Pay Attention: ADHD Through the Lifespan

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Week 7: Complications of ADHD

Homework Review

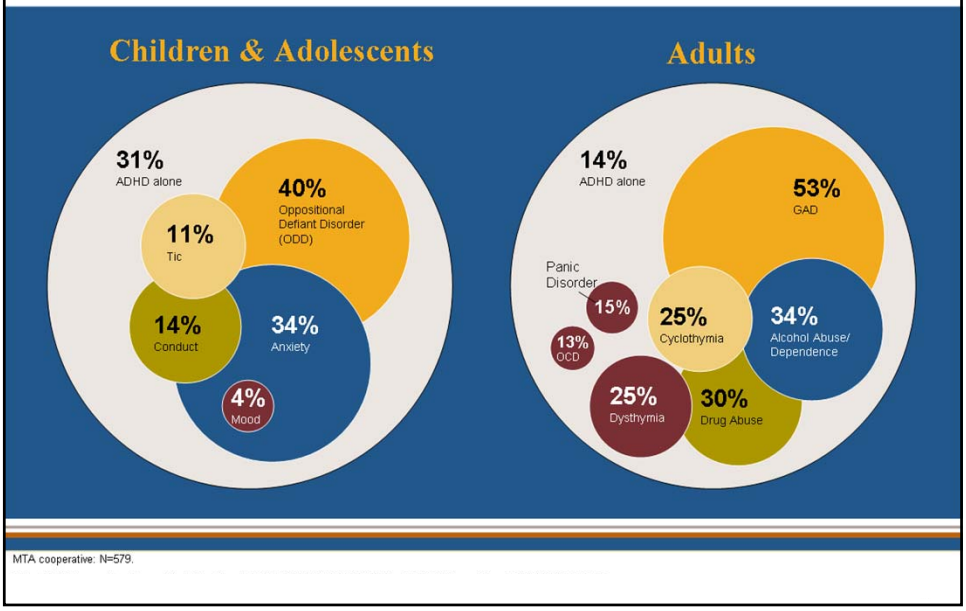
Co-morbidity seen with ADHD

Externalizing disorders	• Oppositional Defiant Disorder • Conduct Disorder
Internalizing disorders	• Anxiety Disorders • Mood Disorders – Bipolar Disorder – Major Depression – Dysthymia
Cognitive disorders	• Learning Disorders • Language Disorders

Co-morbidity seen with ADHD

Special populations	• Tourette Syndrome • Obsessive Compulsive Disorder • Autistic Spectrum Disorders • Fetal Alcohol Syndrome
Other problems	• Sleep Disorders • Substance Use Disorders • Post-Traumatic Stress Disorder

Patients With ADHD Frequently Have Coexisting Disorders



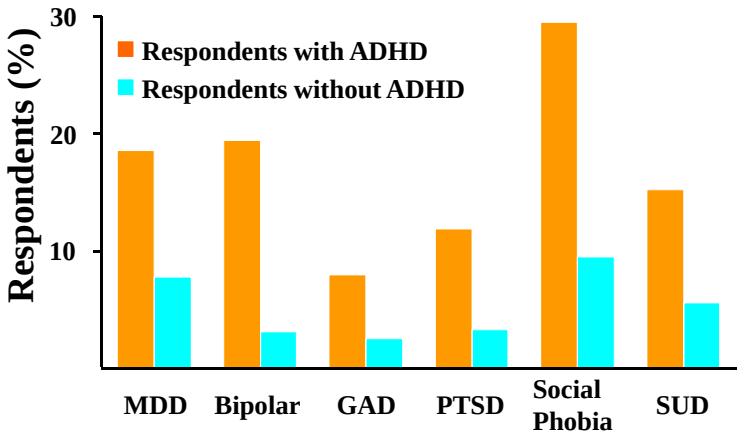
MTA cooperative: N=579.

