyslexics have abnormal postural reflexes and reflexes in general.**
- **These abnormalities can cause problems with riding a bike, skipping, hopping, throwing and catching a ball, swimming, fine motor skills, etc.**

**Goddard Blythe, S. (April, 2001). Neurological Dysfunction as a Significant Factor in Children Diagnosed with Dyslexia. Paper presented at the British Dyslexia Association 5<sup>th</sup> Annual Conference, University of York, England.**



# DCD and Balance



- **Body Core=Trunk and Pelvis...provides the body “breaks” to slow down movement**
- **Legs and arms as well as muscles attach to spine and torso. The spine and torso provide a base.**
- **The body core is also the body’s center of gravity.**

**(September 23, 2003). Strength Training and Stability. From website: <http://www.benning.army.mil/usapfs/Training/Strength/>**

# DCD and Balance

- **NIH Study of *T'ai Chi Chuan***
  - **Improved balance in older adults by 50%**

Hain, T.C., Fuller, L. . Weil, L. , & Kotsias, J. (1999). Effects of Tai Chi on Balance. 125, pp. 1191-1195.



# DCD and Balance



- **Nowicki and Duke spoke of “Resting Posture” which is the posture one assumes when one is not feeling anything of note and is in a neutral position. Those with Expressive Dyssemia tend to use Resting Posture inappropriately.**
- **This may also be caused by poor core body strength.**

**Nowicki, S., and Duke, M. (2002). Will I Ever Fit In? New York, NY: Free Press.**

# DCD and Balance



## Treatment:

- Core strength and control can be developed by balance and stabilization training.
- (September 23, 2003). Strength Training and Stability. From website: <http://www.benning.army.mil/usapf/Training/Strength>
- American Physical Therapy Association: [www.apta.org](http://www.apta.org)
- American Occupational Therapy Association: [www.aota.org](http://www.aota.org)
- American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS): [www.entnet.org](http://www.entnet.org)

# DCD and Balance

- ***Possible Alternative Treatment***

- NIH Emory University video tape:  
Dr. Xu's Tai Chi Research Center  
P.O. Box 98426  
Atlanta, GA 30359

***More Research  
Needed!***





# How To Mitigate Literacy, Employment, & Quality of Life Problems



# Proposed Changes in Adult Literacy Programs

**Most adult literacy programs believe they are successful if they are able to help their clients reach the eight grade reading level.**

- **This is a travesty!**
- **To be successfully support yourself in the United States you must have a twelfth grade reading level.**
- **Most adult literacy programs DO NOT know how to habilitate a person who is not Dyslexic (Problems with Phonological Awareness, Rapid Automatized Naming, and Orthographic Processing), but have problems remembering what they just read and have episodic visual working memory problems. This is something many with ADHD experience.**

# Proposed Changes in Adult Literacy Programs

- **For those with ADHD and the episodic visual working memory difficulties they have difficulty simultaneously reading and visualizing in their mind's eye what they are reading about, hence they will not remember/comprehend what they read. They often do not remember what they just read.**
- **Solutions for this:**
  - **Stimulant medication enhances processing including Working Memory. It can help with Reading Comprehension problems caused by Working Memory deficits.**
  - **SQ4R (Survey, Question, Read, Write, Recite and Review, etc.)**
  - **Lindamood-Bell Visualizing and Verbalizing For Language Comprehension and Thinking program**
  - **If all else fails send them to a speech language pathologist for intensive language comprehension work.**

# Proposed Changes in Adult Literacy Programs

**About 30% of those with ADHD will have comorbid Dyslexia and episodic visual working memory problems.**

- **Both their reading difficulties need to be addressed:**
  - **Their dyslexia needs to be treated by synthetic multisensory phonics programs like the Orton-Gillingham.**
  - **Their additional reading problem of episodic visual working memory needs to be addressed by the aforementioned programs.**

# Specific Reading Comprehension Disorder

**“For S-RCD, the context-dependent functional interaction anomaly was most prominently seen in left IFG, which covaried to a greater extent with hippocampal, parahippocampal, and prefrontal areas than for TD for low- as compared to high-frequency words. Given the greater lexical access demands of low frequency as compared to high-frequency words, these results may suggest specific weaknesses in accessing lexical-semantic representations during word recognition. These novel findings provide foundational insights into the nature of S-RCD, and set the stage for future investigations of this common, but understudied, reading disorder” (p. 199).**

**Cutting, L. (2013). Unraveling Reading Comprehension: Behavioral, Neurobiological, and Genetic Components (Extraordinary Brain). Baltimore, MD: Paul H. Brookes.**

# Proposed Changes in Adult Literacy Programs

**Tannock, R., & Brown, T.E. (2000). Attention-Deficit Disorders With Learning Disorders in Children and Adolescents. In T.E. Brown (ed.), Attention –Deficit Disorders and Comorbidities in Children, Adolescents and Adults. Washington, DC: American Psychiatric Press, pp. 231-297.**

**Blake, K.T. (May/June, 2000). Two Common Reading Problems Experienced by Many AD/HD Adults. Attention!, 6(5), pp. 30-33.**

**<https://drkevintblake.com/TwoCommonReadingProblems.pdf>**

**Lindamood-Bell (The Nancibell) Visualizing and Verbalizing For Language Comprehension and Thinking program:**

**<https://lindamoodbell.com/program/visualizing-and-verbalizing-program>**



# Employment



# Employment and Learning Disabilities

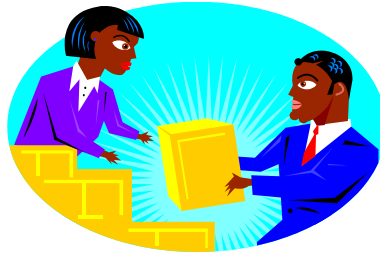


**What can be done about this?**

- **Have a job coach/career counselor help them prepare for the interview.**
- **A job coach can advocate for the person and advocate for accommodations.**
- **Very intense job related social skills training by a mental health professional which includes microskills training in groups and videotape feedback.**
- **Periodic onsite assessment of social skills, monitor progress and fill in social gaps.**

**Inge, K.J., and Tilson, G. (1994). Supported Employment: Issues and Applications for Individuals with Learning Disabilities. In P.J. Gerber and H.B. Reiff (Eds.), Learning Disabilities in Adulthood: Persisting Problems and Evolving Issues. Austin, TX: Pro-ED, pp. 179-193.)**

# Employment and Learning Disabilities



**“...behavioral assessment in a real work environment is the best predictor of an individual’s performance for a supported employment placement” (p. 182).**

Inge, K.J., and Tilson, G. (1994). Supported Employment: Issues and Applications for Individuals with Learning Disabilities. In P.J. Gerber and H.B. Reiff (Eds.), Learning Disabilities in Adulthood: Persisting Problems and Evolving Issues. Austin, TX: Pro-ED, pp. 179-193.

