The Identification, Assessment, & Treatment of ADHD

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Acknowledgement

Adapted from…

Brock, S. E., Jimerson, S. R., & Hansen, R. (in press). *The identification, assessment, and treatment of ADHD at school.* New York: Springer.

Introduction to ADHD

- Etiology
  - A neurobiological disorder.
  - The exact cause of ADHD is not known, but genetic, environmental, and neurological factors likely play a primary causal role.

Introduction to ADHD

- Diagnosis
  - No single procedure will reliably diagnosis ADHD.
  - Complicated by the fact that a variety of conditions may co-exist with and/or cause ADHD symptoms.
  - Is time consuming
  - Involves the use of…
    - multi-procedures.
    - multi-sources.
    - multi-disciplines.

Introduction to ADHD

- Treatment
  - Medication is well established as a safe and effective treatment for ADHD.
  - A variety of psychosocial treatments are also an important part of the comprehensive treatment program.

Workshop Outline

- Introduction
  - Reasons to be Vigilant
  - Symptoms & Associated Features
  - Prevalence
  - Legal Issues
- Causes
- Diagnosis
- Psycho-educational Evaluation
- Psychosocial Treatment Recommendations

Introduction: Reasons to be Vigilant

- ADHD is very common
- ADHD may be under-identified
- ADHD is associated with school adjustment difficulties
- School professionals play a key role in identification
- School-based interventions are important treatments
- Students with ADHD are often included in general education classrooms.
- Federal statute mandates

Introduction: Symptoms & Associated Features

- Diagnosis requires…
  - Six or more of nine symptoms of inattention.
  - Six or more of nine symptom of hyperactivity and impulsivity

Introduction: Symptoms & Associated Features

- Inattention
  - Fails to give close attention to details/make careless mistakes.
  - Difficulty sustaining attention.
  - Does not seem to listen.
  - Lack of follow through.
  - Difficulty organizing tasks and activities.
  - Avoids/dislikes tasks requiring sustained mental effort.
  - Loses things.
  - Easily distracted.
  - Forgetful.

Introduction: Symptoms & Associated Features

- Hyperactivity/Impulsivity
  - Fidgets with hands or feet.
  - Difficulty remaining seated.
  - Runs about/climbs excessively.
  - Difficulty playing quietly.
  - On the go. "Driven by a motor."
  - Talks excessively.
  - Blurts out answers before questions are asked.
  - Difficulty awaiting turn.
  - Interrupts or intrudes on others.

Introduction: Symptoms & Associated Features

- Associated Features
  - Vary according to age and development, but may include…
    - Low frustration tolerance
    - Temper outbursts
    - Bossiness
    - Stubbornness
    - Excessive and frequent insistence that request be met
    - Mood lability
    - Demoralization
    - Dysphoria
    - Rejection by peers
    - Poor self esteem

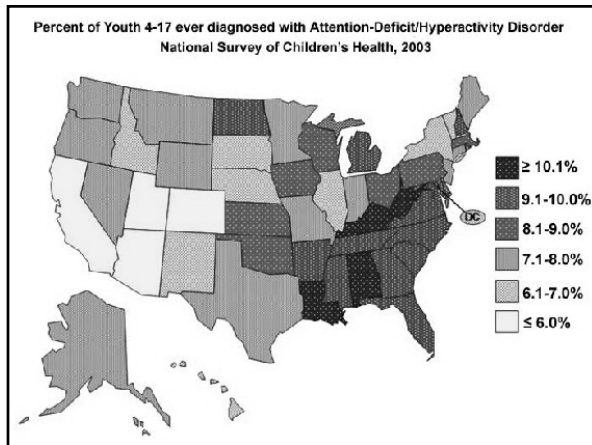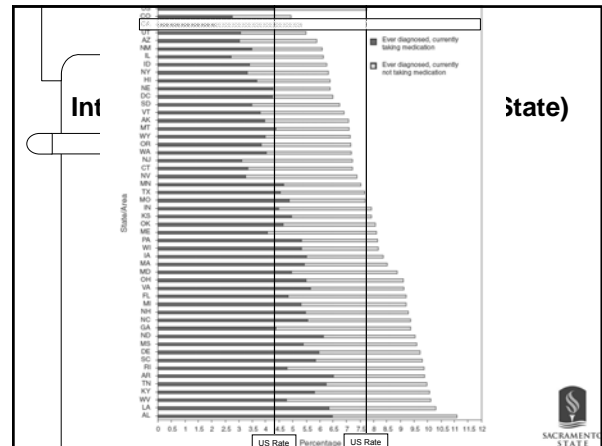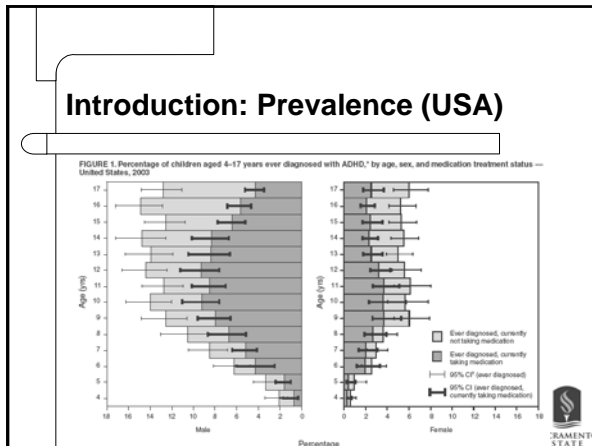Source: DMS IV-TR (APA, 2000)

Introduction: Symptoms & Associated Features

- Associated features may also include
  - Impaired academic achievement (especially among the predominantly inattentive type)
  - Peer rejection (especially among the hyperactive/impulsive type)
  - Poor achievement motivation
  - Family discord
  - Negative parent-child interactions

Source: DMS IV-TR (APA, 2000)

Introduction: Prevalence (USA)

FIGURE 1. Percentage of children aged 4-17 years ever diagnosed with ADHD, by age, sex, and medication treatment status — United States, 2003

Introduction: Prevalence (State)

Percent of Youth 4-17 ever diagnosed with Attention-Deficit/Hyperactivity Disorder
National Survey of Children's Health, 2003