Factors Related to Comorbidity

- Greater severity of ADHD symptoms
- Non-intact families of origin
- Low parental income
- Decreased parental life satisfaction
- Decreased parental interest in and monitoring of the child
- Affiliation of patient with deviant peers
- Parental ADHD, depression, antisocial personality disorder, & substance abuse

Hurtig, T. et al. (2007). *European Child and Adolescent Psychiatry, 16*, 362-369. Also Barkley, R. (2006). *ADHD: A Handbook for Diagnosis & Treatment*. New York: Guilford.

Common Comorbid Psychiatric Disorders (Epidemiological Sample)



National Comorbidity Survey Replication (N = 3199)

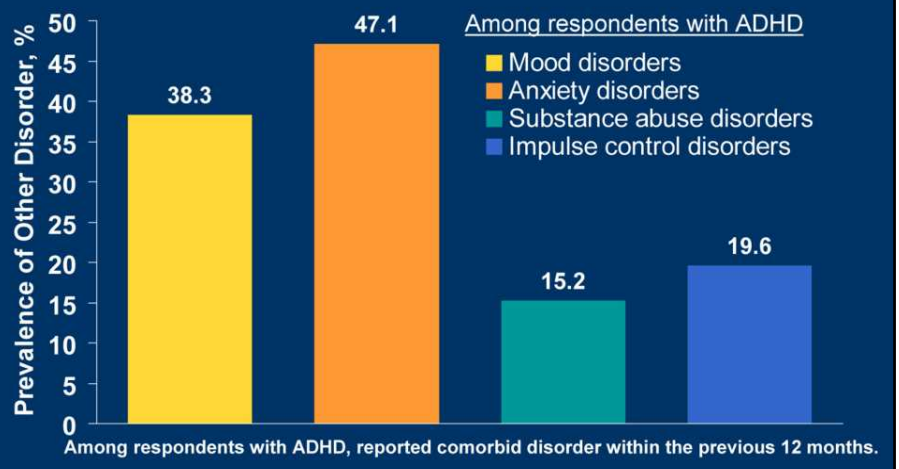
Among respondents aged 18-44 years with ADHD, comorbid disorder within previous 12 months
For all comparisons, $P<0.05$

8

Kessler et al. *Am J Psychiatry*. 2006;163:716-723.

Comorbidity of Other DSM-IV-TR Disorders With ADHD in Adults

National Comorbidity Survey Replication (N=3199)

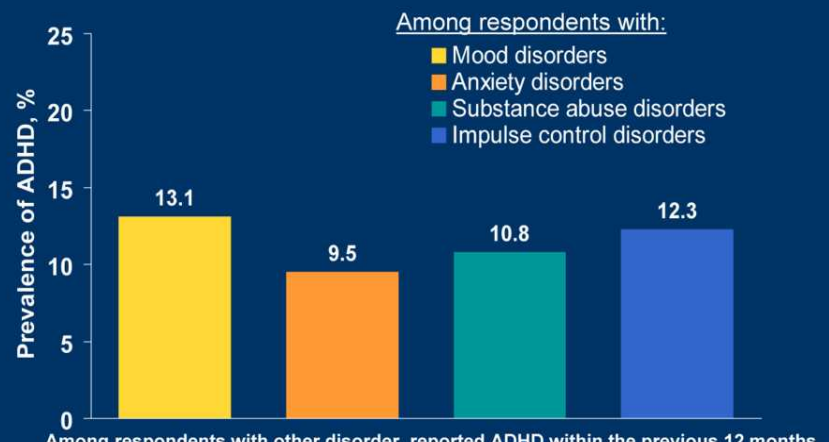


Among respondents with ADHD, reported comorbid disorder within the previous 12 months.

Kessler RC, et al. *Am J Psychiatry*. 2006; 163:716-723.

