Cognitive Behavioral Therapy (CBT) for Substance Use Disorder

John F. Kelly, Ph.D.
Disclosures

- Neither I nor my spouse/partner has a relevant financial relationship with a commercial interest to disclose.
Cognitive Behavioral Therapy (CBT)

- What is CBT and its assumptions?
- What are the clinical strategies involved in CBT?
- How effective is CBT as an intervention for SUD?
- How does it work?
- Some conclusions...
Cognitive Behavioral Therapy (CBT)

What is CBT and its assumptions?

What are the clinical strategies involved in CBT?

How effective is CBT as an intervention for SUD?

How does it work?

Some conclusions...
# Stages of Change: Related Treatment & Recovery Support Services

<table>
<thead>
<tr>
<th>Precontemplative</th>
<th>Contemplative</th>
<th>Preparation</th>
<th>Action</th>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>In this stage, individuals are not even thinking about changing their behavior. They do not see their addiction as a problem; they often think others who point out the problem are exaggerating.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In this stage people are more aware of the personal consequences of their addiction &amp; spend time thinking about their problem. Although they are able to consider the possibility of changing, they tend to be ambivalent about it.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In this stage, people have made a commitment to make a change. This stage involves information gathering about what they will need to change their behavior.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In this stage, individuals believe they have the ability to change their behavior &amp; actively take steps to change their behavior.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In this stage, individuals maintain their sobriety, successfully avoiding temptations &amp; relapse.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Harm Reduction
- *Emergency Services (I.e. Narcan)*
- *Needle Exchanges*
- *Supervised Injection Sites*

### Screening & Feedback
- *Brief Advice*
- *Motivational Interventions*

### Screening, Brief Intervention, & Referral to Treatment (SBIRT)

### Clinical Intervention
- **Phases/Levels (e.g., inpatient, residential, outpatient)**
- **Intervention Types**
  - *Psychosocial (e.g. Cognitive Behavioral Therapy)*
  - *Medications: Agonists (e.g. Buprenorphine, Methadone) & Antagonists (Naltrexone)*

### Non-Clinical Intervention
- **Self-Management/Natural Recovery**
  (e.g. self-help books, online resources)
- **Mutual Help Organizations**
  (e.g. Alcoholics Anonymous, SMART Recovery, Lifering Secular Recovery)
- **Community Support Services**
  (e.g. Recovery Community Centers, Recovery Ministries, Recovery Employment Assistance)

### Continuing Care (3m - 1 year)
- Recovery Management Checkups, Telephone Counseling, Mobile Applications, Text Message Interventions

### Recovery Monitoring (1-5+ yrs)
- Continued Recovery Management Checkups, therapy visits, Primary Care Provider Visits
# Stages of Change: Related Treatment & Recovery Support Services

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Precontemplative</strong></td>
<td>In this stage, individuals are not even thinking about changing their behavior. They do not see their addiction as a problem; they often think others who point out the problem are exaggerating.</td>
</tr>
<tr>
<td><strong>Contemplative</strong></td>
<td>In this stage people are more aware of the personal consequences of their addiction &amp; spend time thinking about their problem. Although they are able to consider the possibility of changing, they tend to be ambivalent about it.</td>
</tr>
<tr>
<td><strong>Preparation</strong></td>
<td>In this stage, people have made a commitment to make a change. This stage involves information gathering about what they will need to change their behavior.</td>
</tr>
<tr>
<td><strong>Action</strong></td>
<td>In this stage, individuals believe they have the ability to change their behavior &amp; actively take steps to change their behavior.</td>
</tr>
<tr>
<td><strong>Maintenance</strong></td>
<td>In this stage, individuals maintain their sobriety, successfully avoiding temptations &amp; relapse.</td>
</tr>
</tbody>
</table>

