

Cognitive Disengagement Syndrome:
What is it and why does it matter?

Joseph W. Fredrick, PhD
Assistant Professor
Center for ADHD
Cincinnati Children's Hospital Medical Center

@joey_fredrick

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A note on terminology

History of CDS & distinction from ADHD

Functional outcomes and impairments

Assessment of CDS

Current evidence on medication and CDS

Possible interventions and treatments

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The collage consists of four distinct images. The top-left image shows a row of six children sitting at desks in a classroom, with one child in the center standing and holding a chair over their head. The top-right image shows a young boy sitting at a desk, covering his eyes with his hands. The bottom-left image shows a young girl sitting at a desk, looking thoughtful with her hand to her chin. The bottom-right image shows a young boy sitting at a desk, looking frustrated or stressed with his hands on his head.

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CDS (SCT)

- “sluggish tempo” or “sluggish cognitive tempo” (SCT) terminology has been used since the construct first discovered in the 1980’s
- SCT term has been criticized for being pejorative, potentially offensive, derogatory, and inaccurate
 - Almost half of parents of children with elevated SCT had a negative reaction to the SCT term
- 13-member Work Group formed to evaluate key research directions and a consensus change in terminology

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Terminology: From SCT to CDS

Work Group recently proposed a change from sluggish cognitive tempo (SCT) to **cognitive disengagement syndrome (CDS)**

“CDS refers to a set of developmentally inappropriate and persistent behaviors (symptoms) that form at least two dimensions best characterized as:

- (1) **cognitive symptoms** involving the disengagement or decoupling of attention and conscious or effortful mental processing from the ongoing external context, as reflected in difficulties with staring, daydreaming, mental confusion or fogginess, withdrawal, and sleepy appearance; and
- (2) **motor symptoms** involving hypoactivity as manifested in underactivity, periods of passive or sedentary movement, and slow, reduced, or delayed motor movements.”
(Becker et al., 2022)

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History of CDS

- **1960’s and 1970’s:** Individual CDS symptoms (e.g., daydreaming, drowsiness, lethargy) were included in rating scales for children (e.g., Conners, 1969; Peterson, 1961; Quay & Quay 1965)
- CDS items tended to load with inattention items
 - Dielman, Cattell, & Leeper (1971) named their inattention scale “Sluggishness”

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History of CDS

- **1980's:** DSM-III allowed diagnosis of ADHD without hyperactivity (APA, 1980)
- The first empirical support for a CDS dimension separate from inattention emerged (Carlson, 1986; Lahey et al., 1988; Neeper & Lahey, 1986)



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History of CDS

- **2001:** A **distinct CDS factor** emerged in a large clinic sample of children with ADHD (McBurnett et al., 2001; also Millich et al., 2001)

Journal of Abnormal Child Psychology, Vol. 29, No. 3, 2001, pp. 207-213

CDS research started to pick up

Symptom Properties as a Function of ADHD Type: An Argument for Continued Study of Sluggish Cognitive Tempo

Keith McBurnett,^{1,4} Linda J. Pfiffner,² and Paul J. Frick³

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The Great Big Universe of CDS Items

- There was **no consensus** regarding the symptoms used to define CDS
- A systematic review examined all the **specific items** that have been previously used to measure CDS

150 different CDS items



18 core features of CDS

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Questions in the Literature

- 1.) Is CDS distinct or the same as ADHD? What about other mental health conditions?
- 2.) Does CDS symptoms impact daily functioning?
- 3.) Does CDS matter for clinical intervention?



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Are CDS symptoms just the same as inattention?

- Factor analyses conducted in **23 independent samples with over 19,000 participants**
- Studies varied based on:
 - CDS measure (ranging from 2 to 44 items)
 - Informant (parent, teacher, self-report)
 - Age range (though most were school-aged)
 - Sampling (clinical vs. community)

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Distinguishing CDS from ADHD

Item content	Mean loadings of the item on SCT factor
Sluggish	.80
Tired / lethargic	.80
Slow thinking / processing	.80
Loses train of thought / cognitive set	.79
Sleepy / drowsy	.79
Spacey	.78
In a fog	.77
Underactive / slow moving	.77
Daydreams	.75
Lost in thoughts	.75
Stares blankly	.74
Easily confused	.74
Apathetic / unmotivated	.72
Absentminded	.61
Slow work / task completion	.59
Low initiative and persistence	.50
Poor listening / difficulty with directions	.50
Easily bored	.38