Comorbidity of ADHD With Other DSM-IV-TR Disorders in Adults

National Comorbidity Survey Replication (N=3199)

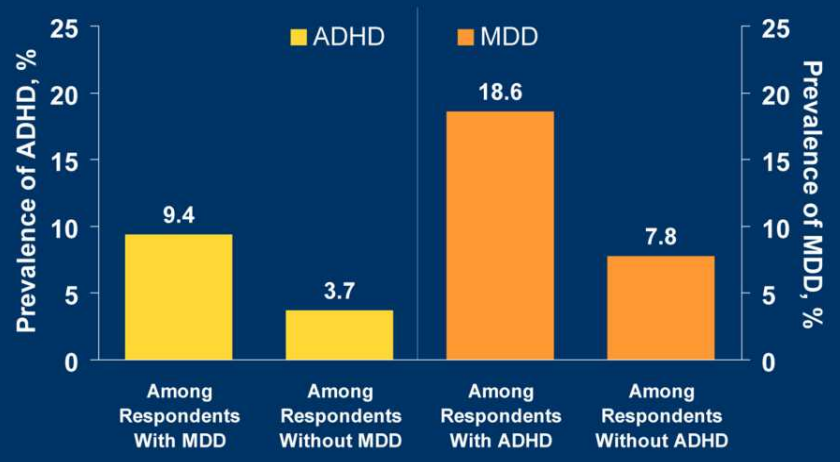


Among respondents with other disorder, reported ADHD within the previous 12 months.

Kessler RC, et al. *Am J Psychiatry*. 2006; 163:716-723.

Comorbidity of Adult ADHD With MDD in Adults

National Comorbidity Survey Replication (N=3199)



Kessler RC, et al. *Am J Psychiatry*. 2006; 163:716-723.

ADHD and Comorbidity in Adults

Symptom domains
- Hyperactivity
- Inattention
- Impulsivity

+

Psychiatric comorbidities
- Anxiety and mood disorders
- Disruptive behavior disorders (conduct disorder and oppositional defiant disorder)

Lead to

Functional impairments

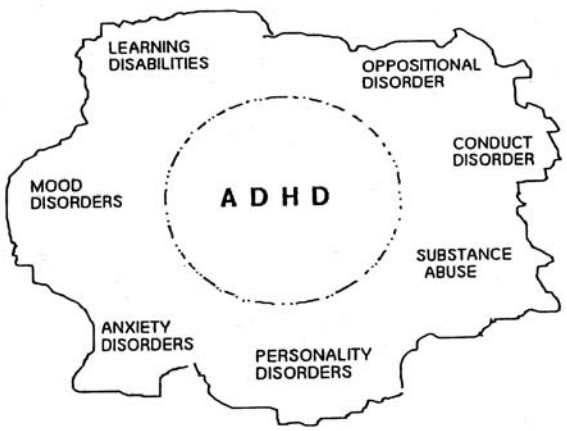
Self
- Low self-esteem
- Accidents and injuries
- Smoking
- Substance abuse
- Delinquency

School / Work
- Academic difficulties, underachievement
- Employment difficulties

Home
- Family stress
- Parenting difficulties

Social
- Poor peer relationships
- Socialization deficit
- Relationship difficulties

Elusive Boundaries of ADHD



Mid-Lecture Questions

Disruptive Disorders (ODD, CD)

Oppositional Defiant Disorder – Diagnostic Criteria

A pattern of negative, hostile and defiant behavior lasting at least 6 months, during which four (or more) of the following are present:

1) often loses temper
2) often argues with adults
3) often actively defies or refuses to comply with adults' requests or rules
4) often deliberately annoys people
5) often blames others for his or her mistakes or misbehavior
6) is often touchy or easily annoyed by others
7) is often angry and resentful
8) is often spiteful or vindictive

Oppositional Defiant Disorder (40-80%)

- ADHD cases are 11x more likely to have ODD
- ADHD contributes to and likely causes ODD
  - This likely occurs through the impact of ADHD on emotional self-regulation (an executive function)
  - This can account for the well-established findings that ADHD medications reduce ODD as much as they do ADHD
- Some ODD is related to disrupted parenting
  - Inconsistent, indiscriminate, emotional, and episodically harsh and permissive (lax) consequences teaches social coercion as a means of social interaction
  - Poor parenting can arise from parental ADHD and other high risk parental disorders in ADHD families
- Early ODD predicts persistence of ADHD and increases risk for CD/MDD and anxiety disorders