# Employment and Learning Disabilities



- **Don't rule out certain career paths solely due to being LD.**
- **Don't let them rule out more education just because of bad past experiences in school.**
  - **If they fall under this category help improve their academic confidence and self-esteem.**

**McLoughlin, D., Fitzgibbon, G., and Young, V. (1994). The Adult Dyslexic: Assessment Counseling and Training. San Diego,CA: Singular.**

# Employment and Learning Disabilities



- **“Even residual difficulties, such as slow reading and writing, would make some occupations onerous” (p. 84).**
- **“Eventually, dyslexics should pursue occupations and careers for which they are appropriately equipped in terms of their abilities, aptitudes and interests” (p. 84).**

**McLoughlin, D., Fitzgibbon, G., and Young, V. (1994). The Adult Dyslexic: Assessment Counseling and Training. San Diego,CA: Singular.**

## Employment and Learning Disabilities



**Thus, adults with learning disabilities should not be limited in the job/career choices if they have adequate abilities, aptitudes and interest, and their compensation strategies and accommodations work in that environment.**

# TRANSITION PLANNING FOR DYSLEXICS

## ➤ **School-to Work Opportunities Act of 1994**



# Vocational Technical Post Secondary Education

- I long for the day when a tenured Harvard professor will proudly say, “My daughter is studying how to use a machine tool at VoTech!”
- The myth that the only way a person can be successful in life is to successfully graduate from college must die.
- Learning a trade can lead to a fulfilling and rewarding career.
- You can make just as much money as a college graduate being a custom furniture maker, Plummer, electrician, etc.
- Make sure such programs have the aforementioned reading habilitation program as well as other disability and academic supports (i.e. remedial courses, disability recourses, etc.).

# Bring Back Apprenticeships

- **My father was an attorney. At one time he shared an office with an “older attorney” who read for the bar exam (he did not have a post secondary education). He was one of the most respected attorneys in the state. He was an expert on the laws of the state from its inception (Oklahoma, 1907). He was an assistant at the state constitutional convention!**
- **When I was in graduate school I had the joy of attending lectures given by a man who was 100 who apprenticed to become a physician. He learned hypnosis from someone in a carnival. He used it to help control pain in his patients. He was the first person to teach me how to do hypnosis.**

# Bring Back Apprenticeships

- **A family member of mine got a college degree in hotel and restaurant management and eventually became the head chef at a restaurant with one Michelin star. He burned out, quit, apprenticed with a top custom furniture maker, and now makes custom furniture, and a great Thanksgiving dinner!**

# A Biosocial Model of Career Counseling?

**“From within an emerging paradigm, clinicians and researchers must appreciate the shift in discourse regarding neurodiversity from an active, vocal stake-holder group and embrace new avenues for study and practice that address practical concerns regarding education, training, work and inclusion. This article has provided an overview of the neurodiversity employment picture; namely high percentages of exclusion juxtaposed against a narrative of talent and hope. Understanding the importance of nomenclature, sensory sensitivity and the lasting psychological effects of intersectional social exclusion is key for physicians wanting to interact confidently and positively with neurominorities. The proposed biopsychosocial model allows us to provide therapeutic intervention (medical model) and recommend structural accommodation (legislative obligation) without pathologization (social model). In other words, we can deal pragmatically with the individuals who approach us and strive for the best outcomes, given their profile and environment.”**

**Doyle, N. (September, 2020). Neurodiversity at work: A biopsychosocial model and the impact on working adults. British Medical Bulletin. DOI: [10.1093/bmb/ldaa021](https://doi.org/10.1093/bmb/ldaa021).**

# Career Counseling and Dyslexia

- **“There are very few studies evaluating the effectiveness of adjustments in the workplace and this is an urgent research need.”**
- **Good Practice in work accommodations is base almost entirely on “professional common sense”, not science.**
- **Workplace difficulties of dyslexics:**
  - **Literacy, memory, organization, communication and self-esteem, memory, organizational skills, time management, stress management**
  - **Workplace participation in terms of mental functions and social interactions**
  - **Cognitive functioning and social self-esteem**
  - **Higher incidence of unemployment and incarceration**

# Career Counseling and Dyslexia

- **Workplace strengths of dyslexics:**
  - **Entrepreneurialism**
  - **Creativity and cognitive control**
  - **Visual reasoning**
  - **Practical skills, visual-spatial skills and story-telling ability**

Doyle, N. (September, 2020). Neurodiversity at work: A biopsychosocial model and the impact on working adults. British Medical Bulletin. DOI: [10.1093/bmb/ldaa021](https://doi.org/10.1093/bmb/ldaa021).

❖ **How do we address this?**



# Bring Career Counseling into the 21<sup>st</sup> Century

**During the Ming Dynasty I ran the Career Counseling Center at a large land grant university.**

- **Essentially, the current theories of career development are the same as they were back then.**
- **Many colleges have gotten rid of the Career Counseling Centers.**
- **Using the Ming Dynasty theory I was taught if someone had a disability they could still do any career they wanted, but they needed to be given appropriate accommodations to do so.**
- **The problem was no one knew what accommodation worked with which disability. The same is true today.**

# Bring Career Counseling into the 21<sup>st</sup> Century

- **Research must be done to learn what specific accommodation works with which symptom in different job settings.**
- **Accommodation plans must be custom designed for the specific symptoms and specific work environment of the client.**
- **Thought experiment: The career counseling test battery indicates the student has interests that exactly match professional editors. The student has a 150 IQ, is about to graduate from college with a degree in English Literature, and is profoundly dyslexic (reading level grade 8 and her reading rate is at the 6<sup>th</sup> grade level). What do you do regarding your career advice for the student?**
  - **Suggest she see a job as an editor with Simon and Schuster?**

# Bring Career Counseling into the 21<sup>st</sup> Century

- I would also make sure she knew how her ADAA rights, what accommodations she would need as an editor, and how to correctly use them as well as how to use every piece of technology that may help her in such a work setting.
- I would ask her how many hours a week she studies to keep her grades up. She might say 20, or she might say 80. If it is close to 80 I would ask her what her life goals were.
- If she said she wanted a family and a comfortable home life.
  - I would let her know her work week would probably be about 80 hours a week to make up for her symptoms and having a life outside work may be almost impossible. She may even burn out. I would discuss possible ways to avoid this.