## Harm Reduction
* Emergency Services (e.g., Narcan)
* Needle Exchanges
* Supervised Injection Sites

## Screening & Feedback
* Brief Advice
* Motivational Interventions

## Screening, Brief Intervention, & Referral to Treatment (SBIRT)

## Clinical Intervention
* Phases/Levels (e.g., inpatient, residential, outpatient)
* Intervention Types
  - Psychosocial (e.g., Cognitive Behavioral Therapy)
  - Medications: Agonists (e.g., Buprenorphine, Methadone) & Antagonists (Naltrexone)

## Non-Clinical Intervention
* Self-Management/Natural Recovery (e.g., self-help books, online resources)
* Mutual Help Organizations (e.g., Alcoholics Anonymous, SMART Recovery, Lifering Secular Recovery)

## Continuing Care (3m-1 year)
* Recovery Management Checkups, Telephone Counseling, Mobile Applications, Text Message Interventions

## Recovery Monitoring (1-5+ yrs)
* Continued Recovery Management Checkups, therapy visits, Primary Care Provider Visits

---

**CBT**

**MI**
## STAGES OF CHANGE: RELATED TREATMENT & RECOVERY SUPPORT SERVICES

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Precontemplative</strong></td>
<td>In this stage, individuals are not even thinking about changing their behavior. They do not see their addiction as a problem: they often think others who point out the problem are exaggerating.</td>
</tr>
<tr>
<td><strong>Contemplative</strong></td>
<td>In this stage, people are more aware of the personal consequences of their addiction &amp; spend time thinking about their problem. Although they are able to consider the possibility of changing, they tend to be ambivalent about it.</td>
</tr>
<tr>
<td><strong>Preparation</strong></td>
<td>In this stage, people have made a commitment to make a change. This stage involves information gathering about what they will need to change their behavior.</td>
</tr>
<tr>
<td><strong>Action</strong></td>
<td>In this stage, individuals believe they have the ability to change their behavior &amp; actively take steps to change their behavior.</td>
</tr>
<tr>
<td><strong>Maintenance</strong></td>
<td>In this stage, individuals maintain their sobriety, successfully avoiding temptations &amp; relapse.</td>
</tr>
</tbody>
</table>

### Harm Reduction
- Emergency Services (i.e., Narcan)
- Needle Exchanges
- Supervised Injection Sites

### Screening & Feedback
- Brief Advice
- Motivational Interventions

### Clinical Intervention
- Phases/Levels (e.g., inpatient, residential, outpatient)
- Intervention Types
  - Psychosocial (e.g., Cognitive Behavioral Therapy)
  - Medications: Agonists (e.g., Buprenorphine, Methadone) & Antagonists (Naltrexone)

### Non-Clinical Intervention
- Self-Management/Natural Recovery (e.g., self-help books, online resources)
- Mutual Help Organizations (e.g., Alcoholics Anonymous, SMART Recovery, Upping Secular Recovery)

### Continuing Care (3m-1 year)
- Recovery Management Checkups, Telephone Counseling, Mobile Applications, Text Message Interventions

### Recovery Monitoring (1-5+ yrs)
- Continued Recovery Management Checkups, therapy visits, Primary Care Provider Visits

---

**CBT**

**MI**

**TSF**
“Quitting smoking is easy, I’ve done it dozens of times” –Mark Twain
# Major psychosocial theories for SUD

<table>
<thead>
<tr>
<th>Theory</th>
<th>Key process mechanisms for...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Substance use</strong></td>
</tr>
<tr>
<td><strong>Social Control</strong></td>
<td>Lack of strong bonds with family, friends, work, religion, other aspects traditional society</td>
</tr>
<tr>
<td><strong>Social Learning</strong></td>
<td>Modeling and observation and imitation of substance use, social reinforcement for and expectations of positive consequences from use; positive norms for use</td>
</tr>
<tr>
<td><strong>Stress and coping</strong></td>
<td>Life stressors (e.g., social/work/financial problems, phys/sex abuse) lead to substance use especially those lacking coping and avoid problems; substance use form of avoidance coping, self-medication</td>
</tr>
<tr>
<td><strong>Behavioral economics</strong></td>
<td>Lack of alternative rewards provided by activities other than substance use</td>
</tr>
</tbody>
</table>

Source: adapted from Moos, RH (2011) Processes the promote recovery from addictive disorders.
What is CBT for SUD?

