ADHD as a Reward Deficiency Syndrome (RDS):
Conceptualization and Treatment

CHADD Annual International Conference
Pre-Conference Workshop, Chicago, IL
November 13, 2014

J. Russell Ramsay, Ph.D.
Associate Professor of Clinical Psychology in Psychiatry

Anthony L. Rostain, M.D., M.A.
Professor of Psychiatry and Pediatrics

Adult ADHD Treatment & Research Program
Perelman School of Medicine, University of Pennsylvania

Note about slides

• Slides are presented in the same order as in the handouts

• There are additional slides in the presentation that are not in the handouts:
  – to reduce the number of handout pages, or...
  – because colleagues have asked that they not be reproduced, or...
  – ongoing additions and modifications.

Outline

1. Introduction (our approach to our work)
2. ADHD as an Executive Function Disorder
3. ADHD as a Reward Deficiency Syndrome
4. Medications for ADHD
5. Psychosocial interventions for ADHD
Introduction

- History of the Penn Adult ADHD Treatment and Research Program
- Current approach to evaluation and treatment
- Summary of treatment studies
- Manual and Tool Kit

ADHD as a Reward Deficiency Syndrome

ADHD AND EXECUTIVE DYSFUNCTION

What are executive functions (EFs)?

- “(T)hose self-directed actions of the individual that are being used to self-regulate”

- EF is self-regulation across time to choose, enact, and sustain actions toward a goal usually in the context of others and often relying on social and cultural means for the maximization of one’s long-term welfare as the person defines that to be.
What are executive functions? (2)

3 factor model of adult ADHD =
- (1) EF
- (2) inattention-hyperactivity
- (3) impulsivity

...with EF being most consistent and discriminating factor.


What are executive functions? (3)

- EF usually emerges as a single factor ("how efficiently do you do what you set out to do"), but there are five semi-distinct domains that emerge in ratings of daily functioning:
  - Self-management to time
  - Self-organization and problem solving
  - Self-restraint (inhibition)
  - Self-motivation
  - Emotional regulation


Barkley (1997) – Executive functions and ADHD

- Nonverbal working memory (sense to self, 0 – 3 years)
- Verbal working memory (talk to self, 3 – 5 years)
  - Vygotsky – privatization of language
    - 0 - 3 years = overt, public talking, ‘blabber’
    - 3 - 5 years = semi-overt, descriptive, speech back to self
    - 5 - 7 years = covert, thinking to self without action
    - 8 - 12 years = fully privatized, instructive, self-talk,
  - Emotional regulation (feel/motivate to self, 5 – 7 years)
  - Reconstitution (play to self, 10 – 12 years)
What Arises From Each EF?

- **Sensing to the self** (nonverbal working memory):
  - Reciprocal exchange, social cooperation
  - Imitation and vicarious learning
  - Hindsight, foresight, future-direction acts
  - Sense and use of time for self-management

- **Self-speech** (verbal working memory):
  - Self-description, reflection, and questioning
  - Self-instruction (rule governed behavior) & use of meta-rules
  - Reading comprehension & morally guided behavior

What Arises From Each EF? (2)

- **Emotion/motivation to the self**:
  - Modifying emotional states and creating new affect
  - Intrinsic motivation – fueling future-direction behavior

- **Play (reconstitution) to the self**:
  - Planning-generating multiple options toward a goal
  - Goal-directed innovation (problem-solving)
  - Verbal and nonverbal fluency (generating diversity)
  - Rapidly assembling complex, hierarchical goal directed actions

Lack of use can lead to secondary EF deficits

The older the ADHD case is, the more likely that some EF deficits may be secondary deficits that could be amenable to some forms of EF training, but such training would not solve the problems arising from the primary EF deficits.
Recent Research: Executive Functions (EF) and Impairment

- Self-ratings of EF problems better predictor of occupational impairment than EF tests (CPT, Stroop, WCST, design fluency, learning and memory battery) among adults with ADHD (Barkley & Murphy, 2010)