# Bring Career Counseling into the 21<sup>st</sup> Century

- I would suggest possible alternative work settings that might not require her to work so hard. I would do this by looking up the skills one needs to be an editor and find similar jobs that would not require as much work.
- In the end the decision is hers and I would support her whatever the decision she makes.
- The problem is there is hideously little research to be able to do the above appropriately.

# Screen For Dyslexia When Career Counseling

**Some Israeli scientists created a simple questionnaire that screened for dyslexia in college students who sought out career counseling. It was found to identify 90% of dyslexic students. It is now used in post-secondary career counseling throughout Israel. If a career counselor may be able to catch a non-diagnosed dyslexic they can get the help with their literacy and aid in guiding them to a better career choice.**

**Kasler, J. et al. (2009). Screening for learning disabilities in young adult career counseling. Work. DOI: [10.3233/WOR-2009-0806](https://doi.org/10.3233/WOR-2009-0806).**



# Career Recommendations From The Ming Dynasty



# Employment and Learning Disabilities



**Price offered the following false beliefs employers have about the learning disabled:**

- **certain jobs are suited to the disabled;**
- **it's good to hire one disabled person to see what he/she can do;**
- **the disabled are better workers than non-disabled;**
- **special training is needed to work with the disabled;**
- **accommodations are expensive;**

# Employment and Learning Disabilities



- **disabled people cannot work;**
- **if we hire the disabled our health insurance rates will rise; and**
- **we must place the disabled in jobs where they will succeed.**

Price, L. (1997). Psychosocial Issues of Workplace Adjustment. In P.J.Gerber and D.S. Brown (Eds.), Learning Disabilities and Employment. Austin, TX: Pro-ED, pp. 275-306.

# Employment and Learning Disabilities



- **3% to 14% of the workforce is LD.**
- **Often employers feel more comfortable hiring those with physical disabilities than those with LD.**
- **“...difficulties with literacy do not necessarily mean lack of intelligence or education” (p. 79).**

Payne, L. (1997). Job Accommodations: What Works and Why. In P.J. Gerber and D.S. Brown (Eds.), Learning Disabilities and Employment. Austin, TX: Pro-Ed, pp. 275-306.

McLoughlin, D., Fitzgibbon, G., and Young, V. (1994). The Adult Dyslexic: Assessment Counseling and Training. San Diego, CA: Singular.

# Employment and Learning Disabilities



- **“Adult dyslexics are frequently reluctant to admit their illiteracy because of its association with stupidity” (p. 73).**
- **Dyslexics often learn to compensate in their job until their job changes (i.e., promotion, etc.).**

**McLoughlin, D., Fitzgibbon, G., and Young, V. (1994). The Adult Dyslexic: Assessment Counseling and Training. San Diego,CA: Singular.**

# Employment and Learning Disabilities



**“If you do not need accommodations in the application process, generally it is best to wait until after you have the job. If you see that part of the job is a problem for you and believe you need an accommodation, it is best to act promptly and not allow a long period of poor performance. Also, at the time you disclose your disability, request specific reasonable accommodations that will enable you to do your job” (p. 4).**

Latham, P.H. (1998). Learning Disabilities and the Law—After High School: An Overview for Students. LDA Newsbriefs, 33 (4), pp. 3-4.

# Employment and Learning Disabilities



**LD employees should start the disclosure process with someone from the human resources/personnel department. Such a specialist could assist with accommodations and coming up with a plan of action. A pre-disclosure session may be a good idea with a job coach, LD specialists, etc.**

Payne, L. (1997). Job Accommodations: What Works and Why. In P.J. Gerber and D.S. Brown (Eds.), Learning Disabilities and Employment. Austin, TX: Pro-Ed, pp. 275-306.



# Employment and Learning Disabilities



**“Job accommodations refers to the process of matching the communications style and expectations of the supervisor and the production system to ensure that the disability of the employee does not hamper his or her ability to produce quality products or services” (p. 198).**

**Brown, D.S, and Gerber, P.J. (1994). Employing People with Learning Disabilities. In P.J. Gerber and H. B. Reiff (Eds.), Learning Disabilities in Adulthood: Persisting Problems and Evolving Issues. Austin, TX: Pro-Ed, pp. 194-203.**

# Employment and Learning Disabilities

**Gregg, Johnson, and McKinley provided the following guidelines to determine if an accommodation would cause an employer undue hardship:**



- 1. The nature and net cost of the accommodation.**
- 2. The financial resources of the facility making the accommodation.**
- 3. The type of facility, and the impact operations if an accommodation would be provided to a consumer” (p. 354).**

**Gregg, N., Johnson, Y., and McKinley (1996). Learning Disabilities Policy and Legal Issues: A Consumer and Practitioner User-Friendly Guide. In N. Gregg, C. Hoy, and A.F. Gay(eds.), Adults with Learning Disabilities: Theoretical and Practical Perspectives. New York, NY: Guilford, pp. 329-367.**

# Employment and Learning Disabilities



**Brown and Gerber (1994) suggested using the Ernst and Young Quality Consulting Group (1990) model in working to develop a specific work accommodation for an LD/ADHD employee:**

# Employment and Learning Disabilities



- “1. Plan. The supervisor, the employee and other team members find a way to resolve the situation...**
- 2. Do. After sufficient planning, the accommodation should be implemented...**
- 3. Check. See if the accommodation works...**
- 4. Act. If the accommodation does not work, it may be necessary to go through the cycle a second time. If the accommodation works, steps should be taken to institutionalize the accommodation so the employee does not loose it with a change of supervisor or other company need” (p. 198).”**

