Autism Spectrum Disorders: Cognitive Strengths and Weaknesses and Improving the Fit with College

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Overview

• Background

• Neuropsychological Perspective on Autism: Weaknesses, Risks and Strengths
  ✓ Executive Functions
  ✓ Social Cognition

• Improving the brain-environment fit for people with ASDs at Cornell
Autism Spectrum Disorders Are….

- Neurogenetic and Defined by:
  - Deficits in social interaction, social communication
  - Repetitive behaviors, restricted of interests

- Heterogeneous and a Spectrum
  - IQ (38% of ASD ≥ 85)
  - Co-morbidity (Leyfer, 2006)

- Common and increasing
  - 1 in 88 (CDC, 2008)
  - 5:1 = Males:Females
  - All races
“A failure to understand how a child’s typical behaviors reflect this disability can result in misperceptions such as viewing the child as noncompliant, willfully stubborn, or unmotivated, rather than confused, involved in repetitive routines, or focusing on less relevant aspects of the situation.” (Kunce & Mesibov, 1998)
<table>
<thead>
<tr>
<th>What looks Like “won’t”……</th>
<th>May actually be “can’t”….</th>
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<tbody>
<tr>
<td>“Oppositional, Stubborn”</td>
<td>Cognitive inflexibility</td>
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<td>Protective effort to avoid being overwhelmed</td>
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<td>“Can do it if he wants to”</td>
<td>Difficulty shifting</td>
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<td>“Self-centered”</td>
<td>Impaired social cognition</td>
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<td>Poor theory of mind</td>
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<td>“ Doesn’t try”</td>
<td>Poor initiation</td>
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<td>Impaired planning &amp; generativity</td>
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<td>“Won’t put good ideas on paper”</td>
<td>Poor fine motor</td>
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<td>Disorganization</td>
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<td>“Sloppy, erratic”</td>
<td>Poor self monitoring</td>
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<td>Overloaded</td>
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<td>“Won’t control outbursts”</td>
<td>Overload</td>
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<td>Disinhibition</td>
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<td>“Prefers to be alone”</td>
<td>Impaired social problem solving</td>
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<td>“Doesn’t care what others think”</td>
<td>Impaired understanding and production of nonverbal social cues</td>
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Two Most Common EF Challenges in ASD

• **Flexibility**
  - Transitioning from one activity to another
  - Changes in routine
  - Violations of expectations
  - Seeing more than one way of doing things
  - Easy to get stuck
  
  (Rumsey, 1985; Courchesne, 1994; Hill, 2004; Kenworthy, Yerys, Anthony & Wallace, 2008)

• **Planning/Organization**
  - Knowing how to accomplish a goal
  - Prioritizing
  - Identifying main idea and organizing thinking
  - Can’t see the forest for the trees
  

Adapted from content included in the Unstuck and On Target! Manual
Detail Processor Risks: Missing big picture

- Safe Person/Social Coach—counselor, teacher, RA
- Make the implicit explicit—deconstruct events, hidden expectations
- Assign specific jobs or tasks
- Emphasize goals
- Transparent, detailed and explicit syllabus
- Study Guides, Cloze format tests
- Writing rubrics
Detail Processor Risks: Overload

- Structure, structure, structure—calendar alarms, check-ins
- Time Management/Organization (*Smart But Scattered, Late Lost & Unprepared, Executive Skills in Children and Adolescents*)
- Give breaks from people—Single room, leave class, communicate through computer device
- Buffer from stimulation—accommodate seating in class
- Recognize that sensory perceptions can interfere with learning
Detail Processor Strengths

- Patience for details
- Respect, follow, use rules
- Good with recipes, checklists and routines
- Powerful computer related thinking
- Classification strengths
- Painstaking attention to detail—Sherlock Holmes, Temple Grandin
- Mastery of detailed datasets
- Large Vocabulary
- Quick recognition of visual patterns
“Asperger’s is like a vise on your brain. And each unexpected event is like another turn on the vise...it just keeps building until you feel like you’re going to explode. Sometimes when you explode, it comes out the wrong way.”