- Self-ratings of EF problems better predictor of occupational and major life impairment than EF tests (Digit Span, Kaufman Hand Movements, Simon game, Stroop, design fluency, Tower of London) in hyperactive children as adults (Barkley & Fischer, 2011)

ADHD as a Reward Deficiency Syndrome

UNDERLYING MECHANISMS AND CONCEPTUALIZATION

ADHD as a Reward Deficiency Syndrome

Expressions of Reward Deficiency Syndrome
The regions of interest for the midbrain are obtained in several planes, and the shadow is projected to the axial image shown in the figure, which explains why the third ventricle is covered by the region. The x coordinate maps the left-right position; the y coordinate, the anterior-posterior position; and the z coordinate, the superior-inferior position.

Evaluating Dopamine Reward Pathway in ADHD
Volkow N, et al, JAMA, 2009

A, Regions showed significantly lower dopamine D<sub>2</sub>/D<sub>3</sub> receptor availability in participants with attention-deficit/hyperactivity disorder (ADHD) than in controls obtained from [11C]raclopride images). B, Regions showed significantly lower dopamine transporter availability in the participants with ADHD than in controls obtained from [11C]cocaine images. The dopamine transporter and the dopamine D<sub>2</sub>/D<sub>3</sub> receptor were inversely correlated between controls and participants with ADHD. The location of the region differed was similar for the dopamine D<sub>2</sub>/D<sub>3</sub> receptor and for the dopamine transporter and included the locations of the left ventral striatum (including accumbens and ventral caudate), left midbrain, and left hypothalamus. The z coordinate maps the superior-inferior position.

Dopamine: Motivational Deficit

– Dopamine binding lower for ADHD adults when compared with controls

– Correlation of Dopamine receptors and DAT and achievement scale of MPQ (trait motivation)
– MPQ lower among ADHD adults vs controls
– MPQ correlate with Dopamine among ADHD; MPQ inversely correlated with ADHD measures
Clinical Implications of RDS

- Motivational deficits commonly encountered
  - Trouble activating, getting started
  - Easy boredom / trouble sustaining attention
  - Sense of “being lazy” or insufficiently disciplined
- ADHD individuals do best with salient (interesting) tasks and frequent rewards
- Higher risk of developing addictive behaviors
  - Intense novelty seeking
  - Chemical dependency
  - Non-chemical addictions: internet use, gaming, gambling

ADHD as a Reward Deficiency Syndrome

ROLE OF DYSFUNCTIONAL EMOTIONAL SELF REGULATION & STRESS SENSITIVITY

“Rejection-Sensitive Dysphoria”

W Dodson (personal communication)

Q: “Have you always been more sensitive than others to rejection, teasing, criticism, or your own perception that you’ve failed or fallen short?”
- Most adult patients with ADHD answer “yes”
- Perception of failure is seen as catastrophic
- Leads to a near-constant state of “tension” / “harm avoidance”
- Mindset: “I’m always anticipating the worst”
- Impact on emotional state: anger / self-blame – “atypical depression”
- Effects on personality development:
  - “People pleaser” – never knows who she/he is...
  - “Risk avoider” – never pursues anything that isn’t a sure success
Conscious (Top Down) Regulation of Behavior and Emotion

Regulation of Attention and Emotion

“Normal” vs. “Abnormal” Anxiety

• Some amount of anxiety is “normal”
  – promotes optimal functioning
• “Abnormal” anxiety: interferes with functioning
  • Worry
  • Nervousness
  • Fear
  • Panic
  • Anxiety Disorder

Exaggerated neurobiological sensitivity to threat


Neurochemistry of Anxiety

Global Modulation: Monoaminergic neurons with wide range
- Raphe - serotonin (5-HT)
- Locus coeruleus - norepinephrine
- Dopaminergic neurons

The Cycle of Anxiety

Cognitive
Anxious interpretations
Prediction of feared outcome
- "They’ll think I’m stupid"

Physiological
Somatic Sensations of anxiety:
- difficulty concentrating,
dizziness, heart racing

Behavioral
Escape/Avoidance of feared situation/outcome

Temporary Relief
reduced anxiety

Negative Reinforcement
Psychological Research on Emotion in ADHD

• Research on child behavior rating scales shows elevations on subscales reflecting low frustration tolerance, anger, and emotional excitability.