**Brown, D.S, and Gerber, P.J. (1994). Employing People with Learning Disabilities. In P.J. Gerber and H.B. Reiff (Eds.), Learning Disabilities in Adulthood: Persisting Problems and Evolving Issues. Austin, TX: Pro-Ed, pp. 194-203.**

# LD Life Insight



**Tessler (1998), a dyslexic psychologist wrote, “Today, people regard me as successful and assume I can do things I can’t do” (p. 32). “With or without a learning disability I must perform as well as my colleagues” (p. 33).**

**Tessler, L.G. (1998). Accommodations Mack Success Possible: A Personal Account. Perspectives, 24 (3), pp. 32-33.)**

# Employment and Learning Disabilities



**Tessler wrote of “psychological accommodations” that individuals with learning disabilities can self-apply to the work environment. They are:**

- 1. Slow down—give yourself permission to take the time you need.**
- 2. Create obtainable goals.**
- 3. Break down each task into small, manageable steps.**



# Employment and Learning Disabilities



- 4. Be willing to work very hard.**
- 5. Recognize and accept the fact that only extra effort will get you the success that others achieve with much less work.**
- 6. Don't quit especially when the going gets tough. Take a break instead.**
- 7. Establish a timetable that is realistic and leave as much room for error and re-doing as possible.**

# Employment and Learning Disabilities



- 8. Anticipate and prepare for problems.**
- 9. Take a chance. Do something you're not sure you can do well. It's the only way to grow and find your full potential" (p. 33).**

**Tessler, L.G. (1998). Accommodations Make Success Possible: A Personal Account. Perspectives, 24 (3), pp. 32-33.**

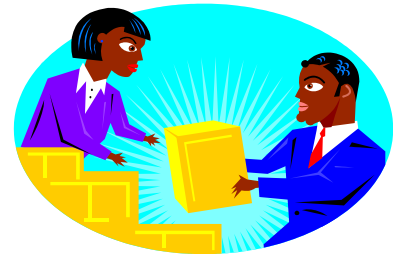
# Employment and Learning Disabilities



**“The findings suggest that the overriding factor leading to success is control. Successful adults with learning disabilities were able to control their lives, and the greater degree of control, the greater likelihood of success...Control refers to the drive to manage one’s life” (p. 207).**

Ginsberg, R., Gerber, P.J., and Reiff, H.B. (1994). Employment Success for Adults with Learning Disabilities. In P.J. Gerber and H.B. Reiff (Eds.), Learning Disabilities in Adulthood: Persisting Problems and Evolving Issues. Austin, TX: Pro-ED, pp. 204-213.

# Employment and Learning Disabilities



## Successful LD Adults:

- have a strong desire to achieve;
- are goal driven;
- reframe disabilities into abilities;
- are extremely persistent;
- find jobs that are good matches for abilities, skills and interests; and
- are creative and not afraid to ask for help.

Ginsberg, R., Gerber, P.J., and Reiff, H.B. (1994). Employment Success for Adults with Learning Disabilities. In P.J. Gerber and H.B. Reiff (Eds.), Learning Disabilities in Adulthood: Persisting Problems and Evolving Issues. Austin, TX: Pro-ED, pp. 204-213.

# Employment and Learning Disabilities

**Job Accommodations Network**

**P. O. Box 6080**

**Morgantown, WV 26506-6080**

**Voice/TTY (in US): 1-800-526-7234**

**Voice/TTY (Worldwide): 1-304-293-7186**

**Fax: 1-304-293-5407**

**E-mail: [jan@jan.icdi.wvu.edu](mailto:jan@jan.icdi.wvu.edu)**

**Web: [www.jan.wvu.edu/english/](http://www.jan.wvu.edu/english/)**



# Employment and Learning Disabilities

**Often LD adults do not know how to:**

- **prepare for a job interview;**
- **act during a job interview;**
- **advocate for themselves on the job;**
- **behave appropriately on the job; or**
- **behave with the opposite sex on the job.**



**Crawford, R. (1997). Vocational Programs and Practices. In S. Goldstein (Ed.), Managing Attention and Learning Disorders in Late Adolescence and Adulthood: A guide for Practitioners. New York, NY: John Wiley and Sons, pp. 287-314.**



# Employment and Learning Disabilities

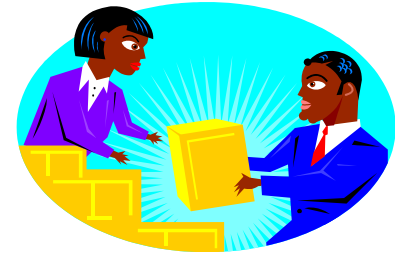


## Eight Myths About Careers:

- I need to choose exactly the right job.
- I am making a decision for a lifetime.
- Most people have made the decision by my age.
- I want the test to tell me what to do.
- If I like to do something I should be good at it..
- I need to get this done ASAP.
- If I don't succeed I failed.
- I'll take some time off then I'll know what to do.

Crawford, R. (1997). Vocational Programs and Practices. In S. Goldstein (Ed.), Managing Attention and Learning Disorders in Late Adolescence and Adulthood: A guide for Practitioners. New York, NY: John Wiley and Sons, pp. 287-314.

# Employment and Learning Disabilities



**A good Resource for Career and Learning Disabilities:**

**Crawford, R. (1997). Vocational Programs and Practices. In S. Goldstein (Ed.), Managing Attention and Learning Disorders in Late Adolescence and Adulthood: A guide for Practitioners. New York, NY: John Wiley and Sons, pp. 287-314.**

# Employment and Learning Disabilities



**Before a person with a disability seeks employment they should check with the Equal Employment Opportunity Commission (EEOC) to see if they have any ADA complaints against the potential employer.**

**Phone: 1-800-669-4000**

**TTY: 1-800-669-6820**

**Website: [www.eeoc.gov](http://www.eeoc.gov)**

**Roffman, A. (February 14, 2003). Working with LD: The Impact of Learning Disabilities on the Job. Paper presented at the 40<sup>th</sup> Annual Learning Disabilities Association International Conference, Chicago, IL, session T58.**

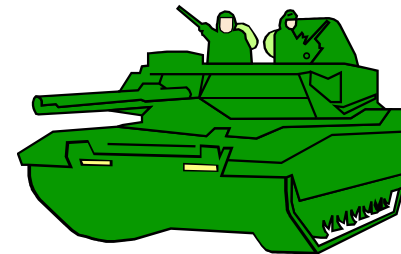
# Employment and Learning Disabilities



**The President's Committee Job Accommodations  
Network will become The Office of Disability  
Policy,  
Department of Labor in 2004.**