13 of the 18 potential CDS items loaded consistently on an CDS factor (mean loading $\geq .70$ across all samples)

Becker et al. (2016)

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CDS Presentation

Daydreaming	Mental Confusion	Hypoactivity
1. Daydreams	1. Loses train of thought	1. Easily tired or fatigued
2. Gets lost in own thoughts	2. Difficulty putting thoughts into words	2. Low level of activity (underactive)
3. Spaces or zones out	3. Forgets what was going to say	3. Behavior is slow
4. Appears lost in a fog	4. Thinking gets mixed up	4. Drowsy or sleepy during the day
5. Stares blankly into space	5. Easily confused	
	6. Thinking is slow	

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CDS =
Depression,
Sleepiness, or
Anxiety?

- Factor analytic studies find CDS to be distinct from:
 - Anxiety symptoms
 - Depressive symptoms
 - Daytime sleepiness

Although distinct, CDS is more strongly associated with depression and anxiety compared to ADHD-IN symptoms

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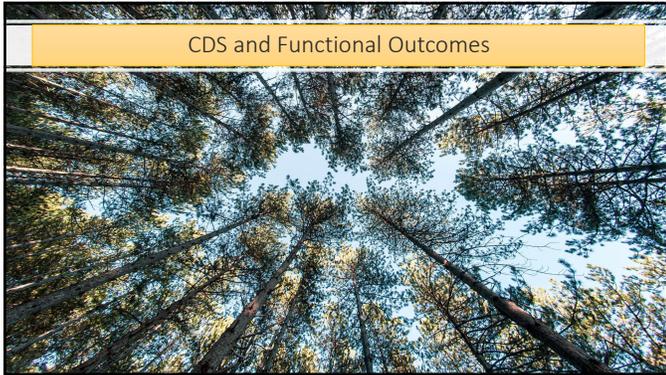
Etiology of CDS

- Three twin samples of youth have shown modest to moderate heritability of CDS symptoms
 - Remaining variance was explained by nonshared environmental influences and measurement error
- Prenatal, early childhood, and medical risk factors
- CDS associated with socio-contextual factors (e.g., socioeconomic status) and stressors (e.g., peer victimization, interpersonal trauma)

These findings are all preliminary, with more studies and replication needed before drawing any firm conclusions

Becker et al. (2022)

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CDS and Cognition

- No central cognitive deficit underlying CDS has been identified
- CDS is not consistently associated with three major components of EF that are often deficient in ADHD: response inhibition (interference control), attentional control (reaction time variability), and working memory
- Links with processing speed are mixed; perhaps in young kids
 - One longitudinal study found slower processing speed to predict SCT (as well as ADHD) in early childhood

Becker et al. (2022)

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CDS and Mind-Wandering

- CDS may be closely linked to mind wandering
- CDS uniquely linked to self-report ratings of mind wandering, even after accounting for ADHD, anxiety, and depression

In CDS there appears to be an over-engagement or decoupling of attention to mental representations or cognitive content more generally, as in mind wandering, mind blanking, and daydreaming.

Becker et al. (2022); Fredrick & Becker (2022)

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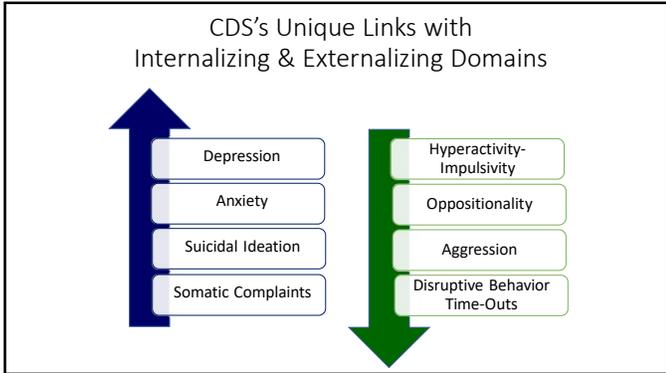
CDS and Comorbidity