• Direct observation studies of emotional control during emotional eliciting events show poor inhibition of emotions, and low frustration tolerance.

• Recent research shows flattened profiles of parasympathetic nervous system response to emotional conditions that normally increase or decrease PNS activity — this indicates abnormal regulation of brain regions contributing to emotion regulation.

• Follow-up studies of ADHD children into adulthood find the majority of EI/DESIR and it is a function of persistence of ADHD.

• Studies of adults with ADHD show EI/DESIR symptoms in the majority.

---

ADHD as a Reward Deficiency Syndrome

INTEGRATIVE TREATMENT MODEL FOR ADULT ADHD: PHARMACOTHERAPY

---

Treatments for Adult ADHD

• Medications

• Psychosocial-CBT

• Academic support and accommodations

• Workplace support and career counseling

Catecholamines and Brain Activity

DLPFC, dorsolateral prefrontal cortex; VLPFC, ventrolateral prefrontal cortex; BS-ACh, pedunculopontine/tetralaminar tegmental nuclei; VTA/SN, ventral tegmental area/substantia nigra; NBM, nucleus basalis magnocellularis; LC, locus coeruleus; DA, dopamine; ACh, acetylcholine; NE, norepinephrine; NBM, nucleus basalis magnocellularis; VTA, ventral tegmental area; SN, substantia nigra.

Dual Systems of Attention

Posterior system orients to and engages novel stimuli; localized to the superior parietal cortex, the superior colliculus and the pulvinar. It receives dense NE innervation from the LC which inhibits the spontaneous activity of postsynaptic neurons thereby increasing signal to noise ratio of target neurons (i.e. orientation)

Anterior system in the PFC and the anterior cingulate that subserves the executive system. It is modulated by ascending DA fibers from the VTA. DA suppresses spontaneous activity of target neurons and reduces their responsiveness to new inputs (i.e. better focusing)
The prefrontal cortex (PFC) is very sensitive to its neurochemical environment. The catecholamines are released in the PFC according to an arousal state, based on the relevance of the stimuli occurring in the environment. Either too little or too much catecholamine release impairs PFC function. Moderate levels of noradrenaline (NA) engage postsynaptic α2A-receptors to improve PFC function, while high levels engage α1 and β, which impair PFC function. Animal studies suggest that therapeutic doses of stimulants improve PFC function by increasing endogenous NA and dopamine (DA) stimulation of α2A and D1 receptors, respectively.

**Pharmacologic Treatments Approved for ADHD**

<table>
<thead>
<tr>
<th>Amphetamine-based formulations</th>
<th>Duration of effect</th>
<th>Adult / Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vyvanse®</td>
<td>12-13 hours</td>
<td>+/+</td>
</tr>
<tr>
<td>Adderall XR®</td>
<td>10-12 hours</td>
<td>+/+</td>
</tr>
<tr>
<td>Dextroamphetamine Spansule®</td>
<td>6-8 hours</td>
<td>–/–</td>
</tr>
<tr>
<td>Dextroamphetamine</td>
<td>4 hours</td>
<td>–/–</td>
</tr>
<tr>
<td>Adderall®</td>
<td>4-6 hours</td>
<td>–/–</td>
</tr>
<tr>
<td>Methylphenidate-based formulations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concerta®</td>
<td>~12 hours</td>
<td>+/+</td>
</tr>
<tr>
<td>Quillivant XR®</td>
<td>~12 hours (if worn 9 hours)</td>
<td>–/–</td>
</tr>
<tr>
<td>Daytrana®</td>
<td>~12 hours</td>
<td>+/+</td>
</tr>
<tr>
<td>Focalin® XR®</td>
<td>8-12 hours</td>
<td>+/+</td>
</tr>
<tr>
<td>Metadate® CD®</td>
<td>8-10 hours</td>
<td>–/–</td>
</tr>
<tr>
<td>Ritalin® LA®</td>
<td>~8 hours</td>
<td>–/–</td>
</tr>
<tr>
<td>Focalin®</td>
<td>~5 hours</td>
<td>+/+</td>
</tr>
<tr>
<td>Ritalin®</td>
<td>~4 hours</td>
<td>–/–</td>
</tr>
<tr>
<td>Non-Stimulants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strattera® (Atomoxetine)</td>
<td>Up to 24 hours</td>
<td>+/+</td>
</tr>
<tr>
<td>Intuniv® (Guanfacine XR)</td>
<td></td>
<td>+/+</td>
</tr>
<tr>
<td>Kapvay (Clonidine XR)</td>
<td></td>
<td>+/+</td>
</tr>
</tbody>
</table>

