Disclosures

- As co-author of the Vineland Adaptive Behavior Scales, Third Edition, Dr. Saulnier receives royalties from Pearson

- As co-author of Essentials of Autism Spectrum Disorders Evaluation and Assessment, and Essentials of Adaptive Behavior Assessments in Neurodevelopmental Disorders, Dr. Saulnier receives royalties from Wiley

Learning Objectives

1. Define adaptive behavior & differentiate adaptive behavior from cognition or ability
2. Describe common profiles of adaptive functioning in various neurodevelopmental disorders for individuals with and without cognitive impairment
3. Identify effective treatment strategies for enhancing adaptive functioning
Defining Intellectual Disability in the DSM-5

- Deficits in cognitive functioning ("scores of approximately two standard deviations or more below the mean")
- Deficits in adaptive functioning (e.g., communication, daily living, social participation, and independent living)
- Onset in the developmental period

**Severity Levels:** Defined by adaptive functioning rather than IQ level (different from DSM-IV)

- Mild
- Moderate
- Severe
- Profound

Differentiating Cognitive Ability from Adaptive Functioning

- **Cognitive ability** is generally defined as an individual’s repertoire of skills that are either innate or acquired.
  - Skills that an individual is capable of performing

- **Adaptive Behavior** is generally defined as performance of skills that are necessary for personal and social sufficiency.
  - Skills an individual does perform, independently, in daily activities and routines
Characteristics of Adaptive Behavior

Age-related
Defined by the expectations/standards of others
Defined by typical performance, not ability
Modifiable (can change over time)
Adequate is the appropriate goal

Profiles of Adaptive Behavior in Intellectual Disability

Adaptive Deficits in the DSM-5
Criteria for ID

- **Conceptual Skills**: those that are more academically based, including language, reading, writing, memory, numerical reasoning, and problem solving, etc.
- **Social Skills**: interpersonal, play, leisure, and conversational skills as well as friendships, empathy, caring, and social awareness.
- **Practical Skills**: self-management, personal care, recreational and vocational skills, money management, and task completion skills.
Profiles of Adaptive Behavior in ID

- In individuals with extremely low levels of cognition, adaptive behavior tends to fall on par with cognitive ability or mental age (Meyers, Nihira, & Zetlin, 1979).
- Correlations between IQ and adaptive behavior are much more variable for individuals with higher cognitive levels, such as those with borderline or mild to moderate ID (National Research Council, 2002; Fernell & Ek, 2010).

Challenges in Diagnosing Borderline - Mild ID

- Mild ID can be challenging to accurately diagnose when overall levels of either IQ or adaptive functioning fall just above cut-off requirements, leaving the diagnosis to rely heavily on clinical judgment.
- This makes it extremely important for clinicians who are conducting evaluations for eligibility to use comprehensive measures (i.e., rather than brief IQ tests, for example) in order to effectively advocate for the needs of these individuals.

Comorbidities with ID

- Estimates of comorbid psychopathology in ID are as high as 4 times the general population (Rush, Bowman, Eidman, Toole, & Mortenson, 2004).
- Psychopathology is a greater risk to those with milder ID, whereas the more severely cognitively impaired individuals (especially with medical complications like epilepsy) tend to be spared (Cowley et al., 2004).
- Depression is one of the most common comorbid psychiatric conditions in individuals with mild to borderline IQ, with the cognitive error of “underestimation of the ability to cope” being most predictive of depressive symptoms (Weeland, Nijhof, Otten, Vermaes, & Buitelaar, 2017).
- Deficits in intellectual and adaptive behavior skills increase the risk of psychopathological disorders, including depression (Tremblay, Richer, Lachance, & Cadé, 2010; Harries et al., 2009).
Adaptive Profiles in Epilepsy

- Seizures occur when there is abnormal excessive or synchronous neuronal activity in the brain.
- A commonly used definition of epilepsy has been two or more unprovoked seizures more than 24 hours apart (Dawda & Ezewuzie, 2010)
- Seizures and epilepsy commonly co-occur in individuals with ID but seizures can certainly be present in individuals with no cognitive impairment
- Profiles of adaptive behavior in epilepsy can vary with cognition, where adaptive skills can be stronger than expected in those with lower cognition compared to those without cognitive impairment
- When seizures are associated with a genetic syndrome, adaptive skills can decline over time
- Adaptive behavior has also been found to correlate with medication use for epilepsy, in that the more medications used (potentially indicating more severe symptomatology), the lower the adaptive scores (Villarreal, Riccio, Cohen, & Park, 2014)

Case Example: Intellectual Disability

Child: Johnny Jones
Age: 13 years, 2 months

WISC-IV Scores:
- Verbal Comprehension = 65
- Perceptual Reasoning = 59
- Working Memory = 59
- Processing Speed = 68
- Full Scale IQ = 66