Diagnosis	Barkley (ages 6-17) %	Burns & Becker (ages 4-13) %
ADHD	27.4	39
Autism	11.1	15.7
Anxiety	11.1	21.3
Depression	7.4	8.8
ODD	1.5	6.9 (combined ODD/CD)
CD	3.0	See ODD above
Bipolar disorder	4.4	2.0
Schizophrenia or psychosis	0.7	2.0
Intellectual disability	8.1	4.9
General developmental delay	(combined with intellectual disability)	6.9
Language delay	15.6	9.8
Delayed motor skills or coordination	12.6	7.8
Reading disorder/disability	11.9	5.9
Math disorder/disability	7.4	3.9
Writing disorder/disability	9.6	2.9
Spelling disorder/disability	8.1	2.0

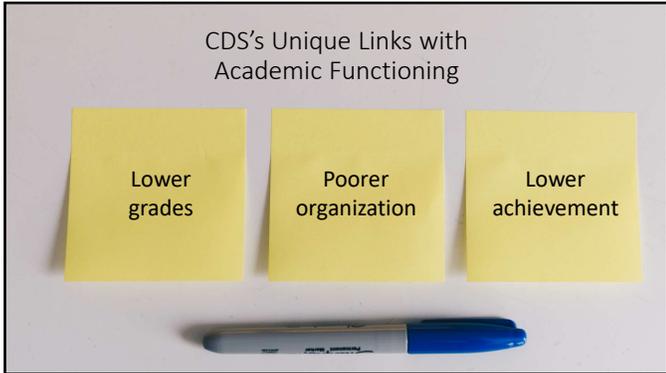
Most common disorders (25% in both studies):
ADHD, autism anxiety, language delay, delayed motor skills, & reading disorder

25-40% of youth with ADHD present with CDS elevations

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CDS's Unique Links with Social Functioning



- Conflicted Shyness
- Withdrawal & isolation (observed)
- Poorer perception of subtle social cues
- Peer victimization risk

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CDS's Unique Links with Sleep Functioning

- CDS associated with sleep problems and daytime sleepiness in youth
- CDS associated with global sleep problems, shorter sleep duration, and increased daytime sleepiness in adults
- Sleep restriction \longrightarrow worsening CDS symptoms
- One study of overnight polysomnography: no associations
- One study with actigraphy: shorter seep duration and later sleep onset

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What are the lived experiences of youth and families with CDS?

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Article

**“My mom calls it Annaland”:
A Qualitative Study of Phenomenology,
Daily Life Impacts, and Treatment
Considerations of Sluggish
Cognitive Tempo**

Journal of Attention Disorders
2022, Vol. 26(4) 115–131
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DOI: 10.1177/10870547211050946
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What language do parents use when describing CDS behaviors?

Parent Interview

“He calls it zoned out, we will be talking to him and he starts staring out in space and says, ‘Oh I zoned out, what did you say?’”

“It’s just that Charlotte’s slow, that’s Charlotte. We are used to it.”

“She’s got this thing going on where it almost feels like it’s like a mental block where she won’t allow herself, like, the control of her mind, you know? I don’t know where she is when she’s not concentrating, but sometimes you can tell that she’s just looking like she’s in another world.”

“I asked him once what he was doing when he was in the backseat quiet for 40 minutes and he says, ‘I’m watching TV in my mind.’”

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What language do kids use when describing CDS behaviors?

Child Interview

“My mom calls it Annaland. It is this place where my imagination rests, like a little oasis and there is a bunch of rainbows. And all my ideas for books, stories, roleplays..”

“I love going into that world, I just want to be able to pull myself out of it.”

“Someone asks me like, ‘what are you thinking about?’ And I don’t know how to say it. . . Now – now I can’t – this is a great example right here. I can’t think of what I’m trying to say.”

“I really hate it when I get lost in my thoughts because I will overthink a situation.”

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Do parents and kids perceive strengths of their CDS behaviors?

- Around 80% of children reported several strengths including, respite from daily stressors and being able to zone out and take a break

"The spacing out is kind of my thing and my favorite part of it because I just, I kind of like it, you know, it just gives me like a small break for a few seconds. And I get back to my work... I've given my own self a break."

- Most parents (60%) also identified strengths of their child's CDS behaviors, primarily related to creativity and imagination

"I feel like when she goes off and she is daydreaming, she is thinking about what she is going to work on and her imagination goes crazy."