**Methylphenidate-based formulations Duration of effect**

| Concerta®                       | ~12 hours          |
| Ritalin®                        | 3-4 hours          |
| Metadate® CD®                   | 8-10 hours         |
| Ritalin® LA®                    | ~8 hours           |
| Focalin® XR®                    | 3-4 (8-10) hours   |
| Daytrana®                       | ~12 hours (worn for 9) |

**Amphetamine-based treatments**

| Adderall XR®                    | ~8 hours           |
| Adderall®                       | 4-6 hours          |
| Dextroamphetamine Spansule®    | 6-8 hours          |
| Vyvanse®                        | ~12 hours          |

**Nonstimulants**

| Strattera®                      | Up to 24 hours     |
| Intuniv®                        | Up to 24 hours     |
| Kapvay                          | Up to 24 hours     |

*Pharmacologic Treatments Approved for ADHD* by Arnsten, Amy F.T. *CNS Drugs* 23():33-41, Aug 1, 2009.
ADHD as a Reward Deficiency Syndrome

INTEGRATIVE TREATMENT MODEL FOR ADULT ADHD: CBT & MOTIVATIONAL ENHANCEMENT

ADHD as a Reward Deficiency Syndrome

FUNCTIONAL IMPAIRMENTS

Life Outcomes: Adult ADHD

- Workplace problems
- Relationship problems
- Lower educational attainment
- Employment problems
- Lower self-esteem
- Lower social functioning
- Lower satisfaction in life domains
- Physical health issues
- Legal issues
- Lower SES
- Psychiatric comorbidity
- Substance use disorders
- Risk for suicide (SUD + psychiatric)

Hecht et al. (2013). Journal of Attention Disorders, online ahead of print.
Impairments in 30-Day Functioning Associated With Adult ADHD

<table>
<thead>
<tr>
<th></th>
<th>% ADHD</th>
<th>% No ADHD</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>High time out of role</td>
<td>15.8%</td>
<td>8.0%</td>
<td>2.0^*</td>
</tr>
<tr>
<td>Low role functioning</td>
<td>15.0%</td>
<td>6.1%</td>
<td>2.7^*</td>
</tr>
<tr>
<td>Low social functioning</td>
<td>18.7%</td>
<td>5.9%</td>
<td>3.3^*</td>
</tr>
<tr>
<td>Low cognition</td>
<td>23.3%</td>
<td>5.9%</td>
<td>3.5^*</td>
</tr>
<tr>
<td>Low mobility</td>
<td>8.3%</td>
<td>4.7%</td>
<td>1.8</td>
</tr>
<tr>
<td>Low self-care</td>
<td>6.1%</td>
<td>4.0%</td>
<td>1.6</td>
</tr>
</tbody>
</table>

*p=.05

Adolescent Predictors of Functional Outcome in Adult ADHD

- Less likely than peers to do each activity ADHD (v. non)
  - Cultural/educational activities outside of school 55% (v. 39%)^*
  - Extracurricular activities 45% (v. 32%)**
  - Dating 43% (v. 24%)**
  - Sports 39% (v. 29%)^*
  - Free time with friends 27% (v. 15%)**
  - Free time with family 27% (v. 12%)**