Vineland-3 Scores:

<table>
<thead>
<tr>
<th>Subdomain/ Domain</th>
<th>Standard/ V-Scale Score</th>
<th>Age Equivalent</th>
<th>Percentile Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptive</td>
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<td>3-5</td>
<td>1</td>
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<tr>
<td>Expressive</td>
<td>8</td>
<td>2-9</td>
<td>5</td>
</tr>
<tr>
<td>Written</td>
<td>9</td>
<td>6-11</td>
<td>1</td>
</tr>
<tr>
<td>Communication</td>
<td>65</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Personal</td>
<td>9</td>
<td>5-2</td>
<td>1</td>
</tr>
<tr>
<td>Domestic</td>
<td>12</td>
<td>8-0</td>
<td>1</td>
</tr>
<tr>
<td>Community</td>
<td>6</td>
<td>3-2</td>
<td>1</td>
</tr>
<tr>
<td>Daily Living Skills</td>
<td>88</td>
<td>3.11</td>
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<tr>
<td>Socialization</td>
<td>8</td>
<td>3.5</td>
<td>1</td>
</tr>
<tr>
<td>Play/Leisure Time</td>
<td>9</td>
<td>5-3</td>
<td>1</td>
</tr>
<tr>
<td>Coping</td>
<td>8</td>
<td>2-5</td>
<td>1</td>
</tr>
<tr>
<td>Socialization</td>
<td>62</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Adaptive Behavior Composite | 64 | 1 |

ID Summary of Results

- Adaptive scores are delayed but generally on par with cognition
- Relative strength in domestic daily living skills
- Important to note that Johnny’s adaptive skills in some areas actually fall slightly above what would be expected given his cognitive level, suggesting that he is learning and applying functional and practical skills to his daily routines.
ID Recommendations

Enhance Communication Skills: Increase the amount of time that Johnny is able to listen to talks. Start by taking him to lectures that may be more interesting to him, such as talks at a museum. Expressively, help Johnny break down a story so he is able to retell it. Use of picture cues can help him sequence and elaborate on his experiences. For written skills, help him to write sentences, using either pen and paper or a computer. He can start by dictating sentences and then copying them so that he does not get frustrated.

Enhance Daily Living Skills: Teach Johnny the purpose of money and when it is used. When he goes to a store, have him give the money to the cashier and talk to him about change. At a store, explore different brands of the same product and discuss the differences in cost. With regard to telling time, if analog clocks have been taught and he has had difficulty learning, teach using a digital clock. Teach vocabulary concepts to go with the time such as quarter to an hour and the like.

Enhance Socialization Skills: Teach Johnny how to express his feelings across various situations. Enrolling Johnny in a social skills group that targets social skills and emotional development can also be helpful.

Profiles of Adaptive Behavior in Down Syndrome

Down Syndrome

• The prevalence of Down syndrome is about 1 in 700 to 1000 births, affecting both males and females of all ethnic and socioeconomic backgrounds
• Motor deficits are more pronounced than would be predicted given cognitive disability and are marked by hypotonia and poor control of muscle stiffness
• Intelligence is variable, though most individuals function within the moderate range of ID, with mean IQ scores in the 50s
• Language skills tend to be delayed, particularly expressive language, syntax, and verbal
Adaptive Behavior Profiles in Down Syndrome

- Children with Down syndrome tend to show greatest strengths in adaptive socialization skills.
- Weaknesses depend on cognition: those with higher cognition tend to have greatest weaknesses in communication skills, whereas those with lower cognition have weaknesses in daily living skills.
  - More years in mainstream education relate to better communication & socialization skills, while daily living skills tend to be predicted by overall cognitive abilities.
- Despite documented weaknesses, adaptive behavior tends to be better than expected given cognitive and academic abilities.
- Adaptive skills appear to increase with age.
- Compared to individuals with other IDs, individuals with Down syndrome have fewer maladaptive behavior deficits.

Profiles of Adaptive Behavior in ASD

Autism Spectrum Disorder

Autism is a neurodevelopmental disorder of unknown genetic origin where symptoms unfold over the first few years of life & include the following:

- Impairments in social communication and interaction.
- Development of restricted interests, repetitive & perseverative behaviors, and need for sameness.
- ASD affects 1 in 68 children (1 in 5 biological siblings).
- Extreme variability in cognitive, language, and behavioral presentations.
The Autism Spectrum

Levels of Cognitive Functioning

- Cognitive Impairment
- Intact Cognition
- Seizures
- Intact Language
- Genetic Disorders
- Psychiatric Comorbidities
- Medical Comorbidities

