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The Other Attention Disorder: Sluggish Cognitive Tempo vs. ADHD

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Dr. Barkley’s Disclosure

Retirement Pension: State of Massachusetts (UMASS Medical School)
Speaking Fees Receiving From the Following (2012):
  University of Alabama, Student Disabilities Service, Annual ADHD Conference, Tuscaloosa, AL
  Alberta Learning Disabilities Association (Edmonton, Canada)
  LDA Life and Learning Services, Rochester, NY
  CMI Education Institute/Premier Educational Solutions (CMI/PESI)
  Cincinnati Children’s Hospital & Springer School
  Yulius Academy, Rotterdam, The Netherlands
  ADHD Network, Utrecht, The Netherlands
  Maasstad Hospital, Rotterdam, The Netherlands
  Association for Personal Training & Development, Bucharest, Romania
  Milwaukee Children’s Hospital/Medical College of Wisconsin
  Nebraska Psychological Association, Omaha
  ADHD Support Network, Moose Jaw, Saskatchewan, Canada
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  ADHD School Specialties & Groves Academy, Minneapolis, MN

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Speaker: Eli Lilly, Shire.
Consultant: Theravance
• 1775 – Melchior Adam Weikard (Germany) describes a disorder of attention very similar to ADHD in his medical textbook – blames it on child rearing. Makes many treatment recommendations, including exercise, horseback riding, sour milk, and extreme isolation if necessary.

• 1798 – Alexander Crichton describes disorders of attention in his medical textbook. One is inattentive and distractible, the other is low power of attention and lethargy. Blames them both on medical/neurological disorders and child upbringing.

• 1968 – Hyperkinetic Reaction of Childhood becomes the official term for what is now ADHD – no subtypes are identified.

• 1980 – The disorders becomes ADD with and without Hyperactivity in DSM-III. This is the first official distinction of two attention disorders cast here as subtypes of ADD. This leads to studies comparing the two with mixed results. But a subset of ADD without H children are found to have relatively unique symptoms of daydreaming, mental confusion, poor processing of information, lethargy and hypo-activity. The term SCT is coined by Carlson & Nepeer (1986) to describe this subset.
1980 to 2010: ADD and ADHD

- 1987 -- DSM-III-R renames the disorder ADHD and views it as a single condition with one list of symptoms. ADD without H is removed and renamed as “Undifferentiated” ADHD and placed at the end of the manual with a call for more research on its validity.

- 1994 -- DSM-IV keeps the name ADHD but now permits the creation of three subtypes – Predominantly Inattentive, Predominantly Hyperactive-Impulsive, and Combined Types. Again, research to date on the I vs. C-Types shows mixed results. The types are not found to be reliable or stable over development. Yet a subset of I-Type children are again found to have high levels of SCT symptoms.

- 2012 -- DSM5 committee proposes to eliminate ADHD subtypes but proposes “presentations” instead - Inattentive Presentation (Restrictive) for ADD/SCT cases.
SCT Symptoms on Rating Scales

- Daydreaming excessively
- Trouble staying alert or awake in boring situations
- Easily confused
- Spacey or “in a fog”; Mind seems to be elsewhere
- Stares a lot
- Lethargic, more tired than others
- Underactive or have less energy than others
- Slow moving or sluggish
- Doesn’t seem to understand or process information as quickly or accurately as others
- Apathetic or withdrawn; less engaged in activities
- Gets lost in thought
- Slow to complete tasks; needs more time than others
- Lacks initiative to complete work or effort fades quickly
What do we know about SCT?

- Most symptoms of Sluggish Cognitive Tempo (SCT) are not characteristic of the C-Type\textsuperscript{1,2}
- SCT Symptoms form 2 dimensions of daydreamy-confused and sluggish/lethargic in factor analysis. The former are the more diagnostic from ADHD\textsuperscript{2}
- Slow, Error Prone Response Style & Processing
  - Less able to use relevant environmental cues in task responding\textsuperscript{2,3}
- Poor Focused or Selective Attention
  - Slower reaction times, more omission errors\textsuperscript{1,4}
  - Unlike ADHD-C type, sluggish style is cross-situational\textsuperscript{4}

SCT (Inattentive-Restrictive?)