• Based on **social-cognitive learning theory**
  – Substance use functionally related to major life problems
  – Coping deficits (e.g., life stress, substance-related cues) maintain use/relapse

• **Coping skills training** addresses and overcomes skill deficits
  – Enhance identification and coping with high-risk situations/cues
  – Increase active adaptive behavioral-cognitive coping
  – Enhance sobriety-based social support
CBT addresses two major types of learning that contribute to SUD...

<table>
<thead>
<tr>
<th>Learning by Association</th>
<th>Learning by Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>‘Classical’ Conditioning</strong></td>
<td><strong>‘Operant’ Conditioning</strong></td>
</tr>
<tr>
<td>Neutral stimuli become <em>triggers for</em> substance use/cravings, through repeated associations between stimuli and drug (conditioning).</td>
<td>Substance use is shaped by the consequences of use.</td>
</tr>
<tr>
<td><strong>External triggers</strong>: People, places, time of day, day of week, things...</td>
<td><strong>Positive Reinforcement</strong>: if after using a substance a person feels more comfortable in social situations or happier etc.</td>
</tr>
<tr>
<td><strong>Internal triggers</strong>: thoughts, emotions, pain/physiological changes</td>
<td><strong>Negative Reinforcement</strong>: if substance use reduces anxiety, tension, stress, or depression; future use to reduce or terminate the unpleasant experience</td>
</tr>
</tbody>
</table>
Operant Conditioning

Reinforcement

Positive
Add pleasant stimulus to increase/maintain behavior
(i.e., giving a treat when the dog sits)

Negative
Add aversive stimulus to decrease behavior
(i.e., spraying a cat with water for jumping on the kitchen counter)

Escape
Remove pleasant stimulus following correct behavior
(i.e., turning off an alarm clock by pressing the snooze button)

Active Avoidance
Behavior to avoid aversive stimulus
(i.e., studying to avoid getting a bad grade)

Punishment

Positive
Add positive stimulus to decrease behavior
(i.e., giving the child a time-out for using inappropriate language)

Negative
Remove positive stimulus to decrease behavior
(i.e., giving a treat to stop the dog from barking)

Decreases Behavior

Main Assumption: 

Substance problems arise/continue due to deficits in sober coping skills.

Patient is motivated to stop/reduce substance use— needs to acquire skills to do so.

1. Failure to engage in active coping when encountering precipitants to substance use contributes to relapse.

2. CBT is differentially effective in increasing active coping efforts when compared to alternative interventions.

3. Because problems with coping are attributable to skills deficits, performance-based skill training techniques are necessary to remediate deficits.
Cognitive Behavioral Therapy (CBT)

- What is CBT and its assumptions?
- What are the clinical strategies involved in CBT?
- How effective is CBT as an intervention for SUD?
- Does it work the way we think it does?
- Some conclusions...
Common Components of CBT

• Establish good therapeutic relationship
• Educate patients: model, disorder, therapy
• Assess illness objectively, set goals
• Use evidence to guide treatment decisions (collaborative empiricism)
• Structure treatment sessions with agenda
• Limit treatment length
• Issue and review homework to generalize learning
Major Goals of CBT

1. Provide social-cognitive learning framework
   - *Substance use becomes predominant coping response to stress*

2. Identify triggers (“functional analysis”)
   - e.g., environmental, cognitive, affective

3. Teach Skills
   - e.g., problem solving, environmental restructuring, social-interpersonal skills, cognitive restructuring, coping with craving/urges, relaxation

4. Consequence control – developing support systems
   - Change positive expectancies about effects of use, access alternative reinforcers
   - Develop social systems to support and reinforce abstinence

5. Reduce relapse risk (Abstinence Violation Effect)
Common Precursors to Relapse and How CBT might help

- Cue Induced
- Stress Induced
- Substance Induced

RELAPSE

Social
Psych
Neurobiology

CBT

Kelly JF, Yeterian, JD, (2013). In McCrady and Epstein. Comprehensive Textbook on Substance Abuse.
Model for CBT Treatment (behavior chain): Functional analysis of substance use behavior
Behavior Chain Modifying Worksheet

**Example**

11:45 PM and in bed and not asleep

“*I need alcohol to get to sleep*”

Anxiety

Drink alcohol

Drowsy

Sleep

Wake up early; jittery; worried
What is CBT and its assumptions?