The Autism Spectrum

Levels of Adaptive Functioning

Daily Living Skills (ADLs)
- Dressing
- Bathing
- Toiletting
- Feeding
- Mobility
- Medical management

Functional Independence
- Social Awareness
- Emotional Awareness
- Personal Care
- Career Development
- Community Navigation
- Financial Management

Profiles of Adaptive Behavior in ASD

Historically
Adaptive skills are often delayed & found to fall significantly below age & IQ in ASD
Volkmar et al., 1987; Carter et al., 1998; Klin et al., 2007

More Recently
Standard scores are found to be higher than IQ in children with intellectual disability & ASD
Perry et al., 2009; Kanne et al., 2010

Of Concern
The gap between cognitive ability and adaptive functioning appears to widen with age
Klin et al., 2007; Saulnier & Klin, 2007; Kanne et al., 2010
Older age group has significantly lower adaptive skills across all Vineland domains than the younger age group.

Adaptive skills fall significantly below cognition in 2 independent samples of boys ages 8 to 18 years.

Vineland-II Assessment Scores & Interpretation

9 Year-old Male with Autism; Full Scale IQ = 119

<table>
<thead>
<tr>
<th>Subdomain/Domain</th>
<th>Standard/Composite Score</th>
<th>Age Equivalent (years-months)</th>
<th>Percentile Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>75</td>
<td>5 (5-10)</td>
<td>67</td>
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<tr>
<td>Personal</td>
<td>10</td>
<td>4 (4-11)</td>
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<tr>
<td>Domestic</td>
<td>11</td>
<td>5 (5-10)</td>
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</tr>
<tr>
<td>Community</td>
<td>9</td>
<td>6 (6-0)</td>
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<tr>
<td>Daily Living Skills</td>
<td>7</td>
<td>7 (7-0)</td>
<td></td>
</tr>
<tr>
<td>Coping</td>
<td>7</td>
<td>6 (6-0)</td>
<td></td>
</tr>
<tr>
<td>Socialization</td>
<td>57</td>
<td>&lt;1</td>
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</tr>
<tr>
<td>Adaptive Behavior Composite</td>
<td>67</td>
<td>67</td>
<td>67</td>
</tr>
</tbody>
</table>

Also beware of high Written subdomain scores in comparison to significantly lower Receptive & Expressive scores. This profile often inflates the Communication Domain scores and reflects the affinity for numbers, letters, reading, & writing often observed in ASD.

Case Example: ASD

Child: Jane Smith
Age: 9 years, 0 months

WISC-IV SCORES:
- Verbal Comprehension = 93
- Perceptual Reasoning = 92
- Working Memory = 80
- Processing Speed = 78
- Full Scale IQ = 83
ASD Summary of Results

- Jane’s overall adaptive skills are significantly delayed for her age in all areas.
- Her overall ABC score of 67 should be interpreted with caution given the discrepancies between her domain scores.
- Jane’s adaptive scores fall below what would be expected given her age and cognitive abilities, suggesting that she is having difficulty independently applying her repertoire of skills to daily contexts and routines with independence.
- Jane’s adaptive Socialization skills are an area of significant deficit, falling below her age, cognition, and her other adaptive abilities.

ASD Recommendations

- **Enhance Daily Living Skills:** Improve upon Jane’s self-care skills such as teaching her to tie her shoes, dress herself completely, brush her teeth and her hair. Establish routine chores for Jane at home, with clear expectations, and appropriate reinforcements (tailored to what is motivating for her).
- **Enhance Safety Awareness:** Develop a safety plan for Jane in which specific rules for making sure she is safe when out and about are described and written down. Teach Jane each rule and practicing each scenario repeatedly, again, with appropriate reinforcement for compliance.
- **Enhance Coping Skills:** Teach Jane skills for coping with frustration, anger, and other complex and unpleasant emotions. Jane will need direct instruction on how to manage and self-regulate her emotions and behavior and opportunities to practice. However, this cannot be accomplished unless Jane is motivated to learn these skills. We recommend a functional behavioral assessment of her biting, hitting, and other aggressive behaviors, including tantrumming and refusing to cooperate.

Profiles of Adaptive Behavior in ADHD
Attention Deficit Hyperactivity Disorder

- ADHD is characterized by inattention, disorganization, and/or hyperactivity and impulsive behaviors.
- The prevalence of ADHD across the US ranges from 5 to 17 percent with a national average of 11%.
- Children and adolescents with ADHD can show significant impairment in conceptual, social, and practical adaptive behavior skills.
- Social deficits can be significant and result in rejection from peers, as well as problems with academic & family functioning.

