

Finding Pieces to the Puzzle of Health and Addictive Behavior Change: What Have We Learned?

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How We Found Puzzle Pieces?

- Science and Serendipity (open to unexpected discovery and disappointment)
 - Qualitative (listening to changers) and Quantitative (data driven) exploration
 - Creating Concepts and Examining Data that help us understand the concepts and whether and how they fit in the process of change
 - Wonderful Collaborators, Colleagues, Students and my mentor James O. Prochaska
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The Beginning

- Over 40 years ago I began what became a lifelong journey exploring how people change behaviors
- A clinical psychotherapy perspective
- Spurred on by curious findings:
 - Different treatments were most often ***equally successful*** despite radically different philosophies and approaches
(Temple psychotherapy study, 1966; Prochaska, Systems of Psychotherapy 1979)
 - Over 250 types of therapy being identified
 - Many smokers successfully quit on their own as did others making behavior changes
 - Searching for Principles/Processes of Change relevant for self-change and therapy



- Are there common processes of change that explain successful smoking cessation?
 - Whether smokers quit on their own without treatment or with a cessation treatment
 - Quitters using 2 popular cessation treatments (Schick & Smoke Enders) and a self-quit group
 - Answer was yes for the most part BUT it is complicated and needs a framework for different points in the change journey
- Participants in the study asked “when” at what point in my quit journey are you asking about?

Initial Dissertation Research

A Client Focused Model of Intentional Behavior Change

STAGES OF CHANGE

**PRECONTEMPLATION → CONTEMPLATION → PREPARATION →
ACTION → MAINTENANCE**

PROCESSES OF CHANGE

COGNITIVE/EXPERIENTIAL

**Consciousness Raising
Self-Revaluation
Environmental Reevaluation
Emotional Arousal/Dramatic Relief
Social Liberation**

BEHAVIORAL

**Self-Liberation
Counter-conditioning
Stimulus Control
Reinforcement Management
Helping Relationships**

CONTEXT OF CHANGE

- 1. Current Life Situation –current concerns, symptoms, housing, stresses**
- 2. Beliefs and Attitudes – religious, political, familial, cultural**
- 3. Interpersonal Relationships –significant others**
- 4. Social Systems –family – work –legal - societal**
- 5. Enduring Personal Characteristics –personality characteristics – identity – implicit attitudes**

MARKERS OF CHANGE

Decisional Balance

Self-Efficacy/Temptation

The First Puzzle Piece

- Understanding how common processes of change (an array of client coping activities) function requires that we know WHEN and WHERE these activities occur in that person's CHANGE PROCESS
- Change is a complex, multidimensional process involving temporal, motivational and behavioral dimensions



Stages of Change

- Benefiting from the work of many thoughtful scientists*, Jim Prochaska and I then divided the change process into 5 stages of change reflecting different parts of the change process and labeling them:
- Precontemplation, Contemplation, Determination (now Preparation), Action, and Maintenance (Prochaska & DiClemente, 1983, JCCP)

*Marlatt, Lichtenstein, Horn, Bandura, Janis and Mann and others,

How Do People Change?

- People change **voluntarily** only when
 - They become **interested and concerned** about the need for change
 - They become **convinced** the change is in their best interest or will benefit them more than cost them
 - They organize a **plan of action** that they are **committed** to implementing
 - They **take the actions** necessary to make the change and sustain the change



Stage of Change: Labels and Tasks

- **Precontemplation**
 - Not interested
 - Interested and concerned
- **Contemplation**
 - Considering
 - Risk-reward analysis and decision making
- **Preparation**
 - Preparing
 - Commitment and creating an effective/acceptable/accessable plan
- **Action**
 - Initial change
 - Implementation of plan and revision as needed
- **Maintenance**
 - Sustained change
 - Consolidating change into lifestyle

DiClemente. *Addiction and Change: How Addictions Develop and Addicted People Recover. (2nd Ed.)* NY:

Guilford Press; 2018.

