DOUBLE WHAMMY: ADHD AND AUTISM
Learning Objectives

• Understand the evolution of autism conceptualization

• Understand symptom distinctions in adults with Autism Spectrum Disorder and Attention Deficit Hyperactivity Disorder

• Understand the limited research for treatment of concurrent adult ADHD and ASD
Autism Spectrum Disorder

- As of 2018, it appeared that ASD risk is heritable between 74% and 93%
- Males are diagnosed four times more often than females
- According to the latest CDC prevalence reports, 1 in 59 children (1.7%) in the United States had a diagnosis of ASD in 2014, reflecting a 2.5-fold increase from the prevalence rate in 2000
- From the 1940s to 2016, there has been a 15-fold increase in the prevalence of ASD

Prevalence of Autism Spectrum Disorder

• **BUT**, it is important to note that these numbers from both 2016 and 2018 are not the result of direct observation of the children

• **Instead** they are the result of parental surveys in which they were asked whether a child in the family has been diagnosed with autism

• **So**, the diagnostic accuracy may come into question

Comorbidity: Childhood ADHD and ASD

- ADHD: 22–83%
- ASD: 30–65%

ASD (M>F) ADHD (M>F)

History of Autism

“Our capacity for deceiving ourselves about the operation of our brain is almost limitless…”

Francis Crick, 1979
Paul Eugen Bleuler: Autism in Schizophrenia

- Autism is a word based on Greek “autos” or “self” to describe “self-absorption” or “withdrawal from reality”

- Eugen Bleuler used the term as one of the pathognomonic features of schizophrenia

- In 1911, he introduced this term to describe the “most severe schizophrenics who live in the world of their own”

Bleuler E. Dementia Praecox or the Group of Schizophrenias 1911.
In 1943, Leo Kanner, “the father of child psychiatry,” recounted eleven case studies in his seminal paper, “Autistic Disturbances of Affective Contact.” He described these children as being born without the ability to make social relationships and used the term “autism.”

Phenotypic elements that he identified included profound inability to develop relationships, obsessive desire for sameness, fascination with inanimate objects, aloofness, lack of imagination, and language that did not serve the purpose of adequate communication with others.

Hans Asperger: “Autistic Psychopathy”

• In 1944, Hans Asperger, an Austrian pediatrician, described a similar set of symptoms in the children from his clinic that he called “little professors.” He described a form of autism that was different from what was noted by Kanner.

• Asperger's children shared some of the similar symptoms, including communication difficulties, repetitive behaviors, inability to make friends, and unusual sensory responses.

• BUT symptoms did not include cognitive disabilities or symptoms of schizophrenia.

• He reported that the syndrome is not particularly rare, as he had seen more than 200 children with a similar set of criteria in his clinic. He named this condition “autistic psychopathy.”

Leo Kanner: “Early Infantile Autism"

• In 1958, Kanner used the term “early infantile autism” to describe the same set of characteristics

• However, the use of the word “autism,” which was initially used to describe adult schizophrenia, caused significant confusion
Lorna Wing: “Asperger’s Syndrome”

• In 1981, Lorna Wing, an English psychiatrist, described her work in the seminal article “Asperger's Syndrome: A Clinical Account”

• She advocated a “neutral” term “Asperger's syndrome” over “autistic psychopathy”

• Wing is also widely credited with considering autism as a spectrum disorder instead of a single entity
Psychoanalysis Perspective

• Sigmund Freud’s death in 1939

• The emphasis was placed on the mother's role in fostering ego development

• Autism were thus attributed, directly or indirectly, to maternal negligence or transgression during the early childhood period
Bruno Bettelheim: “Refrigerator Mother”

• Bruno Bettelheim is usually considered responsible for the introduction of the “refrigerator mother”

• The concept of “schizophrenogenic mother” by Fromm-Reichmann

• Autism is an emotional disorder that is caused by the psychological harm brought upon some children by their own mothers; he was influenced by his own 10-month experience at Dachau concentration camp in WWII

• His theories were widely accepted by the general public during the 1950s and 1960s
Bernard Rimland: Autism As Neurologic Illness

• In 1965, Bernard Rimland, a psychologist, founded the Autism Society of America and the Autism Research Institute in 1967; he was critical of Bettelheim’s theories and stressed that autism had a neurologic basis.