- A young student with ASD

Adapted from content included in the Unstuck and On Target! Manual
Inflexibility Risk: Getting Stuck

- Difficulty with violations of expectations
  - Plan A/Plan B
- Rigid interpretations of rules
  - Big Deal/Little Deal
- Overwhelming intense feelings
  - Breaks, counseling-Cog/Beh rating feelings, coping strategies
- Negotiating, accepting differing viewpoints
  - Compromise, clear expectations, counseling
- Repetitive Behaviors/Intense Interests
  - Decide where they can and can’t happen, agree on a sign
Another Perspective

Ari Ne’eman, President of the Autism Self-Advocacy Network, asks:

“What purpose does inflexibility serve?”

“For one thing, it is an effective anti-anxiety coping mechanism. It provides order in the context of a world that is confusing and illogical for us.”
Inflexibility Powers

• Inflexibility serves **an adaptive role**: limits unexpected, overloading events
  
  • **Overload is dangerous**: It leads to anxiety, impulsivity, inappropriate behavior
  
  • **Overload creates profound risk** in context of: Social isolation, teasing and bullying
  
  • **In a mine field it is wise to use caution**
    
    ➢ Respect routines that don’t interfere
  
• Persistence and patience with repetitive work
• Expert Knowledge
• Deep datasets and understanding
Importance of Self-talk

Social context

Language

Self-directed speech

Self-regulation

Executive control

(Luria, 1961)
Articulatory Suppression and Planning

Wallace, Silvers, Martin & Kenworthy (2009) JADD

Number of Extra Moves

Autism Spectrum Disorder

Typically Developing

[A bar chart showing the comparison between Autism Spectrum Disorder and Typically Developing groups in terms of number of extra moves under Articulatory Suppression and Normal conditions.]
Is Self Talk impaired in ASD?

• Russell (1997): executive deficits ASD related to failure of internalized, self-directed speech to regulate non-routine behaviors

• Whitehouse (2006): ASD group doesn’t use verbal labels

• Ozonoff (1995): Children with autism do not show WSCT deficits when it is administered on the computer

“Actually it’s more difficult to do this with a human.”

• Tower performance in typical controls is predicted by language ability, but not in children with autism (Joseph et al, 2005)
Talk Less, Write More

• **Time:** Google calendar, iCal, Pure Calendar App, Outlook

• **Tasks:** Workflowy, Toodledo, GoogleTasks

• **Writing:** Noodle Tools, Inspiration.com, Diigo, MyStudyBar, Readwritethink.org

• **Communication:** e-mail, texting

• **Transparent Syllabus**

• **Notes**

Source: The Lab School
Executive Dysfunction:

“The curious dissociation between knowing and doing” (Teuber, 1964)
The Overall Impact of Poor EF

12% of those w/ average IQ & ASD attain complete functional independence (Farley et al., 2009)

Kenworthy et al., 2005
Risk: Poor Hygiene, Dysregulated Medicine, Sleep and Eating

- Transition planning between students, parents and college support system:
  - Do parents remind to shower?
  - Does student know how to do laundry? When?
  - Does student take any medicine regularly?
  - Will student use dining hall, does the selection fit diet?
  - Do parents cue to go to bed?

- If student has relied on parental reminders or help:
  - Can they be replaced with technology? Alarms and routines
  - Does student realistically need a weekly face to face (skype) with a therapist?
Social cognition
Components of Social Perception

- **Social perception** (see Pelphrey & Carter, 2008 for review)
  - E.g. faces, eye gaze, biological motion, (intonation, internal sensations)
- **Social expression**: same areas, can be dissociated
- **Theory of Mind**
  - Can you infer actions, motivations, intentions?
- **Social relationships**
- **Social problem solving**
- **Social Rules**
“People talk to each other with their eyes, but I don’t know what they are saying”
Visual Attention in Social Interaction

(Klin et al., 2003)