Treatment Impact of ODD

- Both stimulants and atomoxetine reduce ODD when it is comorbid with ADHD; not when ODD is alone
  - Higher doses may be needed for comorbid cases
- Requires adjunctive parent training in behavior management methods; response is age-related:
  - 60-75% successful for children
  - 25-35% treatment response after 13+ yrs. of age
  - May need to treat parent's ADHD first to succeed
  - May need to add problem-solving communication training of teen and parents after age 14 years

Conduct Disorder – Diagnostic Criteria

A repetitive and persistent pattern of behavior in which the basic rights of others or major age-appropriate societal norms or rules are violated, as manifested by the presence of **three** (or more) of the following criteria in the past 12 months, with at least one criterion present in the past 6 months:

- **Aggression to people and animals**
  1) often bullies, threatens, or intimidates others
  2) often initiates physical fights
  3) has used a weapon that can cause serious physical harm to others (e.g., a bat, brick, bottle, knife, gun)
  4) has been physically cruel to people
  5) has been physically cruel to animal
  6) has stolen while confronting a victim (e.g., mugging, purse snatching, extortion, armed robbery)
  7) has forced someone into sexual activity

Conduct Disorder – Diagnostic Criteria

- **Destruction of property**
  8) has deliberately engaged in fire setting with the intention of causing serious damage
  9) has deliberately destroyed others' property (other than by fire setting)

- **Deceitfulness or theft**
  10) has broken into someone else's house, building, or car
  11) often lies to obtain goods or favors or to avoid obligations (i.e., "cons" others)
  12) has stolen items of nontrivial value without confronting a victim (e.g., shoplifting, but without breaking and entering; forgery)

Conduct Disorder – Diagnostic Criteria

- **Serious violations of rules**
  - 13) often stays out at night despite parental prohibitions, beginning before age 13 years
  - 14) has run away from home overnight at least twice while living in parental or parental surrogate home (or once without returning for a lengthy period)
  - 15) is often truant from school, beginning before age 13 years

- *Specify* type based on age at onset:

  Childhood-Onset Type: onset of at least one criterion characteristic of Conduct Disorder prior to age 10 years

  Adolescent-Onset Type: absence of any criteria characteristic of Conduct Disorder prior to age 10 years

ADHD & Conduct Disorder (20-56%)

- If starts early, represents a unique family subtype
  - More severe, more persistent antisocial behavior
  - Worse family psychopathology
    - Antisocial personality, substance use disorders, major depression
    - Parent hostility, depression, & low warmth and monitoring interact reciprocally with child conduct problems over time to adolescence**
  - Greater association with ADHD (especially inattention symptoms)
  - Less responsive to behavioral or family interventions
- Increased risk of psychopathy (20%)

*Barkley, R. A. et al. (2008). *ADHD in Adults: What the Science Says.* New York: Guilford.

** *Special issue on reciprocal influence across development, Journal of Abnormal Child Psychology (2008), vol. #36 (July).*

ADHD & Conduct Disorder (20-56%)

- Increased risk of psychopathy (20%)
- Father desertion, parent divorce more common
- Major depression more likely to precede/co-exist with CD
- If CD starts late (>12), related to social disadvantage, family disruption, & affiliation with deviant peers
- School drop out, drug use, and teen pregnancy are more likely in comorbid cases than in ADHD alone*

*Barkley, R. A. et al. (2008). *ADHD in Adults: What the Science Says.* New York: Guilford.
** *Special issue on reciprocal influence across development, Journal of Abnormal Child Psychology (2008), vol. #36 (July).*

Treatment Impact of CD

- Stimulants and atomoxetine reduce aggressive behavior and antisocial acts but stimulants may work more rapidly to gain case control
  - Higher doses often required in comorbid cases
  - Stimulant effectiveness may deteriorate with duration of treatment (3+ yrs) in this subset of ADHD cases (MTA study)
- Parent and family interventions often required
  - Problem-solving, communication training and parent BMT
  - Multi-systemic therapy where available
  - Treatment of parental depression and other psychiatric disorders
  - Family relocation to better neighborhoods advisable

*Waschbusch, D. A. et al. (2007). *Journal of Clinical Child and Adolescent Psychology, 36(4),* 629-644.