DiClemente. *J Addictions Nursing. 2005;16:5.*

- A logical sequence of tasks but not followed in a linear fashion
 - regression, getting stuck, and recycling
- Behavior and Goal specific
- Not always a rational or completely conscious process
- Stage tasks involve values, emotional reactions, implicit cognitions, and salient experiences
 - events, motivating contextual influences, personal experiences affect engagement and completion

Misconceptions About Stages

What do these stages represent?

- Most health behavior change theories are multidimensional not single factor or mechanism
 - (vulnerability, intention, decision making, implementation intention, commitment, self-efficacy)
- Stages are **not boxes** in which to place people or labels but represent **critical tasks** of successful behavior change
- A changeable state not a stable characteristic: precontemplation not a “precontemplator”
- Action oriented treatments but pre-action clients



Take Away: Denial, Resistance & Other Myths

- From Resistance to Readiness
- From Confrontation to Evoking Motivation
- From Excluding to Welcoming the “Unmotivated”
- From Willpower to a Process of Change





Puzzle Piece: Specificity and Patterns of Change

- There seems to be a common path that can characterizes the change process across intentional behavior changes
- Change process is behavior and goal specific
 - cutting down versus quitting; drinking or smoking or eating
- How to begin staging: define action and maintenance
 - differs for diet, drinking, physical activity, cancer screening, medication adherence, specific coping activities, condom use, etc.