• Rimland was concerned about the increase in the prevalence of autism and hypothesized that vaccinations, especially those containing thimerosal, might be the cause of this increase.
Thimerosal Disproven

• Popular scientific and parental views that vaccines and thimerosal are the cause of autism have been discredited

Autism: From Schizophrenia to a Spectrum Disorder

• In the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*-I (1952) and *DSM-II* (1968), autistic-like symptoms were labeled under “childhood schizophrenia”

• By 1979, the idea that autism is an early form of “childhood schizophrenia” was abandoned

Autism Redefined: DSM-III

- *DSM-III* (1980): There was a consensus that social deficits, resistance to change, speech and language problems, and onset during early years characterized autism.

- Autism was included under the broader category of Pervasive Developmental Disorder (PDD) as “Infantile autism” (Leo Kanner’s term).
Autism Operationalized

• Formalized in *DSM-III-R* (1987), the separation of core symptoms of autism into three domains of impairment

  • Reciprocal social interaction

  • Communication

  • Restricted or repetitive behaviors
Asperger’s Syndrome Included in DSM-IV

• *DSM-IV* (1994): Three disorders—Rett's disorder, childhood disintegrative disorder, and Asperger's disorder—were included.

• Another major achievement was the alignment of diagnosis among DSM-IV and the *International Classification of Mental and Behavioral Disorders (ICD-10)*.

• Autism Diagnostic Observation Scale, the Autism Diagnostic Interview, and the Childhood Autism Rating Scale.
Autism Redefined Again: DSM-5

- *DSM-5* (2013) took a more restrictive approach
- First, a dimensional approach to the diagnosis was chosen over the categorical approach
- Second, the name of the class of disorders was changed from “Pervasive Developmental Delay” to “Autism Spectrum Disorder” because, after reviewing the research data, a decision was made to collapse the social and communication symptom clusters into one category (Autism Spectrum Disorder) and add symptoms of sensory sensitivities.
- And so, multiple disorders in *DSM-IV* under PDD were removed in favor of a single term—“autism spectrum.” A controversial move was to remove the diagnosis of Asperger's disorder
- Third, a new disorder, social communication disorder, was added
- In addition, diagnosis of attention-deficit/hyperactivity disorder can be made with ASD in *DSM-5*, which was not allowed in *DSM-IV*
The Autism Spectrum Disorder-Observation for Children (ASD-OC)- only for children

The Developmental, Dimensional, and Diagnostic Interview (3di)

Childhood Autism Rating Scale (CARS)

The Autism Diagnostic Interview—Revised (ADI-R)

The Asperger Syndrome (and High-Functioning Autism) Diagnostic Interview (ASDI)

The Diagnostic Interview for Social and Communication Disorders (DISCO)

The Autism Spectrum Disorder—Diagnosis Scale for Intellectually Disabled Adults (ASD-DA)
Diagnosis of Autism Spectrum Disorder in Adults
Symptom Confusion in Adults: ADHD vs. ASD
**Seeming Symptom Overlap: Asperger’s vs. ADHD**

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**Figure 4.** Overlapping symptoms: Similarities in ADHD and Asperger-Syndrome, their causes and appearance

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Seeming Symptom Overlap: Asperger’s vs. ADHD

Asperger’s Syndrome in ADHD Adults

- First ADHD diagnosis
  - N=53 (17 females, 36 males)
  - Range of age: 18–56 years, average age: 33.2 years
- 14 patients had a current psychotropic medication
- ADHD:
  - Conners Adult ADHD Rating Scales and Structured Diagnostic interview (DIVA; Kooij & Francken, 2009)
- Asperger’s:
  - Asperger’s Spectrum Quotient
  - Empathy Quotient

Two self-assessment instruments for screening autism disorders in adults:

1. “Autism-spectrum quotient” (AQ) is an instrument;
   - Continuum from normality to autism
   - A higher score indicates more pronounced autistic traits
   - Its 50 items are divided into five subscales: “social skill,” “attention switching,” “attention to detail,” “communication,” and “imagination”
   - The AQ has been shown to strongly predict Asperger Syndrome in a clinical sample

2. “Empathy Quotient” (EQ) measures the ability of empathy of an individual.
   Higher score indicates a stronger empathy.
   40 items concerning empathy and 20 filler items.

Scores of the AQ and the EQ are inversely correlated.