State	Diagnosed	State	Diagnosed	State	Diagnosed
US	7.74	Louisiana	10.31	Oklahoma	8.11
Alabama	11.09	Maine	7.92	Oregon	7.15
Alaska	7.07	Maryland	9.11	Pennsylvania	8.17
Arkansas	9.88	Massachusetts	8.51	Rhode Island	9.81
Arizona	5.89	Michigan	9.21	South Carolina	9.98
California	5.34	Minnesota	7.53	South Dakota	6.49
Colorado	4.95	Mississippi	9.59	Tennessee	9.87
Connecticut	7.38	Missouri	7.67	Texas	7.69
Delaware	9.74	Montana	7.09	Utah	5.49
Florida	9.21	Nebraska	6.39	Vermont	6.9
Georgia	9.37	Nevada	7.22	Virginia	9.28
Hawaii	6.14	New Hampshire	9.14	Washington	7.18
Idaho	6.38	New Jersey	7.22	Wash., DC	6.74
Illinois	6.32	New Mexico	6.1	West Virginia	10.08
Indiana	7.93	New York	6.27	Wisconsin	8.06
Iowa	8.35	North Carolina	9.54	Wyoming	7.13
Kansas	8.14	North Dakota	9.39		
Kentucky	10.12	Ohio	8.88		

TABLE. Weighted prevalence estimates of ADHD ever diagnosed and current medication treatment for ADHD among children aged 4–17 years, by sex and sociodemographic characteristics — United States, 2003

Introduction: Prevalence (Worldwide)

- International data
  - Worldwide prevalence ranges from 3 to 9%
  - Differences are typically attributed to different ADHD criteria

Country	Rate
New Zealand	6.7
Spain	8.0
Germany	9.6
Puerto Rico	9.5-16.1
Netherlands	7.8
London, GB	1.7
Manheim, GR	4.2
Brazil	5.8
Ontario, CD	6.3

Introduction: Legal Issues

- DSM diagnoses do not automatically qualify a student for any special education placement and/or related services!

Introduction: Legal Issues

- IDEA 1990

Introduction: Legal Issues

- September 16, 1991, Policy Memorandum

Introduction: Legal Issues

- April 29, 1993, Clarification Memorandum

Introduction: Legal Issues

- October 22, 1997, Notice of Proposed Rule Making

Introduction: Legal Issues

- March 12, 1999, Final Regulations for IDEA 1997
- August 14, 2006, Final Regulations for IDEA 2004

Introduction: Legal Issues

- California Education Code Section 56339
  - (a) A pupil whose educational performance is adversely affected by a suspected or diagnosed attention deficit disorder or attention deficit hyperactivity disorder and demonstrates a need for special education and related services by meeting eligibility criteria specified in subdivision (f) or (i) of Section 3030 of Title 5 of the California Code of Regulations or Section 56337 and subdivision (j) of Section 3030 of Title 5 of the California Code of Regulations for the federal Individuals with Disabilities Education Act (20 U.S.C. Sec. 1400 and following) categories of "other health impairments," "serious emotional disturbance," or "specific learning disabilities," is entitled to special education and related services.

Introduction: Legal Issues

- California Education Code Section 56339
  - (b) If a pupil with an attention deficit disorder or attention deficit hyperactivity disorder is not found to be eligible for special education and related services pursuant to subdivision (a), the pupil's instructional program shall be provided in the regular education program.

Introduction: Legal Issues

- California Education Code Section 56339
  - (c) It is the intent of the Legislature that local educational agencies promote coordination between special education and regular education programs to ensure that all pupils, including those with attention deficit disorders or attention deficit hyperactivity disorders, receive appropriate instructional interventions.

Introduction: Legal Issues

- California Education Code Section 56339
  - (d) It is further the intent of the Legislature that regular education teachers and other personnel be trained to develop an awareness about attention deficit disorders and attention deficit hyperactivity disorders and the manifestations of those disorders, and the adaptations that can be implemented in regular education programs to address the instructional needs of pupils having these disorders.

Workshop Outline

- Introduction
- Causes
  - Genetics
  - Environment
  - Neurobiology
- Diagnosis
- Psycho-educational Evaluation
- Psychosocial Treatment Recommendations

Causes

- Genetics (cause)
  - Plays a significant role, but does not account for all cases of AD/HD.
- Environment (cause)
  - May play a role, but not nearly as predictive as genetics
- Neurobiology(consequence/cause)
  - The result of genetic and/or environmental factors that appear to cause ADHD behaviors

Causes

Genetic Factors → Neurobiological Differences (Appears to effect the Prefrontal – striatal – cerebellar network) → ADHD Sx; Gene X Environment Interactions; Environmental Causes; Perinatal Environment; Significant Neurological Injury; Psychosocial Factors

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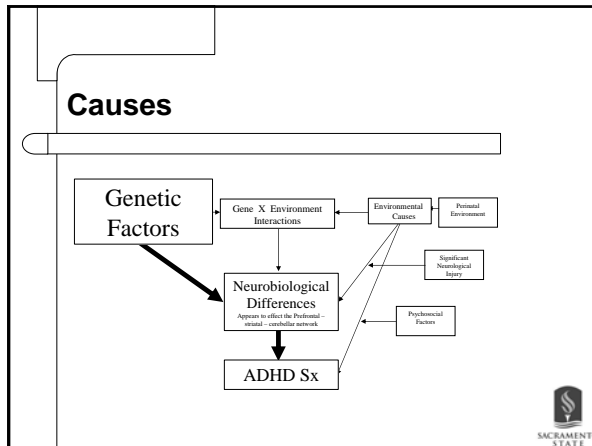
Causes: Genetics

- Twin studies reveal that AD/HD is highly heritable.
- Spencer et al.'s (2002) review suggests a heritability of 0.75.
  - 0 means there is no genetic input.
  - 1 means the disorder is completely determined by genetics.
- In other words, approximately 75% of the etiologic contribution of AD/HD is genetic!
- Thus, a family history of AD/HD is an important variable to consider when diagnosing this disorder.