• Socially shy, reticent or withdrawn – less impaired socially than ADHD children
• No motor disinhibition problems or impulsiveness on ratings or on cognitive testing in most studies\(^1,\,^2\)
  – If anything, they can be overly inhibited\(^4\)
• Little evidence for executive function deficits on tests; if present are in working memory and problem-solving.\(^3\)
• But some EF deficits are evident on EF ratings in daily life. In children, these are far milder than in ADHD. In adults, they are more prominent. In both, they are mostly in Self-Organization and Problem-Solving

More Distinguishing Features of SCT

- Comorbidity: Rarely show Aggression or ODD/CD
- Greater risk may be for anxiety symptoms
- Possibly greater risk for depression (?)
- Lower levels of parenting stress
- Greater parental concerns regarding school failure
- Equally impaired in educational performance
  - But ADHD is a productivity disorder while SCT is an accuracy disorder
  - Greater frequency of math disorders in SCT (?)
- Greater family history of anxiety and LD (?)
Recent large study of SCT in 1,800 U.S. Children 6-17 Yrs (Barkley, 2012)

- SCT forms two dimensions of symptoms distinct from the two ADHD dimensions
  - Daydreaming & Sluggish
  - Two dimensions correlate more with each other (.75) than with ADHD (.40 -.50)
- SCT symptoms increase slightly with age while ADHD (HI) symptoms decline or remain stable
- SCT symptoms only slightly more severe in males than females; ADHD is much more severe in males
More results on SCT children

• Cast as a disorder (category), SCT is not more common in males than females while ADHD is 2-3:1 (males to females)
• SCT is associated more than ADHD with lower parental education, lower household income, greater parental unemployment or disability status, and more parent divorce
• SCT children are older and may have a later age of onset of their symptoms
• Prevalence was 4.7% (93rd percentile or 3 of 12 symptoms plus impairment)
EF Ratings for SCT vs ADHD
(Barkley, 2012)
Contribution of SCT vs ADHD dimensions to EF deficits

- ADHD Inattention accounts for 49-77% of variance in all EF dimensions
- ADHD HI symptoms account for <1 to 6% of variance, mainly in Self-Restraint and Emotional Self-Regulation
- SCT accounts for less than 1% in each except Self-organization, where it is 5%
- ADHD is vastly more associated with EF deficits in daily life than is SCT
Impairment in SCT vs ADHD

* = SCT Worse than ADHD  
! = ADHD Worse than SCT

Contributions of SCT vs ADHD to Impairments

- ADHD results in impairment in twice as many domains as does SCT (5-7 vs. 2-3)
- ADHD Inattention contributes 49% of variance to Home-School Impairment (SCT = 1%)
- ADHD HI symptoms contribute 35% of variance to Community-Leisure impairment (SCT = 6%)
- ADHD contributes 39% of variance to pervasiveness of impairment (# domains) whereas SCT is <3%
- ADHD is a far more impairing disorder than SCT producing more pervasive impairment as well
- ADHD children had greater percentage having teacher complaints of school problems (72-85%), had lower grade point averages, and were more likely to be retained (8-25%)
Overlap of SCT with ADHD

• 59% of SCT cases had any type of ADHD
  – 22% had I-Type
  – 8% had HI-Type
  – 30% had C-Type

• 39% of ADHD cases had SCT
  – 31% of I-Type
  – 27% of HI-Type
  – 55% of C-Type
• No more likely to have ODD, reading, math, anxiety, or bipolar disorder than Control children while ADHD cases were more likely to have these

• More likely than ADHD to be associated with depression disorders

• Equally as likely as ADHD to be associated with motor, spelling, writing, & autistic spectrum disorders and general developmental delay

• 50% of ADHD cases had prior diagnosis of it while 14% of SCT cases had diagnosis of ADHD

• 53% of SCT kids free of comorbidity vs. 39% of ADHD Only and 25% of SCT+ADHD
SCT in U.S. Adults (N = 1,286)

- Later age of onset of symptoms
- No sex differences in general population
- Does not decline with age like ADHD
- 5.1% prevalence (using 5/9 symptoms plus impairment)
- A distinct disorder from ADHD; not a subtype
- Overlaps with ADHD
  - 54% of cases of ADHD have SCT, especially if diagnosed with the Predominantly Inattentive Type
  - 46% of SCT cases may have elevated ADHD symptoms, again mainly of ADHD inattention