^* p < .01
** p < .001

Motivational Enhancement

- Motivational Enhancement Therapy
  - Planned, directed, patient-centered
  - Develop discrepancy b/w behaviors and goals
    - Integrated into CBT for Teen ADHD & SUD
Motivational Enhancement (2)

• “Grit” = “(p)erseverance and passion for long-term goals.”
  – Predicts educational attainment, Ivy League GPA, West Point retention, Natl Spelling Bee rank
  – Self-discipline > IQ predict adolescent academic performance,

Motivational Enhancement (3)

• Gratification delay
  – Early childhood self-control predicts functioning outcomes 40 years later
    • Mischel et al. (2011). Social Cognitive and Affective Neuroscience, 6, 252-256.

HOW IS THIS SELF-REGULATION ACHIEVED????

ADHD as a Reward Deficiency Syndrome

ROLE OF DYSFUNCTIONAL THINKING, MOTIVATION, AND ADULT ADHD
Participants included 77 adults clinically diagnosed with ADHD. Participants completed: (a) diagnostic interviews to establish past and current diagnoses of ADHD and depressive disorders; (b) clinician administered rating scales assessing ADHD & depressive symptoms, and stressful life events; and (c) self-report questionnaires measuring ADHD symptom severity (CSS), depressive symptoms (BDI), dysfunctional beliefs (DAS) and behavioral avoidance (CBAS).

Analyses were conducted to determine the relative contribution of (a) ADHD symptoms, (b) dysfunctional beliefs and (c) cognitive-behavioral avoidance to self-reported depression symptoms and current depressive diagnosis.

METHODS

Results indicated that both dysfunctional beliefs and cognitive-behavioral avoidance accounted for depressive symptoms – these independent variables partially mediated the other, suggesting overlapping and unique variance. Cognitive-behavioral avoidance was more strongly correlated to diagnostic criteria for MDD than dysfunctional beliefs.

CLINICAL IMPLICATIONS

"Struggling with ADHD may contribute to the development of negative self-schemas and increase the actual occurrence of salience of failure experiences, contributing to depressive symptoms. At the same time, ADHD symptoms may initially contribute to a more avoidant cognitive and behavioral style that becomes more pervasive and impairing as depressive symptoms worsen.

Treatment of patients who are “at-risk” for depression (i.e. dysthymia) should focus on both modification of dysfunctional attitudes and establishment of active coping patterns. Treatment of patients who are depressed should shift toward more behavioral activation and more active coping patterns."
Are Negative Automatic Thoughts Associated with ADHD in Adulthood?


METHODS
Participants included 81 adults clinically diagnosed with ADHD.

n=34 ADHD+depression, n=47 ADHD-depression, n=43 non-clinical controls

Measures = CAARS Inattentive, ATQ, BDI

ADHD+depression > ADHD-depression, controls on measure of negative thinking

ADHD-depression > controls on measure of negative thinking

Dysfunctional Cognitions and their Emotional, Behavioral, and Functional Correlates in Adults with Attention Deficit Hyperactivity Disorder (ADHD): Is the Cognitive-Behavioral Model Valid?


METHODS
Participants included 35 adults with ADHD, 20 non-clinical controls, and 20 non-ADHD clinical controls.