Causes: Environment

- Birth weight
- Prematurity
- Psychosocial Stressors
- Environmental Toxins
- Neurological Injury

Causes: Nature vs. Nurture

Odds of Having ADHD Given Specific Risk Factors

Risk Factor (vertical axis): Parent Behav.[a], Tobacco[b], Alcohol[b], Low Birthweight[a], High Blood Lead[c], Parental ADHD[b]

ADHD Odds Ratio (horizontal axis): 0 1 2 3 4 5 6 7 8

Genetic Risk Factor   Biological Risk Factor   Psychosocial Risk Factor

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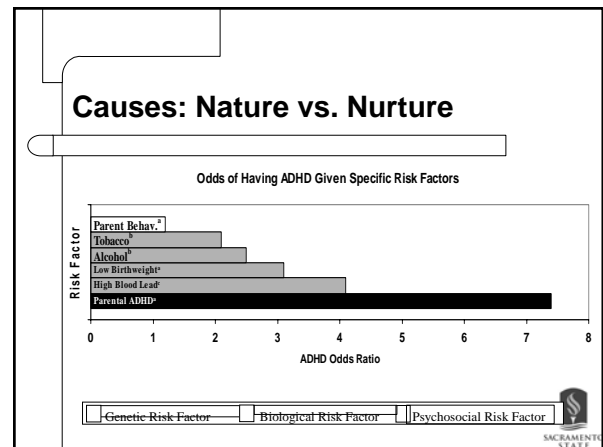
Causes: Combined Factors

- A number of risk factors have now been associated with AD/HD, no factor or any combination is sufficiently explanatory to account for all AD/HD cases.
- In fact, many children suffer similar difficulties are exposed to comparable levels of such risk factors and do not develop AD/HD.
- It may require a combination of some trauma, toxic exposure, or subtle form of brain insult, coupled with a certain pattern of susceptibility genes, for the full syndrome to emerge.

Causes: Neurobiology

Prefrontal Cortex (Dorsolateral prefrontal cortex); Basal Ganglia (Striatum, Caudate nucleus, Putamen, Pallidum); Cerebellum

Causes: Neurobiology
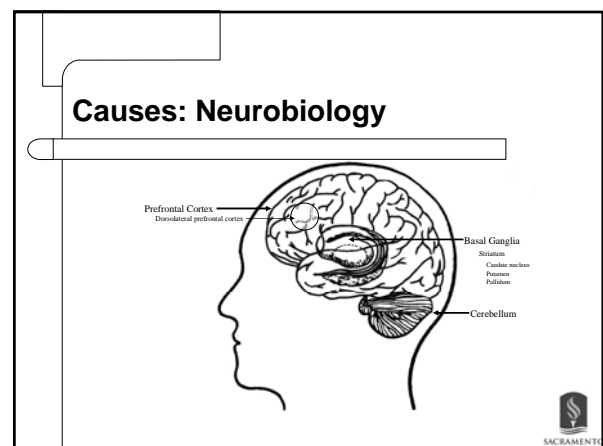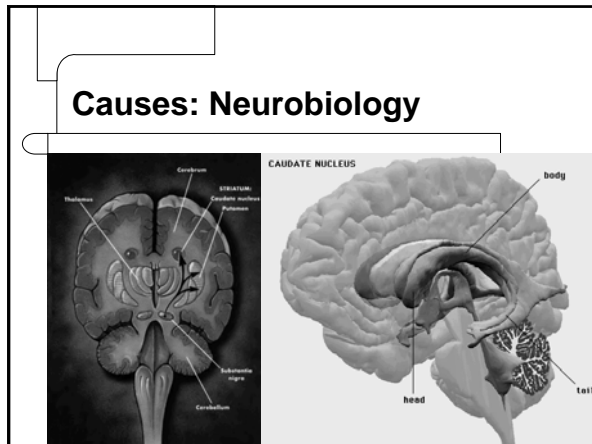
Causes: Neurobiology

- Neurochemistry
  - From the response of children with ADHD to medications that increase the availability of dopamine and norepinephrine, neurochemical explanations for ADHD have also been proposed.
    - These medications include methylphenidate (Ritalin®), pemoline (Cylert®), and dextroamphetamine (Dexedrine®), which increase the release and inhibit the reuptake of dopamine (thereby increasing the availability of this brain chemical).
    - They also include atomoxetine (Strattera®), which is a norepinephrine reuptake inhibitor (i.e., it elevates this neurotransmitter by inhibiting its reuptake from the synaptic cleft thereby increasing its availability).

Causes: Neurobiology

- Neurochemistry
  - Further evidence supporting the neuochemical basis of ADHD include:
    - studies suggesting decreased brain dopamine in the cerebral spinal fluid of children with ADHD (as compared to children without this disorder),
    - animal studies (which, for example, have show that methyphenidate increases norepinephrine and dopamine out flow within the prefrontal cortex, and
    - the fact that the genes implicated in ADHD are known to regulate brain chemicals.

Workshop Outline

- Introduction
- Causes
- Diagnosis
  - DSM-IV-TR Criteria
  - Age Specific Features
  - Differential Diagnosis
  - Recommended Procedures
- Psycho-educational Evaluation
- Psychosocial Treatment Recommendations

Diagnosis

- According to Pelham, Gabiano, and Massetti (2005):
  - "Because the definition of ADHD is currently a behavioral one based on the individual's functioning in daily life (APA, 1994), assessment procedures must focus on the observable behavior as reported by adults or otherwise measured in natural (home and classroom) and laboratory (clinic, analogue classroom) settings" (p. 451).

Diagnosis

- American Academy of Pediatrics (2000)
  - Clinical Practice Guideline: Diagnosis and Evaluation of the Child With Attention-Deficit/Hyperactivity Disorder
    - http://aappolicy.aappublications.org/cgi/reprint/pediatrics;105/5/1158.pdf
- American Academy of Child and Adolescent Psychiatry (1997)
  - Practice Parameters for the Assessment and Treatment of Children, Adolescents, and Adults with Attention-Deficit/Hyperactivity Disorder
    - http://www.aacap.org/clinical/parameters/fulltext/Adhd.doc

Diagnosis

- "There are no laboratory tests, neurological assessments, or attentional assessments that have been established as diagnostic in the clinical assessment of AD/HD" (pp. 88-89).
- "There are no specific physical features associated with AD/HD, although minor physical anomalies (e.g., hypertelorism, highly arched palate, low-set ears) may occur at a higher rate than in the general population" (p. 89).

Source: DMS IV-TR (APA, 2000)

Diagnosis: DSM-IV-TR Criteria

- Symptom Impairment Onset
  - Age 7 years per DSM IV-TR.
  - Age 9 for inattentive type?
- Developmental Level
  - Inconsistent with…
- Symptom Duration
  - 6 months.