Adult ADHD With Autism

- 8 of the 53 ADHD patients (two female, six male patients) were diagnosed with a comorbid Asperger Syndrome
- Equivalent to a frequency of 15.1% in this investigated sample

Autism Spectrum Quotient: ADHD vs. Autism


Figure 2. Scores in AQ: All comorbid ADHD/Asperger-patients had a score above the AQ’s cut-off of 32 points, whereas only two ADHD-patients scored above this cut-off.
Emotion Quotient: ADHD vs. Autism

Figure 3. Scores in EQ. All comorbid ADHD/Asperger-patients had a score under the EQ’s cut-off of 30 points, 18 ADHD-patients scored equal to or below this cut-off, too.

Additional Finding

• In the sample, none of the eight comorbid patients was diagnosed with ADHD or Asperger’s Syndrome in childhood or young adulthood.

Complicating Comorbid Psychiatric Illness With Adult ADHD/ASD
Child ASD and Anxiety Disorders

• Up to 80% of children with ASD also suffer from one or more anxiety disorders

• Separation anxiety disorder (SAD) has the highest comorbidity rate with ASD (38%)

• Obsessive-compulsive disorder (37%)

• Generalized anxiety disorder (35%)

• Social phobia (30%)

Muris et al. 1998; Simonoff et al. 2008; Leyfer et al. 2006; Muris et al. 1998.
### Prevalence Rates of Comorbid Psychiatric Disorders in Child/Adol with ASD

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Prevalence Rate</th>
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<tbody>
<tr>
<td>Overall</td>
<td>70–72</td>
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<tr>
<td>Anxiety disorders</td>
<td>39.6</td>
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<tr>
<td>Obsessive-compulsive disorder</td>
<td>17.4</td>
</tr>
<tr>
<td>Depressive disorders</td>
<td>0.9–29</td>
</tr>
<tr>
<td>Bipolar disorders</td>
<td>0.7–1.9</td>
</tr>
<tr>
<td>ADHD</td>
<td>21–30</td>
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<tr>
<td>Oppositional defiant disorder</td>
<td>25–28.1</td>
</tr>
<tr>
<td>Schizophrenia/psychotic disorders</td>
<td>0–0.3</td>
</tr>
<tr>
<td>Posttraumatic stress disorder</td>
<td>0.3</td>
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</table>
Adult ASD and Depression

- Adults with ASD seem more vulnerable to depression than those with other developmental disorders or healthy individuals

Psychiatric Comorbidities With: Adult ADHD and/or ASD

- Population-based data Norwegian registries

- Adults with ADHD (n = 38,636), ASD (n = 7528), and both diagnoses (n = 1467) compared with the remaining adult population (n=1,653,575)

- Compared the prevalence of psychiatric disorders in adults with ADHD alone, ASD alone, and both ADHD and ASD with adults without ADHD or ASD

- The mean ages of individuals in the ADHD, ASD, and ADHD ASD groups were 31, 26, and 27 years of age, respectively, compared with 33 years of age in the control population
Psychiatric Comorbidities With: Adult ADHD and/or ASD

- From other studies, individuals with either ADHD or ASD have a 65 to 90% risk of developing concomitant psychiatric disorders.

- BUT had seemingly different patterns of comorbidity.
Complicating Comorbid Psychiatric Illness With Adult ADHD/ASD
Complicating Comorbid Psychiatric Illness With Adult ADHD/ASD

The pattern of prevalence of psychiatric comorbidity in adults with ADHD (n=36,836) in red, or ASD (n=7528) in blue.
Treatment of Adult ADHD and Autism Spectrum Disorder
ADHD has been found to be the second most common comorbid disorder diagnosed in adults with ASD, after social anxiety disorder.

ADHD and ASD have their onsets in childhood.

Diagnostic difficulty because both disorders start in childhood (age of onset), unlike the emergence of psychiatric disorders in adult ADHD.

Pharmacological treatment is recommended for ADHD and comorbid ASD by the most recent treatment guideline (National Institute for Health and Care Excellence (NICE), UK, 2018).