Profiles of Adaptive Behavior in ADHD

- Children with ADHD struggle to meet age-appropriate expectations with regard to following multistep instructions, resulting in lower adaptive receptive communication skills.
- Deficits in receptive communication can also impact daily living skills, such as personal & domestic care, such as dressing, grooming, and completing household chores.
- Adaptive skills tend to fall below cognition, with this gap being larger in older vs. younger individuals with ADHD.
- Maladaptive behavior scores will be higher for both externalizing and internalizing behaviors.
- ADHD is highly comorbid with Conduct Disorder & Oppositional Defiant Disorder, which can exacerbate externalizing symptoms.

Case Example: ADHD

**Child:** Jennifer Park  
**Age:** 6 years, 9 months  

**DAS-II SCORES:**  
- Verbal Reasoning = 147  
- Nonverbal Reasoning = 127  
- Spatial Reasoning = 109  
- General Conceptual Ability = 134

**Conners-3:**

**ABAS-3 Scores:**

<table>
<thead>
<tr>
<th>Domain</th>
<th>Parent T-Score</th>
<th>Interpretaion</th>
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<tbody>
<tr>
<td>Motor Efficiency</td>
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<td>Visual-Motor</td>
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<td>Fine Motor</td>
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<td>Social</td>
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<td>Emotional</td>
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<tr>
<td>Behavioral</td>
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<tr>
<td>Attention</td>
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<table>
<thead>
<tr>
<th>Domain</th>
<th>Teacher T-Score</th>
<th>Interpretaion</th>
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<tr>
<td>Attention</td>
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</table>
ADHD Summary of Results

• Jennifer’s adaptive skills fall below average for her age.
• Given her superior cognitive skills, her adaptive skills would be expected to be at age level (i.e., not above average), but they fall lower than age-expectations.
• Jennifer’s adaptive skills are variable, with relative strengths in her functional academics, play and leisure skills, health and safety skills, and self-care.
• However, she has numerous areas of vulnerability that are not commensurate with her extremely strong cognitive abilities.

ADHD Recommendations

Enhance Conceptual Skills: Improve upon Jennifer’s ability to listen and engage in conversations. Jennifer might need visual cues to help her know when it is her turn to speak. Using clear signals, such as red and green lights for stop and go might help her to know when it is appropriate for her to take her conversational turn.
Enhance Functional Academic Skills: Work on Jennifer’s ability to retell a story. Have her check her comprehension after shorter reading chunks and as she improves, check for comprehension at the end of every chapter.
Enhance Self-Direction Skills: Jennifer has a very difficult time working independently and coping with her emotions. Strategies and rewards for increasing time on task and independence should be implemented. If her behavior is disruptive to the classroom, then a behavior plan should be implemented to more specifically target these behaviors.
Improve Social Skills: Jennifer’s friendships are struggling. A social skills group or lunch bunch can help her learn to engage appropriately with peers and better learn how her behaviors are contributing to her challenges with peer relations.
Enhance Practical Skills: Jennifer’s impulsivity is also leading to significant safety issues. Breaking tasks down, working on slowing her down before she crosses a street is imperative so that she does not get injured.

Interpreting Results & Writing Recommendations for Treatment & Intervention
Writing up Adaptive Results in a Written Report

- Provide an overall summary of performance
  - Comparison to chronological age expectations
  - Comparison to mental-age expectations (i.e., IQ)
- If scores are variable, include a statement cautioning about interpreting the overall composite score
- If results are assumed to be invalid, include a validity statement in the report (good to highlight/bold)
- Provide description of Strengths & Weaknesses per subdomains
- Identify topic areas for intervention that are most pertinent to the individual
- If there are multiple time points, describe progress or lack thereof
- If there are multiple respondents, describe consistencies and discrepancies

Intervention Guidance in the Vineland-3
Written Subdomain

Treatment & Intervention for Adaptive Behavior

- Adaptive behavior skills are essential for independence in life – therefore, think about behaviors that are practical and meaningful to real life.
- Adaptive behaviors should be embedded into naturally occurring contexts and routines and should be addressed by everyone working with the individual
- Family members/caregivers should be included in discussions regarding treatment programming
- Less is more! Only a few adaptive behaviors should be addressed simultaneously. Attempting to target the entire list of behaviors that are delayed will likely not result in any progress.
- Drops in standard scores over time do not necessarily indicate regression or loss of skills! Analyzing changes in Growth Scale Values (GSVs) or Age-Equivalent scores can better determine true progress.
- Adaptive behavior is modifiable! A red flag for any treatment program is lack of progress over an extended period of time. This suggests that the targets or metrics need to be modified so as to facilitate progress.
Recommended Resources

Adaptive Living Skills Curriculum (Bruininks, Marreau, Gitman, & Anderson):
- Employment Skills
- Community Living Skills
- Home Living Skills
- Personal Living Skills
  - Infancy = 40+ years

Thank you for attending!

Questions?