Diagnosis: DSM-IV-TR Criteria

- Symptom Display
  - Multiple settings.
- Clinical Significance
  - The effect of symptoms on functioning.
  - Child & Adolescent Functional Assessment Scale

Diagnosis: Age Specific Features

- Preschoolers
  - Difficult to diagnose.
  - High levels of hyperactive/impulsive behavior do not indicate a problem or disorder if the behavior does not impair functioning.
  - Those with ADHD will be extremely active and impulsive, will need constant supervision to avoid injury, and will be difficult to contain.
  - This constant activity can be very stressful to adults who may not have the energy or patience to tolerate such behavior.
  - It has been suggested that task persistence is a feature of preschool ADHD.
    - While the preschooler without ADHD can stick with a task for at least 10 minutes, the preschooler with ADHD is ready to change activities every few minutes.

Diagnosis: Age Specific Features

- Elementary School Students
  - Symptoms most prominent.
  - Activity may be high in play situations.
  - Impulsive behaviors may occur especially in peer pressure situations.
  - Inattention often interferes with class work and academic functioning.
  - Impulsivity often result in the breaking of social, familial, and school rules.
  - Independent seat work tasks can be especially challenging.
  - On-task behavior and task completion are poor.
  - Do not have good organizational habits.

Diagnosis: Age Specific Features

- Late childhood and early adolescence
  - Symptoms of excessive hyperactivity become less common, and may be replaced by an internal sense of restlessness.
  - However, the increased work demands of these school years, combined with poor organizational habits, results in excessively poor task completion and very negative attitudes toward school.

Diagnosis: Age Specific Features

- Adulthood
  - About ⅓ of children diagnosed with ADHD will continue to meet diagnostic criteria into adulthood
  - About ⅓ demonstrate sub-threshold symptoms.
  - Restlessness associated with ADHD may result in avoidance of activities that offer limited opportunities for spontaneous movement, such as desk jobs.
  - Social dysfunction may also be noted.

Diagnosis: Differential Dx

- Medical Conditions
  - Impairment of vision and/or hearing
  - Medication side effect(s)
  - Asthma (or reaction to asthma medications)
  - Allergic rhinitis (or reaction to antihistamine)
  - Incontinence of urine or feces
  - Malnutrition (vitamin or metabolic deficiency)
  - Thyroid disorder
  - Lead toxicity

Diagnosis: Differential Dx

- Neurologic and Psychiatric Conditions
  - Learning disabilities
  - Tic disorder
  - Seizure disorder (or effect of antiepileptic)
  - Mental retardation or intellectual precocity
  - Low developmental level.
  - Brain damage or injury
  - Sleep disorders (including sleep apnea and insomnia)
  - Oppositional Defiance and Conduct Disorders
  - Substance abuse
  - Anxiety
  - Depression (or Bipolar Disorder)
  - Obsessive-compulsive Disorder
  - Posttraumatic Stress Disorder

Diagnosis: Differential Dx

- Environmental Conditions
  - Improper or poor learning environment
  - Mismatched curriculum and child
  - Dysfunctional or stressful home
  - Poor parenting (inconsistent, punitive)
  - Neglect or abuse
  - Parental psychopathology
  - Low motivation.

Diagnosis: Recommended Procedures

- A variety of different procedures were identified.
- Most could be classified into one of six categories.
- Behavior rating scales, diagnostic interviews, behavioral observations, and laboratory/psychoeducational testing are the most frequently recommended.
- Medical evaluations and school record review were also recommended.

Diagnosis: Recommended Procedures

Sources:

Brock, S. E. (1999). The diagnosis of attention-deficit/hyperactivity disorder (AD/HD) in childhood. *The California School Psychologists, 4,* 18-29. Available http://kady.education.ucsb.edu/schpsych/CSP-Journal/index.html

Clinton, A., & Brock, S. E. (2006). Diagnosis of attention-deficit/hyperactivity (AD/HD) in childhood: A review of the literature. *The California School Psychologist, 12,* 73-91.

Diagnosis: Recommended Procedures

- Rating Scales
  - Cited in 100% of the papers reviewed.
  - Strengths:
    - Quick and cost effective way to document the presence of AD/HD symptoms.
    - Provide a normative frame of reference.
    - Useful in assessing treatment effectiveness.
    - Allow for assessment of behavior in specific settings.
  - Weaknesses:
    - Many false positives.
    - Rater bias.
    - Unrepresentative samples.
  - Recommendations:
    - Raters must have observed the child for at least six weeks.
    - Symptom specific and broad band rating scales are recommended.

Diagnosis: Recommended Procedures

- Broad Band Rating Scales
  - Include items that span the range of child psychopathologies.
  - By themselves are not currently recommended for the diagnosis of ADHD in clinical practice (Pelham et al., 2005).
  - Useful as a tool for considering comorbid or competing diagnoses.

Diagnosis: Recommended Procedures

- Broad Band Rating Scales
  - Examples:
    - Behavior Assessment System for Children (Reynolds & Kamphaus, 2002)
      - Order at: http://www.agsnet.com/group.asp?nGroupInfoID=a30000
    - Child Behavior Checklist (Achenbach & Rescorla, 2001)
      - Sample: http://www.aseba.org/support/SAMPLES/CBCLSample.pdf
    - Teacher Report form (Achenbach & Rescorla, 2001)
      - Sample: http://www.aseba.org/support/SAMPLES/TRFsample.pdf

Diagnosis: Recommended Procedures

Diagnosis: Recommended Procedures

- Free Symptom Specific Rating Scales
  - SNAP
    - www.adhd.net/SNAP_SWAN.pdf
    - www.adhd.net/snap-iv-instructions.pdf
  - DBD
    - http://ccf.buffalo.edu/pdf/DBD_rating_scale.pdf
  - Vanderbilt ADHD Diagnostic Parent Rating Scale
    - http://www.vanderbiltchildrens.com/uploads/documents/ccdr_adhd_scale.pdf
  - Vanderbilt ADHD Diagnostic Teacher Rating Scale
    - http://www.brightfutures.org/mentalhealth/pdf/professionals/bridges/adhd.pdf

Diagnosis: Recommended Procedures

- Rating Scales
  - These measures are …
    - Reliable, however, cross-informant reliabilities are low ranging from .14 to .59
    - Effective at discriminating between clinical and nonclincial groups and among ADHD subgroups.
    - Have a long history of use as treatment outcome measures
    - Are sensitive to both behavioral and pharmacological treatment effects