Treatment Impact of CD

- If psychopathy (callous-unemotional traits) is present there is limited or no response to behavior therapy alone – medication is necessary first, then follow up with behavioral treatments*
- Avoid group treatment due to deviancy training by aggressive peers
- Involvement of social service and juvenile justice agencies is highly likely
- Mood stabilizers, atypicals, or antihypertensives may be needed for highly aggressive/explosive cases or Bipolar Disorder

*Waschbusch, D. A. et al. (2007). *Journal of Clinical Child and Adolescent Psychology, 36(4)*, 629-644.

Mid-Lecture Questions

Anxiety and Mood Disorders

Significance of Anxiety Disorders in Children and Adolescents

- 10% - 20% of school age children exhibit symptoms of social withdrawal, anxiety, isolation, hypersensitivity, depression & self-consciousness
- Many experience debilitating physical symptoms: headaches, stomachaches & irritable bowel syndrome
- Child anxiety disorders persist & even worsen over time

Categories of Anxiety Disorder

- Separation Anxiety Disorder
- Social Anxiety Disorder (Social Phobia)
- Selective Mutism
- Generalized Anxiety Disorder (GAD)
- Specific (Simple) Phobia
- Panic Disorder
- Obsessive-Compulsive Disorder (OCD)
- Posttraumatic Stress Disorder (PTSD)

Common Themes Across All Anxiety Disorders

- Fear signals are triggered in situations where there is no serious threat of harm ("overestimation of danger")
- Minimal or moderate stress produces an exaggerated reaction ("over-reactivity")
- Intense/out of proportion anxiety results in *distress* and/or functional *impairment*

ADHD and Anxiety Disorders (10-40%)

- Considered a stealth or hidden comorbidity in child ADHD cases if only parents are interviewed about child anxiety symptoms. High comorbidity with adult ADHD (30%+)
- Related in part to poor emotion regulation in ADHD
- Some legitimate anxiety disorders are likely and risk increases with age
- Most common are simple phobias or separation anxiety in early childhood; GAD becomes more common with age
- Risk is related to earlier inattention more than to impulsive-hyperactive*

* Reinke, W., & Ostrander, R. (2008). *Journal of Abnormal Child Psychology, 36(7),* 1109-1122.

**See Pfiffner, L. & McBurnett, K. (2006). *Journal of Abnormal Child Psychology, 34*, 725-735. Also Kepley, H., & Ostrander, R. (2007). *Journal of Attention Disorders, 10*, 317-323.

ADHD and Anxiety Disorders (10-40%)

- Greater association with disruptive and stressful events
- Often show lower levels of impulsiveness
- Anxiety disorders more likely in parents and family**
  - Child and parental anxiety are associated with low rates of positive parental behavior, over-protectiveness of the child, less autonomy for the child, lower child self-sufficiency, and parent modeling of anxiety
- Comorbid cases are more impaired than ADHD alone cases
- Need to look more carefully for child physical or sexual abuse, or bullying at school

* Reinke, W., & Ostrander, R. (2008). *Journal of Abnormal Child Psychology, 36(7),* 1109-1122.

**See Pfiffner, L. & McBurnett, K. (2006). *Journal of Abnormal Child Psychology, 34*, 725-735. Also Kepley, H., & Ostrander, R. (2007). *Journal of Attention Disorders, 10*, 317-323.