What are the clinical strategies involved in CBT?

How effective is CBT as an intervention for SUD?

Does it work the way we think it does?

Some conclusions...
How effective is CBT as an intervention for SUD?

• Meta-analysis of 53 controlled trials (1982-2006) of CBT for adults with alcohol- or drug-use disorders.

• Findings demonstrate utility of CBT across a large and diverse sample of studies and under rigorous conditions for establishing efficacy.

Main Treatment Effect

- Small but statistically significant treatment effect ($g = 0.154, p < .005$)
- Effects diminished over time:
  - 6- to 9-months ($g = 0.115, p < .005$)
  - 12 months ($g = 0.096, p < .05$)

Subgroup Moderators

- Across substances, strongest among marijuana users ($g = 0.513, p < .005$)
- CBT combined with additional psychosocial treatment ($g = 0.305, p < .005; n = 19$) had a larger effect size than CBT combined with pharmacological treatment ($g = 0.208, p < .005; n = 13$) and CBT alone ($g = 0.172, p < .05; n = 21$)
- Large effect size for CBT compared to no treatment ($g = 0.796, p < .005; n = 6$)

Regression Moderators

- Women appeared to benefit more from CBT than men ($b = .005, p < .05$)
- Benefit of shorter duration interventions: length of treatment had a negative association ($b = -.008, p < .005$) with effect size
- No difference in effectiveness by format (group or individual)
- Little evidence for its value as an adjunctive treatment particularly in combination with contingency management
Cognitive Behavioral Therapy (CBT)

What is CBT and its assumptions?

What are the clinical strategies involved in CBT?

How effective is CBT as an intervention for SUD?

How does it work?

Some conclusions...
Examining evidence of CBT’s hypothesized mechanisms of action

**Hypothesis:** CBT for SUD works through increasing cognitive and behavioral coping skills

Review of 10 studies involving random assignment of participants to treatment condition (CBT and at least one comparison condition)

Four necessary conditions to establish support for coping skills mediation:

1. CBT reduces substance use more than comparison
2. CBT increases coping skill mediator more than comparison
3. Substance outcome co-varies with coping skills mediator
4. Entering mediator as a covariate reduces the treatment effect

Examining evidence of CBT’s hypothesized mechanisms of action

Results indicate little support for the hypothesized mechanisms of action of CBT.

- Overall no reported positive findings
- Most common that none or only one step of the mediational chain supported

Research has not yet established why CBT is an effective treatment for SUD.

Possible explanations for negative findings:

- Methodological flaws of prior studies may have obscured detection of effects

Cognitive Behavioral Therapy (CBT)

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is CBT and its assumptions?</td>
<td></td>
</tr>
<tr>
<td>What are the clinical strategies involved in CBT?</td>
<td></td>
</tr>
<tr>
<td>How effective is CBT as an intervention for SUD?</td>
<td></td>
</tr>
<tr>
<td>Does it work the way we think it does?</td>
<td></td>
</tr>
</tbody>
</table>

Some conclusions...
Summary

• CBT represents therapeutic approach consisting of common set of strategies based in social-cognitive learning theory

• Deconditioning-cognitive restructuring-skills building form basis of intervention usually anchored in functional analysis (behavior chain analysis)

• CBTs for SUD are empirically supported but typically not clinically superior to other types of active interventions

• Causal mechanisms of CBT’s effects on reducing alcohol/drug use not well-supported suggesting that, similar to other interventions, the common therapeutic encounter provides a context that activates and mobilizes dormant broad cognitive-behavioral strategies within patients that confers therapeutic benefits.
Enhancing Recovery Through Science