Pelham et al., 2005

Diagnosis: Recommended Procedures

- Interviews
  - Cited in 98% of the papers reviewed.
  - Help to answer the following questions:
    - Are AD/HD symptoms present?
    - When did symptoms begin to present problems?
    - How long have symptoms been problematic?
    - Is there a family history of AD/HD?
    - Is the developmental history suggestive of AD/HD?
    - Are there learning disabilities?
    - Are there interpersonal difficulties?
  - Interview Types:
    - Structured, semistructured, and unstructured interview
    - Parent, teacher, and student interviews

Diagnosis: Recommended Procedures

- Structured and semi-structured interviews
  - *Strengths:* allow for normative comparison.
  - *Weaknesses:* cumbersome, don't facilitate school interventions, false positives.
  - Examples (Structured):
    - Diagnostic Interview for Children and Adolescents – Revised
    - Diagnostic Interview Schedule for Children
  - Example (Semistructured)
    - Kiddie Schedule for Affective Disorders and Schizophrenia
      - Available: http://www.wpic.pitt.edu/ksads/ksads-pl.pdf
  - Child and Adolescent Psychiatric Assessment
- Unstructured interview
  - *Strengths:* flexible, interviewee focused, facilitate collection of psychosocial data.
  - *Weaknesses:* Lack reliability.

Diagnosis: Recommended Procedures

- Parent interviews
  - *Strengths:* Identifies historical data (e.g., family, developmental, and school histories).
  - *Weaknesses:* Lacks reliability.
- Teacher interviews
  - *Strengths:* Informant has knowledge of developmental expectations. Has frequent observations. Helps to identify behavioral contingencies. Provides academic data.
  - *Weaknesses:* May lack objectivity. Under utilized. If parent report is positive for AD/HD, there is a 90% probability that the teacher report will be positive.
- Student interviews
  - *Strengths:* May facilitate behavioral observations and helps in the identification of psychopathology.
  - *Weaknesses:* AD/HD symptoms may not be displayed during the interview. AD/HD symptoms may not be recognized by the student.

Diagnosis: Recommended Procedures

- Psychological Testing
  - Cited in 90% of the papers reviewed.
  - Strength:
    - Assists in differential diagnosis.
  - Weakness:
    - May not directly assess AD/HD.
  - Recommendations:
    - Psychoeducational tests are best used to rule in or out competing explanations for AD/HD symptoms (e.g., learning disabilities).
    - Continuous performance tests appear to be he most useful for AD/HD diagnosis.

Diagnosis: Recommended Procedures

Continuous-Performance Testing
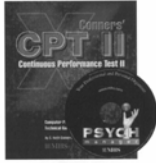
Diagnosis: Recommended Procedures

- Continuous Performance Testing
  - The most frequently studied laboratory test for AD/HD.
  - Examples include the Gordon Diagnostic System and the Conners Continuous Performance Test.
  - Require the student to listen to or look at a series of numbers or letters, and to respond in some way.
  - Scores are typically based upon number of correct responses, errors of omissions, and errors of comission.
  - Should not be used as the only data source when making an AD/HD diagnosis.
  - For more information go to:
    - http://www.division42.org/MembersArea/IPfiles/IPFall00/CE/ADHD.html

Diagnosis: Recommended Procedures

Conners' Continuous Performance
Test II (CPT II) for Windows®

C. Keith Conners, Ph.D. & MHS Staff

Description: Assessment software that helps identify attention
problems and measures treatment effectiveness.
Age: 6 and older
Administration: Self-completed performance measure
Administration Time: 14 minutes
Qualification Level: b (see page 130)

Diagnosis: Recommended Procedures

- Test Taking Behavior
  - Observations of children taking CPTs may be as sensitive to discriminating AD/HD children from other diagnostic groups as CPT scores themselves.
  - During testing students with AD/HD typically make more careless and impulsive errors. In addition, they may find it difficult to sit still, may display sustained concentration difficulties, and be distracted by events outside of the testing room.
  - Test performance often characterized by omissions or insertions, or misinterpretation of easy items when motivated to do well (not just when completing task that are not intrinsically valued).

Diagnosis: Recommended Procedures

- Intelligence Testing
  - Digit Span, Coding, and Arithmetic data have been reported by Barkley to not be able to distinguish AD/HD students from either LD or normal students.
  - May assist in the determination of a learning disability.
  - Will help to rule in our out intellectual delay or giftedness as a cause of AD/HD symptoms.

Diagnosis: Recommended Procedures

- Behavioral Observations
  - Cited in 60% of the papers reviewed.
  - Strengths:
    - Confirm rating scale and interview data.
    - May be more valid than test data.
  - Weaknesses:
    - Cost.
    - Requires extensive training.
    - Lack of normative data.
    - Low frequency behaviors may not be seen.

Diagnosis: Recommended Procedures

- Behavioral Observation Recommendations:
  - Should conduct several observations in different settings given that symptoms may vary across situations and times.
  - Should include the setting(s) where in the student is reported to have his/her greatest difficulty.
  - Classroom observations are particularly important.
  - Both anecdotal and systematic observations should be used.

Diagnosis: Recommended Procedures

Behavioral Contingency Assessment (Time)

Student Name: _____ Date: _____
Observers(s): _____
Behavior being observed: _____

Behavior not observed	1 behavior observed	2 behaviors observed	3 behaviors observed	4 behaviors observed	5 or more behaviors observed

Time						Date		
7:30								
7:45								
8:00								
8:15								
8:30								
8:45								
9:00								
9:15								
9:30								
9:45								
10:00								

Diagnosis: Recommended Procedures

Behavioral Contingency Assessment (Activity)

Student Name: _____   Date: _____
Observers(s): _____
Behaviors being observed: _____

☐ Behavior not observed ◨ 1 behavior observed ◪ 2 behaviors observed ▤ 3 behaviors observed ▥ 4 behaviors observed ■ 5 or more behaviors observed

Behaviors	Transition	Large Group Lecture	Small Group	Independent task	Paper/pencil task	Worksheet/Workbook	Read Aloud	Read Silently	Instruct out group	Media	Other