- **Web: [www.disability.gov/CSS/Defaults.asp](http://www.disability.gov/CSS/Defaults.asp)**
- **Web: [www.DisabilityInfo.gov](http://www.DisabilityInfo.gov)**
- **Voice: 1-800-526-7234**

# Employment and Learning Disabilities



**“Many individuals with learning disabilities or ADD join the Armed forces and report that the structure and clear expectations help them to do well. However, these conditions may prevent some individuals from obtaining the required score on the Armed Forces Qualifying Test. The Armed Forces are not required to grant accommodations Further, military regulations provide that academic skills deficits that interfere with school or work after the age of 12 may be a cause for rejection for service in the Armed Forces” (p. 4).**

**Latham, P.H. (1998). Learning Disabilities and the Law—After High School: An Overview for Students. LDA Newsbriefs, 33 (4), pp. 3-4.**



# ACCOMMODATIONS FOR DYSLEXICS...At least what exists...





# Accommodations for Dyslexics



**The ADA of 1990 and Section 504 of the Rehabilitation Act of 1973 require all educational institutions provide academic adjustments and auxiliary aids to self-identified disabled students to insure equal access.**

**Jenison, M.E., Westra, M., Russell, J.H. (In Press). Do “Unreasonable” Accommodations for Postsecondary Students Provide Unfair Advantages.**

# Accommodations for Dyslexics



**“All of the studies suggested that while students with identified learning disabilities significantly benefited by the provision of extended time, students without disabilities made less dramatic gains” (p. 7).**

**Jenison, M.E., Westra, M., Russell, J.H. (In Press). Do “Unreasonable” Accommodations for Postsecondary Students Provide Unfair Advantages.**

# Accommodations for Dyslexics

**“The results from this study support the previous research about the efficacy of using accommodations, specifically that people who do not have learning disabilities do not significantly improve performance using extended time on examinations. This fact has been known for many years by learning disability researchers, clinicians, and educators. What is missing though is a general awareness of this fact in the community” (p. 18).**

**Jenison, M.E., Westra, M., Russell, J.H. (In Press). Do “Unreasonable” Accommodations for Postsecondary Students Provide Unfair Advantages.**

# Accommodations for Dyslexics

**“Fairness is giving each person what he or she needs, not giving each person the same accommodations” (p. 19).**

Jenison, M.E., Westra, M., Russell, J.H. (In Press). Do “Unreasonable” Accommodations for Postsecondary Students Provide Unfair Advantages.

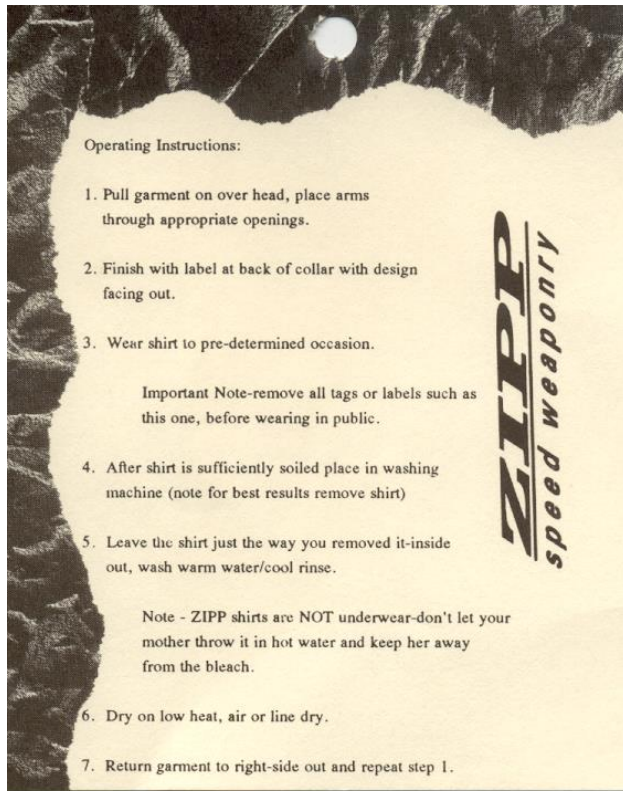


# Accommodations for Dyslexics

- **State education agencies governing secondary schools often have different disability qualification and documentation requirements for accommodations than do postsecondary institutions.**
- **Postsecondary institutions often need more information about students to provide appropriate accommodations.**

Layton, C.A., Lock, R.H. (2003). Challenges in Evaluating Eligibility Criteria and Accommodation Needs for Postsecondary Students. Learning Disabilities: A Multidisciplinary Journal, 12 (1), pp. 1-5).

# Accommodations for Dyslexics



- **LearningAlly**
- **20 Roszel Road**
- **Princeton, NJ 08540**
- **Email:**  
[CustomerCare@learningally.org](mailto:CustomerCare@learningally.org)
- **Voice: 800-221-4792**
- **Website: <https://learningally.org/>**



# Accommodations for Dyslexics

- **Kurzweil 3000**

**Kurzweil Educational Systems, Inc.**

**14 Crosby Drive**

**Bedford, MA 01730-1402**

**Voice: 800-894-5374**

**Fax: 781-276-0650**

**E-Mail: [info@kurzweilededu.com](mailto:info@kurzweilededu.com)**

**Web: [www.kurzweilededu.com](http://www.kurzweilededu.com)**



# Accommodations for Those with Learning Disabilities

**Good resources to help decide which accommodations work with which weaknesses:**

- **Brinkerhoff, L.C., McGuire, J.M., and Shaw, S. (2002). Postsecondary Education and Transition for Students with Learning Disabilities (Second Edition). Austin, TX: Pro-ED.**
- **Mather, N. and Jaffe, L.E. (2002). Woodcock-Johnson-III: Reports, Recommendations, and Strategies. New York, NY: John Wiley and Sons.**

# Accommodations For Dyslexics

**Lorry suggested the following:**



- **extended time for slow reading rate;**
- **a separate room for those who subvocalize while reading;**
- **audiotape versions of tests;**
- **a reader;**
- **assistance with answer sheets (i.e., a scribe)**

# Accommodations for Dyslexics



- **extended breaks;**
- **Large print; and/or**
- **copy of verbal instructions read by the proctor**

Lorry, B.J. (1998). Language Based Learning Disabilities. In M. Gordon and S. Kiesser (Eds.), Accommodations in Higher Education Under the Americans with Disabilities Act (ADA): A No-Nonsense Guide for Educators, Administrators and Lawyers. New York, NY: Guilford, pp. 103-153.