Treatment Impact of Anxiety Disorders

- More responsive to behavioral therapies
- May respond better to social skills training (and possibly cognitive therapies)
- Treatment can reduce school avoidance and social phobia
- Stimulants can exacerbate anxiety in some cases:
  - Studies are conflicting – 8 say it can but MTA study and Abikoff (2005) study did not find this relationship

Treatment Impact of Anxiety Disorders

- Atomoxetine (ATX) significantly reduces anxiety
  - Effect Size = .3-.5
- AACAP revised Practice Parameters recommend ATX as a possible first choice treatment in these comorbid cases
- Family counseling may be required to limit family setting induction of anxiety; focus parent BMT on increasing positive parenting behavior and reducing over-protectiveness and less so on parent discipline tactics
- Try cognitive behavioral training with ADHD adults to further cope with anxiety disorders

Definition & Criteria of Mood Disorders

Major Depressive Disorder: feelings of unhappiness inconsistent with one's circumstances

Dysthymic Disorder: chronic condition of unhappiness but does not reach clinical levels

- Depressed (sad) or expansive mood
- Decreased energy, stamina, activity level
- Loss of interest or pleasure in almost all activities (anhedonia)
- Changes in appetite, weight, sleeping patterns
- Irritability, poor concentration, or difficulty making decisions
- Feelings of worthlessness & thoughts of death or suicide

Major Depression (0-45%)

- Likely genetic linkage to ADHD
- Genes create a vulnerability to MDD
- MDD expressed upon exposure to repeated social and emotional distress, physical trauma, etc.
- Also related to presence of CD in child or adult patient & family
- Often manifest low self-esteem in childhood in contrast to other ADHD cases
- MDD onset may not be until adolescence or later
  - In adults with ADHD, MDD is related to higher GAD and social phobia but lower SUDS and school disciplinary actions and grade repetitions in history***

*Elgar et al. (2007). Maternal and paternal depressive symptoms and child maladjustment: The mediating role of parental behavior. *Journal of Abnormal Child Psychology, 35*, 943-955.

*Gerdes, et al. (2007). Maternal depressive symptomatology and parenting behavior: Exploration of possible mediators. *Journal of Abnormal Child Psychology, 35*, 705-714.

***Fischer, A. et al. (2007). The role of comorbid major depressive disorder in the clinical presentation of adult ADHD. *Journal of Psychiatric Research, 41,* 991-996.

Major Depression (0-45%)

- Associated with increased suicidal ideation (4x) and attempts (2x) in ADHD cases during peak risk years in high school
- Parental depression is elevated in these child cases; depressed parents:
  - show decreased positive parenting and nurturance, greater irritability and expressed emotion, irritability and open hostility, erratic use of discipline tactics, child rejection, and poor child monitoring – these are associated with increased later risk for child behavior and internalizing problems*
- Evaluate carefully for presence of child physical or sexual abuse or victimization by bullying in child cases

*Elgar et al. (2007). Maternal and paternal depressive symptoms and child maladjustment: The mediating role of parental behavior. *Journal of Abnormal Child Psychology, 35*, 943-955.

*Gerdes, et al. (2007). Maternal depressive symptomatology and parenting behavior: Exploration of possible mediators. *Journal of Abnormal Child Psychology, 35*, 705-714.

***Fischer, A. et al. (2007). The role of comorbid major depressive disorder in the clinical presentation of adult ADHD. *Journal of Psychiatric Research, 41,* 991-996.

ADHD and Suicidality

- ADHD is associated with a greater risk for suicidal ideation & suicide attempts*
  - Ideation in high school (33 vs. 22%)
  - Attempts in high school (16 vs. 3%)
  - Attempts are worse (46% vs. 11% hospitalized)
  - Ideation after high school (25% vs. 12%), attempts 6 vs 3%); risks for ideation found even at age 27
  - Associated with comorbid MDD (4x), CD (somewhat), and more severe ADHD
  - Evaluate carefully for child physical or sexual abuse or victimization by bullying

*Barkley, R. A. & Fischer, M. (2005). *The ADHD Report, 13 (6)*, 1-4.

*Barkley, R. A., Murphy, K. R., & Fischer, M. (2008). *ADHD in adults: What the science says.* New York:Guilford

Treatment Impact of MDD

- May require mixed ADHD/SSRI therapy
  - Stimulants and atomoxetine do not treat MDD
- May need cognitive-behavioral therapy
- Assess for parental induction of depression in children and exaggeration of child ODD symptoms given higher maternal depression
- Parent depression may require separate treatment
- In parent training use a "go slow" approach to punishment so as not to contribute to depressive cognitive schemas (self-statements) or to already excessive parental use of criticism and discipline
  - start with all reward programs initially until MDD symptoms lift then introduce mild, selective punishments.