Diagnosis: Recommended Procedures

Interval Time Sample of On-task Behaviors

Student Name: _____   Date: _____ Time: _____

Teacher Name: _____   Observer Name: _____

Code	**T** = On-task	**P** = Passive off-task	**V** = Verbal off-task	**M** = Motor off-task

Time	Target	Comparison	Class Scan	Setting, Task, and Anecdotal Notes

Diagnosis: Recommended Procedures

- ADHD School Observation Code (ADHD SOC)
  - http://www.checkmateplus.com/product/adhd-soc.htm
- BASC-2 Portable Observation Program
  - http://ags.pearsonassessments.com/group.asp?nGroupInfoID=a38206
- Behavioral Observation of Students in Schools (BOSS)
  - http://harcourtassessment.com/haiweb/cultures/en-us/productdetail.htm?pid=015-8048-601

Diagnosis: Recommended Procedures

- Medical Examination
  - Cited in 34% of the papers reviewed.
  - Includes the medical interview and the physical examination.
  - From this examination the need for diagnostic medical testing can be determined.
  - By itself is inadequate to diagnosis AD/HD.

Diagnosis: Recommended Procedures

- Medical Examination
- Critical for children with a seizure disorder and/or asthma.
- Purposes of . . .
  - Identify conditions that may have caused symptoms.
  - Identify medical conditions associated with the symptoms that may require treatment.
  - Identify medical conditions that would contraindicate treatment with stimulant medications.

Diagnosis: Recommended Procedures

- School Record Review
  - Cited in 24% of the papers reviewed.
  - Cumulative folders (report cards).
  - Document symptom onset and duration.
  - Document symptom changes over time.

Diagnosis

- Conclusion
  - Diagnosis is as much an art as it is a science.
  - There is no single psychological or medical test.
  - There are a number of conditions that generate AD/HD-like symptoms.
  - Requires a multidisciplinary team, accessing multiple data sources, and using multiple assessment procedures.

Diagnosis vs. Psycho-educational Assessment

- Diagnostic vs. Psycho-educational evaluation.
  - *While diagnosis will focus on the presence or absence of relevant symptoms, the psycho-educational assessment should operationalize specific problem behaviors, evaluate establishing operations and immediate antecedents, and consider the environmental consequences that may exacerbate, precipitate, and maintain the behavior* (Pelham, 2005).

Workshop Outline

- Introduction
- Causes
- Diagnosis
- Psycho-educational Evaluation
  - Testing Accommodations & Modifications
  - Behavioral Observations & Functional Assessment
  - Specific Measures
- Psychosocial Treatment Recommendations

Psycho-ed. Eval: Testing Accomodations & Modifications

- Allow for frequent test session breaks
- Allow for physical movement
- Minimize distractions
- Make use of powerful external rewards
- Provide clear test taking rules
- Carefully pre-select task difficulty
- Allow the student to pace him- or herself.
- Schedule the testing session early in the day
- Provide structure and organization.
- Modify test administration and allow nonstandard responses

Psycho-ed. Eval: Behavioral Observations & Functional Assessment

- Students with ADHD are a very heterogeneous group.
- Observation of the student with ADHD in typical environments, such as the classroom, will also facilitate the evaluation of test taking behavior.
- From such observations judgments regarding how typical the students test taking behaviors were can be made and the validity of the obtained test results assessed.
- A specific tool for evaluating the test session behavior, suggested to be valid and reliable, is the *Guide to the Assessment of Test Session Behavior* (Glutting & Oakland, 1993).
- Parent and teacher interviews will also be important to understanding the student's behavior and are key elements of a functional behavioral assessment.

Psycho-ed. Eval: Specific Measures

- Should be evaluated in all areas of suspected disability.
  - This means that the evaluation should include measures designed to help determine eligibility for special education services under the learning disabled, other health impaired, and emotionally disturbed criteria.
  - The evaluation will typically include measures of cognitive functioning, adaptive behavior, basic psychological processes, academic achievement, emotional functioning, and language functioning.

Psycho-ed. Eval: Specific Measures

- Cognitive Functioning
  - To establish the student's developmental level.
  - Students with ADHD score an average of nine points lower than their age peers.
  - Students with ADHD often score lower on tasks that assess executive functions.

Psycho-ed. Eval: Specific Measures

- Adaptive behavior
  - Score lower on measures of adaptive behavior.
  - Relative to other clinical groups, discrepancy between IQ test and adaptive behavior scale scores is often larger among students with ADHD.
    - IQ standard scores higher than adaptive behavior scores.
  - Measures such as the Vineland Adaptive Behavior Scales should be administered.
    - Serve as a measure of the functional impairments.
    - Can be used to establish a baseline for, and evaluate attainment of, IEP objectives.

Psycho-ed. Eval: Specific Measures

- Psychological processes
  - ADHD frequently comorbid with reading disabilities
    - Thus, phonological processing tests should always be considered.
  - ADHD associated with impaired executive functioning
    - The *NEPSY* differentiates individuals with the inattentive type of ADHD from those with the combined type.
    - The BRIEF parent and teacher rating scales have promise in identifying intervention targets, and to account for a significant amount of academic achievement and adaptive behavior variance among students with ADHD.
  - ADHD associated with motor coordination problems and poor graphomotor ability.
    - Among the measures that could be used to assess this ability is the *Developmental Test of Visual-Motor Integration.*

Psycho-ed. Eval: Specific Measures

- Academic achievement
  - ADHD is typically associated with significant deficits in academic achievement.
    - Thus, measures such as the *WJ III: ACH* and the *WIAT* should be administered.
    - Measure of academic achievement deficits associated with ADHD and can be used to establish a baseline for, and evaluate attainment of, IEP objectives.
  - Even in the absence of a comorbid learning disability, students with ADHD may have relative academic achievement deficits.
    - For example, ADHD students without learning disabilities still have lower reading comprehension test scores.

Psycho-ed. Eval: Specific Measures

- Emotional functioning
  - ¾ or more of students with ADHD will develop a comorbid psychiatric disorder.
    - Thus, it will also be important for the school psychologist to evaluate the student's emotional/behavioral status.
    - Traditional measures such as the *BASC-2* would be appropriate as a general purpose screening tool.
    - More specific measures such as The *Children's Depression Inventory* and the *Revised Children's Manifest Anxiety Scale* would be appropriate for assessing more specific presenting concerns.