# Employment and Learning Disabilities



- **“Even residual difficulties, such as slow reading and writing, would make some occupations onerous” (p. 84).**

McLoughlin, D., Fitzgibbon, G., and Young, V. (1994). The Adult Dyslexic: Assessment Counseling and Training. San Diego, CA: Singular.



# Social Interaction





# I Believe

- **For years I believed that many dyslexics would eventually be found to have some form of Developmental Prosopagnosia. Bradley Duchaine, Ph.D. and Stanislas Dehaene, Ph.D. disabused me of this in personal discussions through the years.**
- **I still am “hopeful” that it may someday be found to be a comorbidity. The recent studies regarding the speed of face processing in dyslexics may lead to this.**
- **The following are things that can help a person with Developmental Prosopagnosia.**

# Memory Disorders



- **Remembering Faces:**
  - **Prosopagnosia**: Inability to recognize faces, even one's own face" (p. 1168).
  - Harvard & U. of London's Prosopagnosia Research Centers have added emotional facial expression to the definition.

Taber's (1981). Taber's Cyclopedic Medical Dictionary. Philadelphia, PA:F.A. Davis  
Harvard University and University of London Prosopagnosia Research Centers:  
[www.faceblind.org/research](http://www.faceblind.org/research)

# Prosopagnosia



- Most cases are genetic
- Affects 2 percent of the population
- Those affected often know something is wrong, but they don't know exactly what.

Goldberg, C. (June 14, 2006). When Faces Have No Name. The Boston Globe. From website:  
[www.boston.com/yourlife/health/diseases/articles/2006/06/14/when\\_faces\\_have\\_no\\_name/](http://www.boston.com/yourlife/health/diseases/articles/2006/06/14/when_faces_have_no_name/)



# Memory Disorders



- Remembering Faces:
  - This is an important ability for survival.
    - It lets you know “friends and foes”.
    - It helps you maintain relationships.
    - It helps you remember the social status of others.

**Ratey, J.J. (2001). A User's Guide to the Brain: Perception, , attention and the Four Theaters of the Brain. New York, NY: Vintage.**

# Memory Disorders



- **Remembering Faces:**
  - **LD and AD/HD people often have problems remembering faces.**

(Roffman, A.J. (2000). Meeting The Challenge of Learning Disabilities In Adulthood. Baltimore, MD: Brookes.)



## ***Face Perception***

- The right Fusiform Gyrus typically does not respond to objects.
- This area reorganizes faces into wholes.
- Inverted faces are more difficult to process than upright faces.
- The fusiform gyrus helps to differentiate between visually similar stimuli
- Greebles-novices treat them as objects and experts treat them in a holistic manner.

Gauthier, I. (November 3, 2004). Face Processing: Is It Hard-wired or Learned? Evidence from Brain Imaging Studies. Paper presented at the 55<sup>th</sup> Annual International Dyslexia Association Conference seminar, *The Neural Basis of Reading and Other Forms of Skill Acquisition*, Philadelphia, PA, Session: W-1.





# Treatments for Remembering Faces

- **Consult with a Behavioral Neurologist and Neuro-Ophthalmologist:**  
[www.anpaonline.org](http://www.anpaonline.org) & [www.ama-assn.org](http://www.ama-assn.org)
- **Try aforementioned list of professionals who can help with memory problems.**
- **Simon Baron-Cohen stated the CD-ROM Mind Reading –An Interactive Guide To Human Emotions may be helpful.**



**Baron-Cohen, S. (2002). Mind Reading – An Interactive Guide To Human Emotions. London, England: Human Emotions, Ltd.**

# Assessment for Remembering Faces



## ➤ Cambridge Face Memory Test

## ➤ Test My Face Recognition- Internet test

Duchaine, B., and Nakayama, K. (2006). The Cambridge Face Memory Test: Results for Neurologically Intact and an Investigation of It's Validity Using Inverted Face Stimuli and Prosopagnosic Participants. Neuropsychologia, 44, pp. 576-585. From web site:

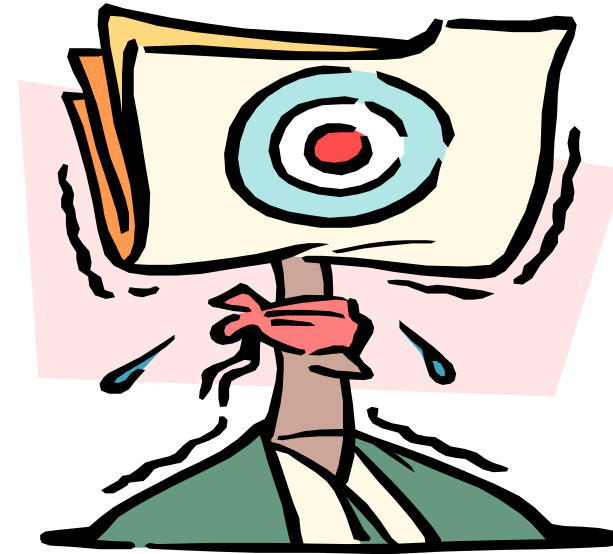
[www.faceblind.org/people/duchaine06neuropsychologia.pdf#search=%22Cambridge%20Face%20Memory%20Test%22](http://www.faceblind.org/people/duchaine06neuropsychologia.pdf#search=%22Cambridge%20Face%20Memory%20Test%22)

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Test My Face Recognition (From web site): [www.icn.ud.ac.uk/facetests/](http://www.icn.ud.ac.uk/facetests/)



# Visual-Spatial Processing Disorders



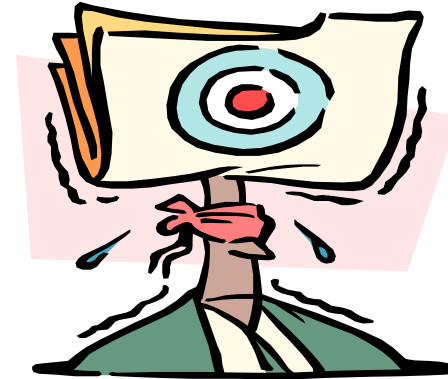
## Emotional Facial Expression Recognition:

- “Does this mean we come into the world expecting to see human faces and ready to respond with our own prewired facial expressions? Yes!” (Ratey, 2001, p. 300).