SCT vs ADHD Adults on EF Ratings

Impairments in SCT vs. ADHD

Possible Etiologies

• Research is very sparse and limited
  – No direct studies of neuro-imaging or genetics

• SCT symptoms occur more often in prenatally alcohol exposed children*

• SCT and ADHD Inattention are highly correlated; given the high heritability of the latter, SCT would also be expected to be highly heritable

• But SCT is also linked to greater family and child psychosocial adversity and to internalizing symptoms (specifically depression) and so social stressors may be linked to SCT as well

What is the Nature of SCT?

- It appears to be a distinctly different form of inattentiveness from that seen in ADHD but can be comorbid with ADHD (mostly inattentive type)
- Possibly a dysfunction of arousal?
- Possibly a disorder of the focus/execute or stabilize attention components?
- Possibly more related to social stressors?
- But is it a pathological case of mind wandering?
Mind wandering or daydreaming can be constructive under some circumstances when more routine goals are being largely automatically pursued – it is an efficient use of excess EF capacity (especially working memory) in which one focuses on other goals, problems, or concerns while engaged in a separate goal-directed action.

When it is engaged in excessively, it can diminish the EF capacities needed for the primary goal-directed action and even interfere with the primary task or goal, slowing progress toward the goal or even preventing the goal from being attained or the task being completed in time.
4 Potential Sources of Mind Wandering

• **Poor capacity for executive (ideational) inhibition or poor prioritization of tasks**

• **It can be escape-avoidant behavior:** This can occur in situations where the individual is using visual imagery, self-speech, and other executive functions for daydreaming in order to escape from unpleasant settings or tasks (imposed goals) or for sheer immediate entertainment or pleasure.

• **Or SCT may be a means of mentally escaping from anxiety inducing situations or tasks:** It may be negatively reinforced for doing so. This may explain its connection to anxiety disorders.

• **SCT can be ruminative:** The person is preoccupied with recurrent thoughts of their problems or fears. It is an excessive deployment of the EF system as in OCD or other ruminative disorders (anxiety, depression) or even psychoses. Perhaps this also is why SCT overlaps with anxiety.
Treatment Implications for SCT

- All research has been with children, not with adults
- All drug research was with methylphenidate and used ADD without H cases (or Inattentive Only) – not selected specifically for SCT
- Less Likely to Have a Clinically Impressive Response to Stimulants (based on a few studies; need more research)
  - (Barkley Study finds 65% improve modestly in symptom ratings but only 20% showed a good clinical response warranting continued medication)
- Better response to social skills training in children than ADHD cases
  - Up to 25% of ADHD cases become more aggressive in social skills groups due to peer deviancy training
  - Training works best for shy, withdrawn, anxious children
- Good (better?) response to joint home-school treatments
  - MTA study: anxious cases did the best in psychosocial treatment
  - Pfiffner (2007) study shows good response to home-school behavioral training and child training in social and organizational skills that is targeted at ADHD-I specific problems*

More SCT Treatment Considerations

• More responsive to cognitive therapy (??)
  – It doesn’t work for children with ADHD but if this is not ADHD then try it again?
  – It does work for anxiety disorders and depression

• Do adults respond to CBT focusing on EF deficits as well as do ADHD adults?
  – And do they need to be on medication like ADHD adults? Doubtful, as ADHD medications don’t seem as useful for SCT

• Consider atomoxetine (??) Why? It may treat anxiety in ADHD cases – SCT cases are more likely to have anxiety

• Consider modafinil (anti-narcoleptic) (??) Why? Is SCT a disorder of arousal?

• If SCT is ruminative or related to OCD, consider clomipramine or fluvoxamine used to treat OCD (??)
Conclusions

- ADHD is a chronic disorder of inhibition, inattention, and poor self-regulation (EF)
- SCT (ADD) seems to be a different disorder from ADHD and not a subtype of it
- Both disorders can be comorbid and are impairing though they may differ in which major life activities they create the greatest impairment
- In children, ADHD contributes far more to EF deficits than does SCT but contribution of SCT increases in adulthood
- In children and adults, ADHD is a more impairing disorder and more pervasively impairing but SCT can be worse than ADHD in selective situations