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EF in early social learning

• Social orienting/Social referencing
  – Within a few days of birth, babies show a preference for their mother’s face and voice over others
  – Newborns prefer to look at whole faces vs. scrambled faces
  – Babies are drawn to look where another is looking, prefer direct eye contact (Farroni et al., 2002)

• Joint attention deficient at 1 year -- an “early developing self-organizing facility” (Mundy, 2003)

• Enactive mind (Klin et al, 2003)
Social Risks

• Isolation
  ➢ Help finding their “people”

• Conflict with Professors and Peers
  ➢ Safe person decodes social world: *Hidden Curriculum* (Smith Myles)
  ➢ Social rules: *How Rude!, Expected / Unexpected behaviors* (Garcia Winner)
  ➢ Social Skills Groups: *PEERS*, Jed Baker *Preparing for Life*

• Difficulty with Self Advocacy
  ➢ *OAR Guide for Transition to Adulthood*, Autistic Self Advocacy Network, *Be Different*

• Anxiety/Depression
  ➢ May be expressed in physical symptoms
  ➢ CBT methods to become aware of feelings and develop coping skills (Teresa Bolick)

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Live Out Loud

Make the implicit explicit by verbalizing your actions.

I am feeling frustrated because my computer is running slow. I am going to take a deep breath.
Theory of Mind

What thoughts are you giving others?

Right now you are giving me ____thoughts because______
Making The Implicit Explicit

You can work together towards your goal

Engage in Expected Behaviors

Their behavior impacts how other people feel

They respond to you in a positive way

Give other people good thoughts
Common Social Strengths

• Honest
• Loyal
• Ethical
• Altruistic
• Straightforward
What do these people have in common?

- **Tim Page**, Pulitzer prize winner
- **Vernon Smith**, noble laureate
- **Satoshi Tajiri**, creator of Pokémon
- **Matt Savage**, "Mozart of jazz"
- **Daryl Hannah**, actor
- **Michelangelo**
- **Thomas Jefferson**
- **Jesse Eisenberg**
- **Mozart**

- **Marie Curie**
- **Orson Wells**
- **Charles Darwin**
- **Glenn Gould**
- **Gregor Mendel**
- **Carl Sagan**
- **Einstein**
Celebrate Neurodiversity

Mild autism can give you a genius like Einstein. ...if you got rid of all the autism genetics, you wouldn't have science or art. All you would have is a bunch of social 'yak yaks.' --Grandin

I believe those of us with Asperger's are here for a reason, and we have much to offer. --Robison
Improving the brain-environment fit for people with ASD at Cornell

Accommodations and teaching:
- Single rooms, Fluorescent lights
- Transparent Syllabi
- Engaging parents
- Executive coaching and self advocacy skills
- Social Skills supports—Hidden Curriculum of a Seminar
- Daily living skills supports

Climate Change: Welcome Neurodiversity
- Civil Right
- Engage self advocates and parents—public speakers
- Educate faculty, staff, student life
- Visibility: webpage, neurodiversity committee

www.childrensnational.org
Best Practices:
Communicate Expectations Clearly

Educate faculty in ASD and best practices:

- Transparent Syllabus
  - What does success in this class typically entail?
  - Provide specific, **explicit** instructions for organizing information and completing assignments
  - Give clear, written plan of assignments
  - Provide detailed schedule
  - Have a clear, predictable class routine

Educate Students: “Hidden Rules of Seminar Success”

- Don’t interrupt, talk only to the professor, dominate the discussion, think “I shouldn’t say that because surely everyone has already thought of it.”

Material Kindness of Karin Wolf and The William & Mary Neurodiversity Working Group
ASD in Popular Media

- **Novels:** The Speed of Dark; The Curious Incident of the Dog in the Nighttime; Marcelo in the Real World
- **Memoirs:** Look Me in the Eye, Be Different (Robison); Thinking in Pictures (Grandin); Parallel Play (Page)
- **Movies:** Billy the Kid; Today’s Man; Autism the Musical; Temple Grandin
- **TV:** The Big Bang Theory; Parenthood
- **Kid’s books:** All Cats Have Autism (Hoopmann); I am Utterly Unique (Larson)