Psycho-ed. Eval: Specific Measures

- Language functioning
  - One of the least problematic areas for the student with ADHD.
  - Children with ADHD do not appear to have higher rates of serious or generalized language delays.
  - However, this is not to say that language impairment are uncommon.
    - Language comprehension and communication being rated problematic three times as high as problems with expressive language.
    - May be more likely to have specific speech development challenges.
  - Given these observations, referral to a speech and language pathologist may be a common supplement to the psycho-educational evaluation.

Workshop Outline

- Introduction
- Causes
- Diagnosis
- Psycho-educational Evaluation
- Psychosocial Treatment Recommendations
    - Setting the Student up for Success
    - Encouraging Adaptive Behavior
    - Connecting Diagnosis to Treatment

Psychosocial Treatment Recommendations

- Setting the Student up for Success
    - Modify the Academic Environment
        - Eliminate irrelevant cues or distractions from the work area
            - Engaging/irrelevant visual stimuli (toys, cartoons)
            - Conversations during complex thinking tasks
            - Auditory distractions during individual seatwork
        - Highlight relevant information
            - Bold important elements of written directions
            - Provide examples or models when giving directions
            - Ask students to repeat instructions and recount
            - Use color, animation, or verbal cues to improve attention to academic tasks. (e.g., brightly colored spelling words).

Zentall (2005)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
    - Modify the Academic Environment
        - Add music or sound during academic tasks.
            - ADHD students have been found to be more productive and accurate when music was playing in the background.
        - Increase the novelty of lessons.
            - ADHD students have shown improved attention when presented with novel tasks (films, free time, tests) when compared to routine lectures and seat work.

Zentall (2005)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
    - Modify Instruction
        - Increase opportunities for child-initiated movement during class lessons.
            - Activities requiring movement (games, drills, calculator use, filing) improve the student's ability to attend to class lessons.
            - Allow students to move around between lessons or tasks.

Zentall (2005)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
    - Adjust Task Difficulty
        - Match task difficulty to instructional level
            - Begin with easier tasks
            - Progress to more complex assignments after a period of practice.
            - Avoid tasks that are too easy or difficult
                - ADHD students often give up or become bored with tasks that appear too difficult or too easy.
        - Encourage students to set goals relative to their own work- not that of other students.

Zentall (2005)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
    - Adjust On-task Behavior Expectations
        - Reduce the quantity of items or amount of time required for class work in one sitting
            - Allow students to take breaks
            - Break large assignments up into small parts
        - Shorten task directions and use fewer words to explain assignments
        - Decrease repetitive tasks
            - Students with ADHD are more likely to become off task when information is repetitive

Zentall (2005)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
  - Student Self-Monitoring
    - Teach students to use self-monitoring strategies before beginning tasks such as asking:
      - "What is my problem?"
      - "What is my plan?"
      - "Am I following my plan?"
      - "How did I do?"
    - This technique has been shown to improve selective attention, sustained attention, and language as well as reducing impulsivity.

Zentall (2005)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
  - Student Self-Monitoring
    - Provide cues (taped signals) for students to self-monitor their behavior.
    - Self monitoring provides immediate behavioral feedback and can help students to control their actions.
    - Mechanical devices such as PDAs can also be used to signal a child to attend to and record their behavioral or emotional state.
    - Having students self-reinforce (stickers, stars) or chart their performance has been shown to increase on-task attention and persistence.
    - Placing mirrors where the student can see him or herself has also been shown to increase persistence and productivity.

Zentall (1989; 2005)

Psychosocial Treatment Recommendations

- Example of a Self-Monitoring Chart:

	Tone 1	Tone 2	Tone 3	Tone 4	Tone 5
My Rating					
Teacher Rating					
Teacher on-task rating		=			
My on-task rating		=			
Agreement		=			

Brock, Cummings, & Seiver (2004)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
  - Practice
    - Provide extra practice
      - Students with ADHD benefit most from short repeated exposures to new material.
    - Provide "attention training" sessions
      - Direct instruction and practice on selectively attending to visual and auditory cues significantly improves ability to selectively attend to important material.

Zentall (2005)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
  - Feedback
    - Use Cross-Modal Response Options
      - Feedback that is delivered in a different mode than the task being performed (e.g., providing auditory feedback for visual math problems).
      - Response options are different from the task (e.g., problems presented orally, with answers presented visually).
    - Allow the student to …
      - differentiate information they are taking in from information they are putting out.
      - differentiate information they are receiving about their performance.

Bennett, Zentall, Giorgetti-Borucki, & French (2005)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
  - Task Modifications
    - Visual vs. Auditory Presentation
      - Oral reading has been shown to produce more accurate reading comprehension than silent-reading.
    - Structure
      - Increased structure and predictability in class routines and activities is helpful for students.
    - Choice Making
      - Allowing ADHD students to make choices about assignments (e.g., which book to read) improves on-task behavior.

Raggi & Chronis (2006)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
  - Social Skills Training
    - Mixed efficacy
      - Debate over skill deficit vs. performance deficit
    - Assertion skills are the most positively impacted area.
    - Results are improved when social skills groups are diagnostically heterogeneous
      - May be contraindicated for ADHD- Inattentive type.
    - Inattentive type students show greater gains than combined type students.
      - This group is thought to lack knowledge about appropriate social skills, while combined type students typically have knowledge, but fail to use their skills.

Antshel & Remer (2003)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
  - Social Skills Training: Components of Effective Programs
    1. Brief introduction to the skill.
    2. Majority of session involves playing a supervised game or activity with prompting and coaching on using the skill.
    3. A short debriefing with feedback and reinforcement for demonstrating the skill.
    4. Skills taught should be generalized across settings.
       - Skills should be practiced at school and at home
    5. Students should be encouraged to set and monitor specific social skills goals;

Rief (2005)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
  - Peer Tutoring
    - Children with ADHD are paired with a peer tutor to work an academic tasks.
      - Allows for one-to-one instruction tailored to the student's need and pace.
      - Frequent immediate feedback is provided by the tutor.

Raggi & Chronis (2006)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
  - Class-Wide Peer Tutoring (CWPT)
    - Increases in on-task behavior and accuracy
      - Students are trained in tutoring and randomly paired
      - Tutors are provided with a script of academic material (e.g., math problems).
      - Items are presented orally to the tutee.
      - Points are awarded for correct responses and feedback is given for incorrect responses.
      - The item list is repeated multiple times.
      - Students switch roles.
      - Teachers monitor the tutoring sessions and provide assistance as needed.