"He is always thinking outside the box."

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Phenomenology

- It is challenging to differentiate CDS from ADHD inattention
- There may also be an interplay between CDS and ADHD-IN, or CDS may be a mechanism contributing to ADHD-IN behaviors

"He would sometimes just forget to write the homework down [an ADHD-IN symptom] either because he is zoned out [an CDS symptom], is forgetful [the same ADHD-IN symptom], or is in his own little world [an CDS symptom]."

"She cannot pay attention to what the teacher is saying and she is off in la la land [an CDS symptom]. This makes it hard for her to finish her work [an ADHD-IN symptom]."

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Daily Life Impacts

- Domains with the largest percentage ($\geq 25\%$) of parents and children indicating a *substantial* negative impact of SCT behaviors:
 1. Morning routine
 2. Academics
 3. Sleep
 4. Homework (parents only)
- 87% parents endorsed trying strategies (e.g., sleep, verbal reminders, routines), with many being unsure what to do:
 - "We really do not know what exactly to do except bring him back to earth."

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Assessment and Treatment of CDS

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Current CDS Measures

Measures to Assess CDS in Children	Measures to Assess CDS in Adults
Barkley SCT Scale – Children and Adolescents (BSCTS-CA; Barkley, 2013) • Parent-report scale, adapted for use with teachers Child and Adolescent Behavior Inventory (CABI; Burns et al., 2015) [§] • Parent- and teacher-report scale Child Concentration Inventory, 2 nd ed. (CCI-II; Becker, 2015) [§] • Youth self-report scale Kiddie Sluggish Cognitive Tempo Scale (K-SCT; McBurnett et al., 2014) • Parent- and teacher-report scale Penny SCT Scale (Penny et al., 2009) • Parent- and teacher-report scale	Adult Concentration Inventory (ACI; Becker et al., 2018) Barkley Adult ADHD Rating Scale—IV (BAARS-IV; Barkley, 2012) [§]

All of these measures are available for free or a nominal cost!

Measures marked with a “§” currently have the strongest support for parent/teacher-reported, youth self-reported, and adult self-reported CDS.

Becker (2021)

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Possible Psychosocial/Behavioral Treatments for CDS

- In youth with ADHD, school-based intervention reduced CDS symptoms modestly (Piffner et al., 2007; Smith & Langberg, 2020)
- It has been hypothesized that CBT and social skills interventions may be effective (Becker & Barkley, 2018)
- Behavioral sleep intervention improves CDS (Becker et al., 2022)
- Mindfulness should also be evaluated (Becker & Barkley, 2021)

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Possible Medication Treatments for CDS (SCT)

- In adolescents with ADHD and/or reading problems, atomoxetine reduced CDS symptoms (Wietecha et al., 2011; McBurnett et al., 2017)
- Stimulants may not be as effective (Firat et al., 2020; Froehlich et al., 2018; Milich et al., 2001)
 - Not well-established enough to change standard clinical practice guidelines/recommendations, but may want to give patients a heads-up so that they do not give up if stimulants do not seem to be effective

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Talking About CDS

- CDS is *not currently* recognized as a mental health disorder
- “Syndrome” refers to the symptoms being closely related to each other and separate from other symptoms/dimensions of psychopathology
- Some patients will have “ADHD with features of CDS”
- CDS may explain a different type of attention problems

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Possible Intervention Targets for CDS Behaviors

<p>Home</p> <ul style="list-style-type: none"> • Effective commands, visual, externalize time • Clear routines/schedules • Simplifying language • Mindfulness practice • Daily morning routine • Behavioral activation • Social skills training 	<p>School</p> <ul style="list-style-type: none"> • 504 plan/IEP • DRC • Scheduled prompts and attention checks • Daily self monitoring of internal distractions • Extended time on assignments • Attention/physical breaks
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Again, why does this matter?

"I have a son who is 16 years old who lives with symptoms that 100% match the symptoms list for CDS...He has been diagnosed with ADHD by his pediatrician. He tried several stimulant medications that did not help...I see my son struggle socially, academically and in his extracurricular activities, the most important to him being baseball. I feel like now I'm seeing some signs of depression. Aside from these symptoms, he has every single described symptom of CDS that I have read about.

I am at a loss as to what to do or where to take him."

--E-mail from a concerned mother

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