Measures: ADHD-RS, ATQ, DAS, BDI, STAI, WOCS, AAQoL

ADHD, non-ADHD clinical controls > non-clinical controls ATQ, DAS

Negative thoughts associated with emotions; ADHD also had high escape-avoidance coping

ADHD + emotions + escape-avoidance predicts life impairment

Adult ADHD and the Relationship between Self-Reported Frequency of Cognitive Distortions, Anxiety, and Depression

Strohmeyer, Rosenfield, DiTomaasso, & Ramsay (2013). Poster Session, CHADD

Chart review N = 44 adults with ADHD (30 met inclusion criteria)

Measures = BADDS, CAARS, ICD, BDI-II, BAI, BHS

Direct and positive correlation between CAARS-Inattention and Cognitive Distortions (r = .360, p = .033*)
CBT for Adult ADHD

Conceptualize patterns
   – WHY don’t I change? (Educate)

Consider alternatives / gain skills
   – HOW can I change? (Execute)

Gain novel experiences / face challenges
   – WHEN do I change? (Experience-Endurance)

Coping Domains for Adult ADHD

- To Do List
- Daily Planner/Planning
- Prioritize/Choreograph
- Break down tasks
- Get started (Procrastination)
- Keep going
- "Manufacture" motivation
- Thoughts, emotions, escape behaviors
- Outsource coping
- Data management
- Materials mgt.
- Environmental Eng.
- Prob mgt./Dec. making
- College, Work
- Relationships
- Health, well-being
- Technology


ADHD as a Reward Deficiency Syndrome

CLINICAL EXAMPLE: PROCRASTINATION
Facets of Procrastination

- Low conscientiousness
- Self-regulatory failure
- Distractibility
- Organization
- Achievement motivation
- Intention-action gap
- Impulsiveness (more than anxiety)

Low self-efficacy (fear of failure)
- Less perfectionism
- Prone to boredom
- Aversive task
- Reward delay
- Decreases with age


Summary of CBT for Adult ADHD
Motivational Enhancement Interventions

- Cognitive modification
- Behavioral modification and coping skills
- Implementation strategies
- Acceptance, mindfulness, persistence

CBT for Adult ADHD
Motivational Enhancement: Targets

- Task engagement ("Once I get started...")
- Sustained time "on task"
- Return to task
- Sufficient "on task" episodes across time
CBT for Adult ADHD
Motivational Enhancement: Targets (2)

- Adjusting to circumstances, difficulties
- Task completion
- Follow up
- Manage distractions (internal & external)
- Managing multiple roles, demands

CBT for Adult ADHD
Motivational Enhancement: Targets (3)

- Poor planning
- Time management
- Prioritization
- Rewards, consequences
- Commitment to task

Cognitive Interventions

- Cognitive error = magnification/minimization
  - Magnify – discomfort, inability, futility, time on task
  - Minimize – tolerate, efficacy, value, process-outcome
  - Change the negative-to-positive ratio

- Cognitive error = overgeneralization + jumping to conclusions
  - Overgeneralization – “I hate this. It is always torture for me.”
  - Jumping to conclusions – “This is going to be just as bad as it always is.”
  - Focus on changing approach, what is in control > what is out of control
Cognitive Interventions (2)

- "Defense Attorney" metaphor
  - Conclusions based on one-sided review of evidence
  - What argument would your Attorney make on your behalf?
  - Challenge the evidence, prolongation to counteract impulsivity
  - Not power of positive thinking, but adaptive thinking
  - Consider ability to manage adequately, behavioral priming

Cognitive Interventions (3)

- Perspective taking, Scaling
- Task expectancy, reprocess
- Increase self-efficacy (“lower the bar”)
- Enhance personal value of task (salience)

Cognitive Interventions (4)

- Expand image of possible futures
- Focus on actions that will change probabilities of possible outcomes
- Concerns based on past “make perfect sense”...
- ... but what can be done differently NOW?
Behavioral Interventions

- Break down task into component steps
  - Identify “old” behavioral script, escape behaviors
    - “What typically happens when you face this situation?”
    - “What diverts you from your intention?”
    - Thoughts, emotions, escape behaviors, distractions, etc.
    - “How does it not happen?” (Reverse Engineering)
  - Develop “new” script for task
    - “How would you program a robot to complete this task?”
    - “Enter the room with a plan. What is a scenario for new result?”
    - “What is a realistic way to manage the diversions?”
    - Step-by-step script (or recipe → actionable)

Behavioral Interventions (2)