Raggi & Chronis (2006)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
  - Computer-Assisted Instruction (CAI)
    - Improves both academic performance and on-task behavior.
      - Targets specific instructional objectives using a computer program.
      - The most effective programs are presented in a game-like format, without animation, and offer an unlimited response time.
      - Math-based programs have been shown to be more effective than reading programs.
      - Easy to implement in the classroom.

Raggi & Chronis (2006)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
  - Strategy Training
    - Direct Note-Taking Activity (DNA)
      - DNA training shown to significantly increase on-task behavior, scores on assignments, and comprehension.
      - Students are explicitly taught strategies for effective note-taking.   (e.g., dividing notes into main ideas and supporting details).
      - Prompting is gradually faded until students are able to take accurate effective notes.

Raggi & Chronis (2006)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
  - Strategy Training
    - Challenging Horizons Program (CHP)
      - Significant GPA improvements seen after two semesters.
      - Combination of psychosocial and educational interventions including DNA, study skills training, organizational skill training, and parent training.

Raggi & Chronis (2006)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
  - Homework Interventions
    - Parent-Training Programs
      - Parents taught to …
        - establish consistent homework routines
        - provide a quiet homework environment
        - help their children prioritize
        - break down large assignments
        - set goals

Raggi & Chronis (2006)

Psychosocial Treatment Recommendations

- Setting the Student up for Success
  - Homework Interventions
    - Home-School Communication
      - Shown to increase homework accuracy and completion rates.
      - Parents and teachers work together to address the students needs, set goals, and manage homework.

Raggi & Chronis (2006)

Psychosocial Treatment Recommendations

- Encouraging Adaptive Behavior
  - Increase the intensity of positive feedback
  - Increase the frequency of positive feedback to encourage practice of new skills.
    - Students performed better on rote tasks when there was a higher level of verbal praise and immediate reinforcement.
  - Increase the immediacy of feedback
    - Immediate feedback increases stimulation and helps sustain attention.
    - Students with ADHD are more influenced by current rewards than history of past rewards.

(Zentall, 2005)

Psychosocial Treatment Recommendations

- Encouraging Adaptive Behavior
  - Immediate verbal praise should be delivered frequently.
    - Praise is most effective when it is specific and related to the desired behavior.
    - Praise is most effective when given immediately following appropriate behavior.
    - Praise should be increased in relation to negative feedback.

Psychosocial Treatment Recommendations

- Encouraging Adaptive Behavior
  - Functional Assessment and Behavior Intervention Plans
    - Before a behavior intervention plan (BIP) is implemented, a functional assessment (or analysis) of behavior (FBA or FAA) should be conducted to evaluate the function of the student's behavior.
    - Once the function of the student's behavior is understood, a BIP should be implemented to make the target behavior irrelevant, ineffective, and inefficient.
    - The BIP should focus on providing the student with an appropriate means for obtaining the desired function of the target behavior.

Psychosocial Treatment Recommendations

- Encouraging Adaptive Behavior
  - Beginning a BIP
    - Ensure the student understands expectations and procedures.
    - Behaviors to be rewarded are clearly operationally defined and understood.
    - Behaviors framed in positive language focusing on desired behavior.
    - Behavior contracts are a useful way of helping the student understand the goals and contingencies of the plan.

Brock, Cummings, & Seiver (2004)

Psychosocial Treatment Recommendations

- Encouraging Adaptive Behavior
  - Contingency Management Options
    - Self-Monitoring
    - Token Economy Systems
      - Student earns points for appropriate behavior that can be used to "buy" desired rewards.
    - Response Cost Systems
      - If the "cost" is too frequent ADHD students may become frustrated.
      - Must include the opportunity to earn points back.
    - Time Out
      - Use the least restrictive form.
      - Time out from attention.

Psychosocial Treatment Recommendations

- Encouraging Adaptive Behavior
  - Daily Mini-Conferences
    - One to two minute mini-conferences between the teacher and student should be scheduled several to discuss behavior.
      - The more conferences held the better, but it must be feasible for the teacher.
    - During conferences, teacher gives verbal praise for appropriate behavior in the last period.
    - Teachers can use a tally sheet to mark or place a sticker on the sheet and further reinforce behavior.
    - Encouragement of, and instruction on, behaviors not displayed is given.

Brock, Cummings, & Seiver (2004)

Psychosocial Treatment Recommendations

- Encouraging Adaptive Behavior
  - Example of a Mini-conference chart

Daily Tally Sheet

Work Period	Begin work immediately	Work quietly	Remain seated	Ask good questions	Work carefully	Follow instructions	Complete Assignments	Total
							My daily total	
							My daily total goal for this week	

Brock, Cummings, & Seiver (2004)

Psychosocial Treatment Recommendations

- Encouraging Adaptive Behavior
  - Daily Rewards
    - Before implementing a BIP, student and teacher should set a daily behavior goals.
    - The student can be encouraged to set own goals as appropriate.
      - However, the goal should be set low in the beginning to ensure success and gradually increased.
    - If the student reaches daily goal, he or she would be given rewards as specified by the behavior contract.

Brock, Cummings, & Seiver (2004)

Psychosocial Treatment Recommendations

- Encouraging Adaptive Behavior
  - Weekly Rewards
    - A weekly reward can be used.
    - Are typically of greater magnitude than daily goals.
    - Are most effective with older students.
    - Should not replace daily and immediate rewards.
    - Weekly progress can be graphed during a mini-conference.

Brock, Cummings, & Seiver (2004)

Psychosocial Treatment Recommendations

- Encouraging Adaptive Behavior
  - Example of a weekly rewards chart

WEEKLY CONTRACT

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Daily Total					

My weekly total goal is

This week's total

If I meet my weekly goal, I will earn _____

Brock, Cummings, & Seiver (2004)

Psychosocial Treatment Recommendations

- Encouraging Adaptive Behavior
  - Concluding Comments
    - It is important to select goals that are important to student learning.
    - Students should only be rewarded when they clearly deserve it.
    - As the student progresses, external rewards should be faded. The goal is to move the student from extrinsic motivation to intrinsic motivation as soon as possible.

Psychosocial Treatment Recommendations

- Connecting Diagnosis to Treatment

Contact Information

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