Treatment of ADHD in Adults With ASD

• There have not been any RCTs that have investigated the role of stimulant or non-stimulant medications in treating ADHD in adults with ASD

Childhood ADHD Treatment With ASD

- Extensive research on pharmacotherapy has been conducted among children with ADHD and comorbid ASD

- Outcomes generally show some effectiveness of MPH in the treatment of hyperactivity in ASD

- One study reported a dropout rate of 18% in children

- There is no evidence available for the use of d-amphetamine or bupropion in patients with ADHD and comorbid ASD

Pharmacotherapy of ADHD in Adults With ASD

- 60 adults with ADHD+ASD were selected from an outpatient clinic and compared with 226 ADHD-only adults from the same clinic; similar treatment regimens were received

- Adult outpatient psychiatric department between January 2013 and May 2018

Pharmacotherapy of ADHD in Adults With ASD

• Mean reduction of 24.6% on the ADHD-index for the ADHD+ASD group; this reduction was significant and represents a large effect, $r = .70$

• A reduction of 31.3% was found for the ADHD-only group, which was significant and represents a large effect, $r = .74$

• A comorbid diagnosis of ASD did not significantly affect ADHD symptom reduction with treatment

Group Comparisons

• The time until establishment of optimal pharmacological treatment (i.e., the elapsed time between T1 and T2) did not differ significantly for the ADHD+ASD group and the ADHD-ASD group.

• No significant group difference was found for the distribution of medication types within the two groups.

• The ADHD+ASD group used a significantly higher daily dosage of bupropion compared with the ADHD-ASD group.

• The results show the pharmacological treatment of adult ADHD+ASD is not less effective than the pharmacological treatment of child ADHD-ASD.

Gender Differences: ADHD-ASD/ADHD+ASD

- No effect of gender was found for symptom reduction
- In this study, a M:F ratio of 2.5:1 in the ADHD+ASD group vs. 1:1 in the ADHD-only group
- A lower representation of females was found in the ADHD+ASD group than in the ADHD-only group (27% vs. 48%)
- By epidemiological surveys, ADHD+ASD is more prevalent in males than in females with a ratio of 4.3:1

### Pharmacotherapy of ADHD in Adults With ASD

<table>
<thead>
<tr>
<th></th>
<th>Increase Adverse Events</th>
<th>Decrease Adverse Events</th>
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<tbody>
<tr>
<td>ADHD+ASD</td>
<td>decreased appetite and weight loss</td>
<td>agitation, anxiety, and sadness/unhappiness</td>
</tr>
<tr>
<td>ADHD</td>
<td>decreased appetite, weight loss, and dry mouth</td>
<td>sleeping disorder, nervousness, agitation, anxiety, and sadness/unhappiness</td>
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- No significant differences between the groups for the changes in side effects

Treatment Conclusions: Adult ADHD With ASD

• When compared to ADHD-ASD patients, the present findings suggest that patients with ADHD+ASD:
  • Do not require lower optimal doses
  • Do not require more time to reach optimal dosage
  • Do not experience more side effects of medication

Medication Side Effects in ADHD+ASD: Children vs. Adult

- The increased occurrence of side effects reported previously for the pharmacological treatment of children with ADHD+ASD is not supported by the present data for adults with ADHD +ASD

Risperidone in Adult ASD

• An early 12-week, double-blind RCT in adult patients with ASD (autism and PPD-NOS) found that risperidone (mean dose 2.9 mg/d) significantly reduced repetitive behavior, aggression, anxiety or nervousness, depression, and irritability compared to placebo-treated patients.

McDougle et al. 1998.
FDA-Approved Medications for ASD

• Risperidone and aripiprazole are approved by the FDA for the treatment of irritable mood-associated problems (e.g., aggression, self-injury, tantrums, and mood (ability) in youth with ASD

• No medications have been consistently effective in treating the core social and communication deficits seen in ASD
Psychotherapies

• Education
  • Disorders
  • Medication

• Distinguishing symptoms of each disorder
• Inclusion of family members
• Organization and life skills
• Social skills and training
• Vocational accommodations
Summary

• ADHD in adults is common with ASD

• Categorical symptom distinction is cognitive versus social/communication

• Functional impairment worse when both are present

• Adult ADHD can be effectively treated in the presence of ASD

• No research on diagnostic prioritization in adult ASD with psychiatric comorbidities
Which of the following is **not** true?

1. Asperger’s syndrome was named by Hans Asperger
2. Autism was thought to be caused by a “refrigerator mom”
3. Autism was once referred to as schizophrenia
4. Autism is not caused by vaccines
For patients with ADHD+ASD, which of the following is not true?

1. More prevalence in males
2. Titrate dose as slowly in adults as children
3. High rates of heritability
4. Impairments are more severe
Posttest Question 3

Which two medications are FDA-approved for ASD in youth?

1. Risperidone, Quetiapine
2. Ziprazidone, Risperidone
3. Aripiprazole, Risperidone
4. Olanzapine, Aripiprazole
5. Haloperidol, Risperidone