- Starting point
  - Point of engagement – “lower the bar”
  - Zeno’s Paradoxes – leaving a room
  - Point at which one moves from “off task” to “on task”
- Behavior > emotion
  - Make the task manual (graduated exposure)
  - “What do you have to do?” (even if you do not feel like doing it)
  - Practice on “small stuff” in everyday life

Behavioral interventions (3)

- Stimulus control / environmental engineering / reward
- Rework task objectives
  - Time based (10 minute rule)
  - Task based (# paragraphs or specific items)
  - Terrain based (one square foot, specific table top)
Behavioral interventions (4)

- Make task a priority for Daily To Do List
- Schedule task appointment in Daily Planner
- Make task behavioral and doable

Implementation Intention Strategies

“Self-regulation by IMPLEMENTATION INTENTIONS entails delegating action control to pre-specified critical environmental cues. In other words, by planning out in advance when, where, and how a goal is to be transformed into action, implementation intentions disencumber executive functions. As a result, deficits in executive functioning should no longer be apparent in the quality of task performance.” (p. 263)


Implementation Strategies

- Identify specific example of a targeted situation
- Define reasonable, desired way to handle it
  - New behavioral script
  - “Enter the room with a plan”
- Anticipate barriers
  - Old behavioral script
- Plan to engage in task and manage barriers (“If x, then y”)
### Implementation Strategies (2)
- Attitude (cognitive) of possibility
- Define task in reasonable, behavioral terms
- New behavioral script for task engagement
- Identify “tipping points” for starting the task
- “Knowing yourself as you do, what will help you get started?”
- “If X happens, then I will do Y” (“If I sit upright in bed when my alarm goes off, I will get up and make it to class.”)

### Implementation Strategies (3)
- Identify “tipping points” for maintaining task
- “Knowing yourself as you do, what could disrupt the plan?”
- “Knowing this could happen, how do you plan to handle it?”
- “If I get interrupted, then I will re-read the last paragraph I wrote.”
- Ideal is task goal + implementation plan

### Acceptance, Mindfulness, Persistence
- “Acceptance” of discomfort to maintain “commitment” to a valued task.
- “Mindful” recognition of ADHD symptoms, emotional discomfort without escape reaction
- Feel discomfort AND persist on task

Acceptance, Mindfulness, Persistence (2)

- Recognize emotional reaction
- Identifying, labeling the emotion reduces reactivity
- Do not use emotional reaction as sole or primary reason to leave a task
- Acknowledge feeling AND persist in moment/on task

Acceptance, Mindfulness, Persistence (3)

- Catch yourself having “strayed” (mentally and/or behaviorally)
- Take a moment to reorient, breathe, and acknowledge the situation and feelings
- Make and informed decision of where you want to direct yourself, your energy, and your attention
- You can find a way to do “enough”

TAKE AWAY – 10 Minute Rule

- Identify and define task you are avoiding (in behavioral terms)
- Define the time interval you can perform this task, even if it is as AWFUL as you anticipate it will be (e.g., “10 minutes”)
- Define the smallest, most specific, behavioral starting point; if-then plans for barriers
- Get everything you need and be in position to perform the task. Start the clock and give the task an “honest try” for the full 600 seconds.
- Assess the outcome
  - Stop – You did not procrastinate
  - Keep going for another time interval
Make treatment “sticky”

Reminders
- Written behavioral “prescriptions” or “take aways”
- Set up reminders
- Reframe time
- Invest 10 seconds discomfort

Metaphors
- “Swing votes”
- Woody Allen, 9-1-1
- “It doesn’t have to be fun to be fun”
- You do not have to be “in the mood”

Conclusions
- ADHD has serious effects on daily life
- Motivational deficits play a central role in many aspects of the phenomenology and life problems associated with adult ADHD
- There are medical and psychosocial interventions that can effectively treat motivational deficits
- A central focus of CBT for adult ADHD is motivational enhancement and implementation

Contact us

ramsay@mail.med.upenn.edu
rostain@mail.med.upenn.edu