"He's bipolar."

ADHD and Bipolar Disorder

Overlapping symptoms

- Poor attention
- Hyperactivity
- Impulsivity

Bipolar symptoms

- Expansive mood
- Grandiosity
- Manic quality
- Rage episodes/severe irritability
- History of bipolar disorder in first-degree relatives

No evidence-based treatment exists for this patient population. Expert consensus suggests treating bipolar disorder first.

Sheffer et al. *Am J Psychiatry*. 2005;162:58-64. Wilens et al. *Biol Psychiatry*. 2003;54:9-16. Rappley. *N Engl J Med.* 2005;352:165-173. Pliszka. *Pediatr Drugs*. 2003;5:741-750. Pavuluri et al. *Biol Psychiatry*. 2006;60:936-941.

Child Bipolar Disorder (C-BPD) (3-6%)

- Controversial - 0-27% incidence in ADHD cases
- Not documented in follow-up studies, however
- Some cases are misdiagnosed (BPD vs. ADHD/ODD)
  - Several ADHD symptoms appear on bipolar symptom list in DSM
  - Irritability could substitute for mania in children (could be ODD)
  - No requirement for cycling or periods of remission in children
- DSM-V will likely correct these issues
  - Diagnosis will require mixed moods (bipolarity), cycling between them, grandiosity, mania and other typical bipolar symptoms which can be present in children (see next slide)
- Family history of BPD is common in child BPD; not in ADHD
  - Childhood BPD has 7-8x family risk of BPD than does ADHD or adult onset BPD
- Probably a one-way comorbidity – 3-6% of ADHD cases have BPD while 80-97% of child BPD have ADHD

Differential diagnosis from ADHD

- Irritability: 95% (BPD) vs. 65% (Disruptives)
- Elation: 73% vs. 15%
- Grandiosity: 80% vs. 10%
- Excessive talking: 92% vs. 38%
- Racing thoughts: 30% vs. 5%
- Flight of ideas: 69% vs. 14%
- Decreased sleep: 42% vs. 12%
- Pressured speech/motor: 84% vs. 35%
- More active: 85% vs. 43%
- Uninhibited socializing: 32% vs. 3%
- Hypersexual: 53% vs. 3%

From Luby & Belden, 2006, *Development and Psychopathology, 18, p. 971*

C-BPD Diagnostic Keys

- Mood regulation is a major problem and moods are often severe (i.e., rage attacks, violence, destructive)
- Mood states are not related to immediate environmental events in a rational sense (irrational and inconsistent)
  - ADHD kids have rational but somewhat excessive emotions
- Grandiosity, elated mood, psychotic-like thinking (paranoia, delusions, auditory hallucinations, disjointed thought) , and hyper-sexuality are involved in C-BPD but not in ADHD
- Overlapping ADHD symptoms are far more severe (distractible, impulsive, hyperactive, decreased sleep, excessive talking)
- Disruptive (aggressive) behavior rated as 3+SDs on rating scales like the CBCL (85 or higher) goes with CBPD, not with ADHD
- BPD is significantly more prevalent in biological relatives

Mid-Lecture Questions

Substance Use Disorders

Is ADHD a Risk Factor for SUD?

Many clinical studies report a connection, however

- Most are not population based (referral bias)
- Many are retrospective (recall bias)
- Some don't take co-morbidity into account

Which ADHD Children Are at Greatest Risk for SUD?

- Comorbid psychiatric disorders
- Family history of SUD (may contribute to both ADHD and SUD)
- Persistent ADHD
- Other biological markers?
- Social skills deficits

Which ADHD Children Are at Greatest Risk for SUD?