Ratey, J. J. (2001). A User's Guide to the Brain: Perception, Attention, and the four Theaters of the Brain. New York: NY: Vintage.

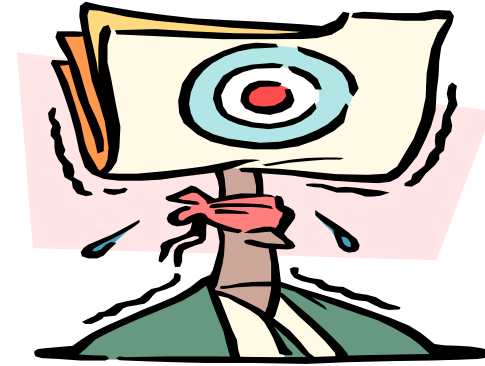
# Facial Expression and Social Ability

- **Positive emotions are the easiest to decode.**
- **Negative emotions are the most difficult.**
- **Poor interpreters of facial expression have less social acceptance and poorer adjustment.**



**Semrud-Clikeman, M. (Spring, 2003). Executive Function and Social Communication Disorders. Perspectives, 29 (2), p. 20-22.**

# Facial Expression and Social Ability

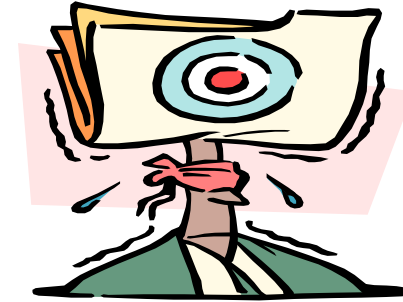


- **Most and Greenbank (2000) stated LD children are less accurate in identifying emotional expressions than non-LD children.**
- **Brown (2001) indicated AD/HD children are less accurate in facial expression identification than their non-AD/HD peers.**

**Most, T., and Greenbank, A. (2000). Auditory, Visual, and Auditory—Visual Perception of Emotions by Adolescents With and Without Learning Disabilities, and their Relationship to Social Skills. Journal of Learning Disabilities, 15 (4), pp. 171-178.**

**Brown, T. E. (2001). Social Ineptness & “Emotional Intelligence” in ADHD. Paper Presented at the 13<sup>th</sup> Annual Children and Adults With Attention Deficit Disorders International Conference, October 18-20 2001, Anaheim CA.**

# Facial Expression and Social Ability



**Regarding facial expressions in children and adults with AD/HD Kuhle, Hoch, Rautzenberg, and Jansen (2001) concluded, “Altogether, ... the facial expressions, are uncontrolled and jerky and are often wrongly dimensioned in time and space” (p. 6).**

**Kuhle, H.J., Hoch, C., Rautzenberg, P., and Jansen, F. (2001). Short-Term Video-Based Observation of Behavior with Special Reference to Eye-Contact, Facial Expression and Motor Activity in Diagnosis and Therapy of Attention Deficiency/ Hyperactivity Syndrome (ADHS). (First Published in): Praxis der Kinderpsychologie und Kinderpsychiatrie 50: 607-621. Obtained from: Kuehle, H. (October 17, 2002). Video Assisted Observation of Visual Attention and Motor Behavior for the Diagnosis and Determination of the Individual Stimulant Dosage in Children with AD/HD. Research Poster Session, 14<sup>th</sup> Annual CHADD International Conference, Miami Beach, FL.**



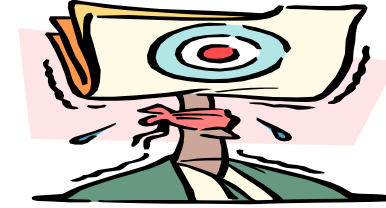
# Facial Expressions and AD/HD

- AD/HD childrens' eyes drift away from those they are in conversation with.
- This usually interrupts in the flow and their comprehension of the conversation.
- Often parents feel rejected by AD/HD children when they do this.

Kuehle, H.J., Hoch, C, and Jansen, F. (2002). Video Assisted Observation of Visual Attention, Facial Expression of the Individual Stimulant Dosage and Motor Behavior for the Diagnosis and for the Determination in Children with AD/HD. Obtained from: Kuehle, H. (October 17, 2002). Video Assissted Observation of Visual Attention and Motor Behavior for the Diagnosis and Determination of the Individual Stimulant Dosage in Children with AD/HD. Research Poster Session, 14<sup>th</sup> Annual CHADD International Conference, Miami Beach, FL.



# Facial Expressions and AD/HD



- **AD/HD children smile abruptly.**
- **There is little or no transition between emotional states.**
- **Sometimes their facial expression bleeds over into the next emotional state.**
- **Expression of emotion often appears exaggerated. The quality of expression can be limited due to this.**
- **Even body movements are jerky and uncontrolled.**

Kuehle, H.J., Hoch, C, and Jansen, F. (2002). Video Assisted Observation of Visual Attention, Facial Expression of the Individual Stimulant Dosage and Motor Behavior for the Diagnosis and for the Determination in Children with AD/HD. Obtained from: Kuehle, H. (October 17, 2002). Video Assisted Observation of Visual Attention and Motor Behavior for the Diagnosis and Determination of the Individual Stimulant Dosage in Children with AD/HD. Research Poster Session, 14<sup>th</sup> Annual CHADD International Conference, Miami Beach, FL.

# The “Resting Face”



- **75% of the population has an emotionally neutral face.**
- **25% of the population have a resting face that is interpreted negatively.**
- **The older you are the more at risk you are for this.**
- **This can cause a very negative first impression.**
- **Some people resort to surgery to “correct” this (Bell’s Palsy, etc.).**
- **Nowicki, S., and Duke, M. (2002). Will I Ever Fit In? New York, NY: Free Press.**

# Assessment for Nonverbal Interaction

- **Reading the Mind In The Eyes Test**: Screening test for problems interpreting facial expressions.
- Baron-Cohen, S. (2003). The Essential Difference. New York, NY: Basic Books, pp. 197-199.
- **Research versions of the “Eyes Test”**
  - **Adult Eyes Test (Instructions, Part 1 and Part 2)**
  - **Child Eyes Test (Instructions, Part 1 and Part 2)**
  - **Faces Test**
  - Downloadable from: [www.human-emotions.com/mindreading/default.asp](http://www.human-emotions.com/mindreading/default.asp)

# ***FACE READING ASSESSMENT***

- **Comprehensive Affect Testing System  
(CATS)**

“This ensemble of tests enables clinical psychologists, neuropsychologists, neurologists, educators, speech therapists and other related disciplines to assess dysfunctional processing of affect expressed by the human face and voice”  
(p. 1 of 4).

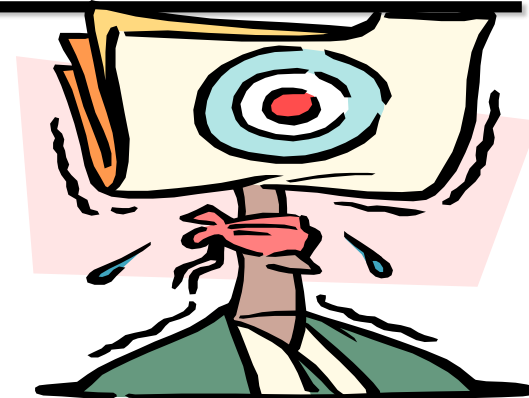
Froming, K., Levy, M. and Ekman, P. (2003).

[www.psychologysoftware.com/testing\\_instruments.htm](http://www.psychologysoftware.com/testing_instruments.htm)

# Treating Problems Reading Facial Expressions

- Volkmar, F. (April 23, 2003). Asperger Syndrome: Clinical Features, Assessment, and Intervention Guidelines. Seminar presented by the New England Educational Institute, Phoenix, AZ.
- Gauthier, I. And Tarr, M.J. (1997). Becoming a “Greeble” Expert: Exploring Mechanisms for Face Recognition. Vision Research, 37 (12), 1673-1682.

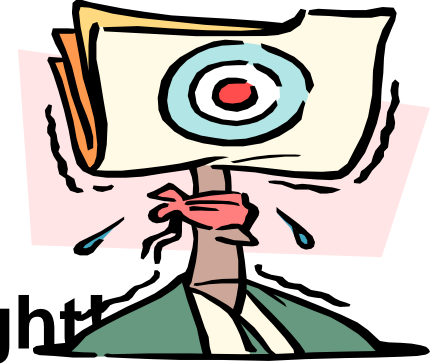
- **FACIAL EXPRESSIONS CAN BE TAUGHT!**





# Treating Problems

## Reading Facial Expressions



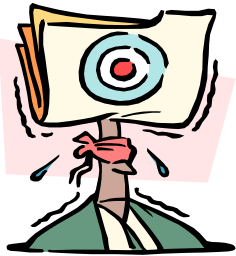
- Facial expressions can be taught
- Gaining Face computer program ([www.cloder.com/gainingface/overview.html](http://www.cloder.com/gainingface/overview.html))
- “Let’s Face It” Yale Child Study & Oberlin College: [www.oberlin.edu/news-info/02jul/autism\\_research.html](http://www.oberlin.edu/news-info/02jul/autism_research.html)
- Ekman tape ([www.paulekman.com](http://www.paulekman.com))
- Baron-Cohen: “Mind Reading – An Interactive Guide to Human Emotions (CD-ROM)”; [www.human-emotions.com/mindreading/default.asp](http://www.human-emotions.com/mindreading/default.asp)

# Treating Problems Reading and Making Facial Expressions

## Micro Expression Training Tool (METT) CD

➤ Available from: [www.emotionsrevealed.com](http://www.emotionsrevealed.com)

➤ “In under an hour you will learn how to recognize very brief expressions (1/5 of a second).” The METT trains one to recognize the 7 universal emotions: enjoyment, fear, surprise, sadness, contempt, anger and disgust.



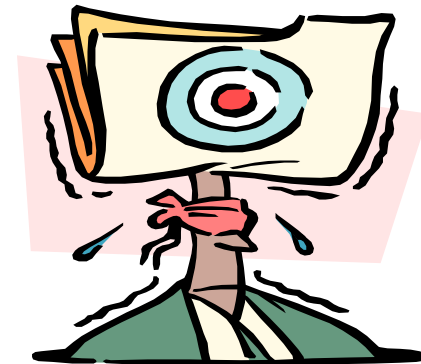
➤ Subtle Expression Training Tool (SETT)

➤ Available from: [www.emotionsrevealed.com](http://www.emotionsrevealed.com)

# Treating Problems Reading Facial Expressions

**Ekman, P. (2003). Emotions Revealed: Recognizing Faces and Feelings to Improve Communication and Emotional Life. New York, NY: Time Books.**

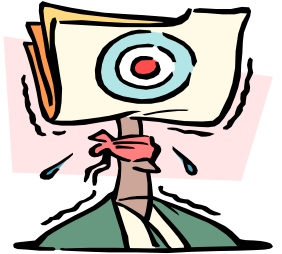
**Appendix: Face Reading-The Test**



# Possible Treatment of Problems with Facial Expression and AD/HD

- **Optimal dosing of a stimulant medication causes a significant reduction in visual attention loss.**
- **Facial expressions will become smooth and variable.**
- **Too high a dose can cause a return of the symptoms.**
- **Can properly ID 80% of the AD/HD children with video procedure.**

Kuhle, H.J., Hoch, C., Rautzenberg, P., and Jansen, F. (2001). Short-Term Video-Based Observation of Behavior with Special Reference to Eye-Contact, Facial Expression and Motor Activity in Diagnosis and Therapy of Attention Deficiency/ Hyperactivity Syndrome (ADHS). (First Published in): Praxis der Kinderpsychologie und Kinderpsychiatrie 50: 607-621. Obtained from: Kuehle, H. (October 17, 2002). Video Assisted Observation of Visual Attention and Motor Behavior for the Diagnosis and Determination of the Individual Stimulant Dosage in Children with AD/HD. Research Poster Session, 14<sup>th</sup> Annual CHADD International Conference, Miami Beach, FL.



# Thank You!



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