- Severity of childhood symptoms?
- Inattention (for tobacco)?
- Impulsivity or disinhibition (for other drugs)?
- Gender differences: findings contradictory so far
- Ethnic or racial group differences: inadequately studied so far

Which ADHD Children Are at Greatest Risk for SUD?

Biological associations:

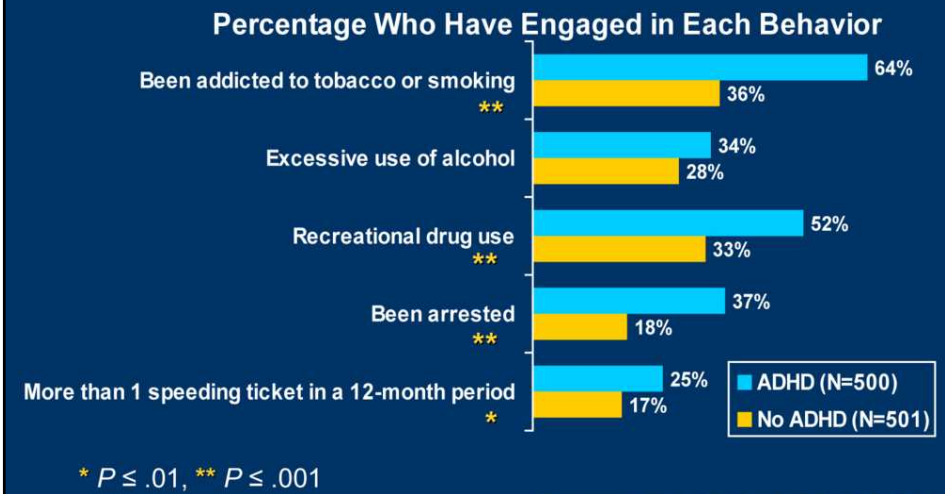
- Through prenatal exposure to alcohol, smoking, perhaps drugs
- Low birth weight
- Dopaminergic system: Self-medication? (especially tobacco)
- Perhaps an internalizing/inattentive/self-medicating late-onset subtype?
- Perhaps sensitization through use of stimulants

Which ADHD Children Are at Greatest Risk for SUD?

Psychosocial factors that might impact use/early use:

- Weak attachment to & conflict with parents, school secondary to behavior problems
- Disordered alcohol or drug expectancies
- Association with deviant peers
- Attribution (fulfilling expectations)?
- Parental modeling, monitoring, coping (ADHD parents or child-induced)

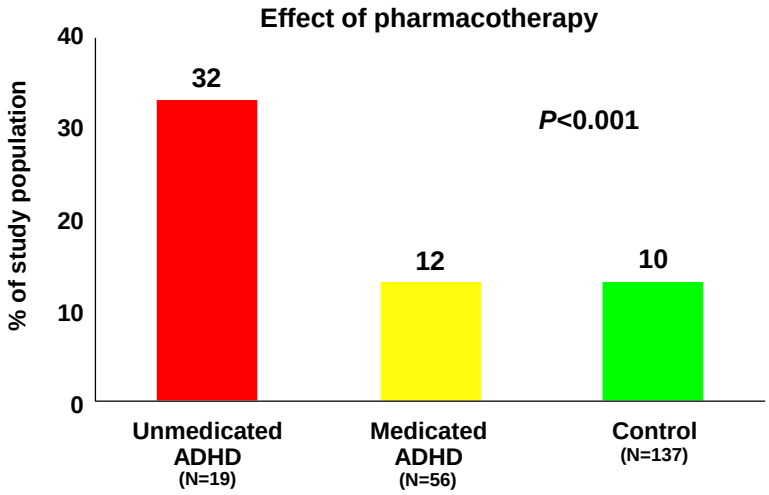
Prevalence of Addiction, Antisocial, or Destructive Behaviors



* $P \leq .01$, ** $P \leq .001$

Biederman et al. *J Clin Psychiatry* 2006;67:524.

Pharmacotherapy Significantly Reduces Substance Abuse in Adults with ADHD



Biederman J, et al. *Pediatrics.* 1999;104:e20-e25.

Quiz Questions