**HEALTH PROMOTION &
DISEASE MANAGEMENT
& PREVENTION**

REQUIRE

BEHAVIOR

CHANGE

STRESS MANAGEMENT

INITIATION

HEALTH PROMOTION

**CHRONIC DISEASE
MANAGEMENT**

MODIFICATION

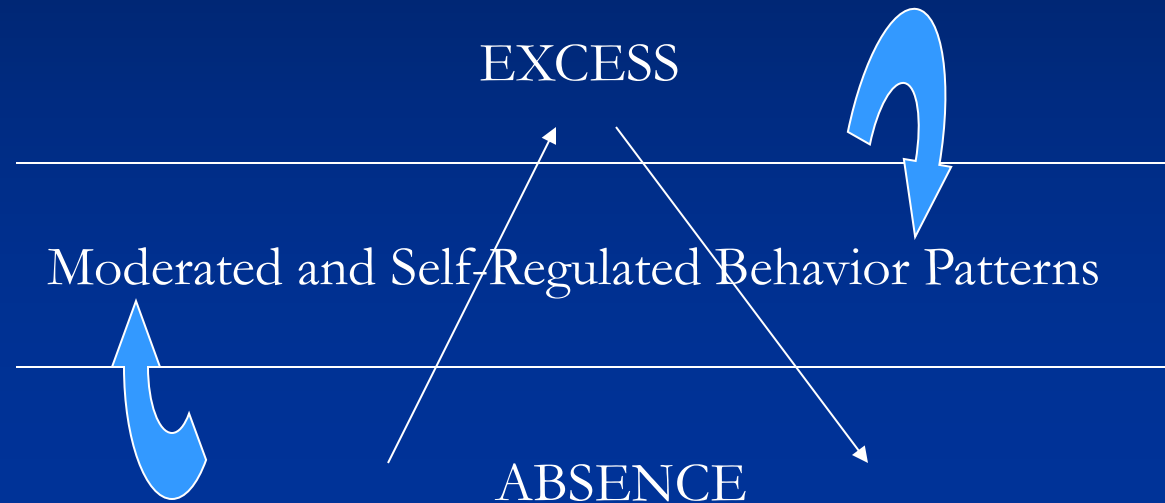
MENTAL HEALTH RECOVERY

SUBSTANCE ABUSE

CESSATION

Different Patterns of Behavior Change

Initiation, Modification, Cessation



Healthy
Lifestyle
And
Wellbeing
Zone

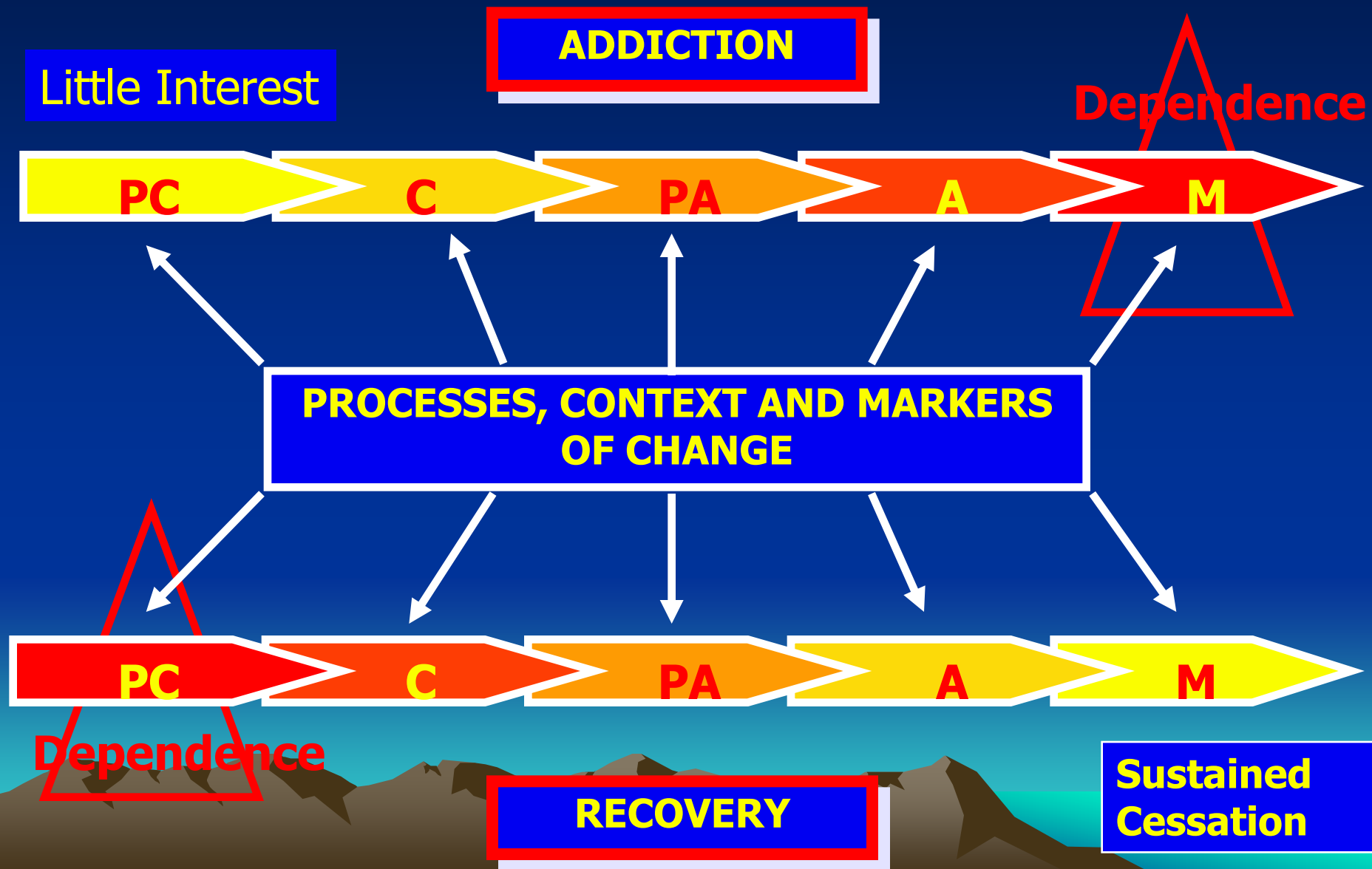
In Medio
Stat Virtus

Defining Action

- Specifying the behavior or constellation of behaviors that define action
- Task analysis indicates frequency, intensity, difficulty, and skills needed to perform the goal behavior
- Define partial goals and behaviors that indicate positive activity but fall short of the actual target
 - reduction vs cessation; daily or weekly, mindfulness exercises 3 or 5 times a week
- Target: Initiation, Modification, Cessation



THE STAGES OF CHANGE FOR ADDICTION AND RECOVERY

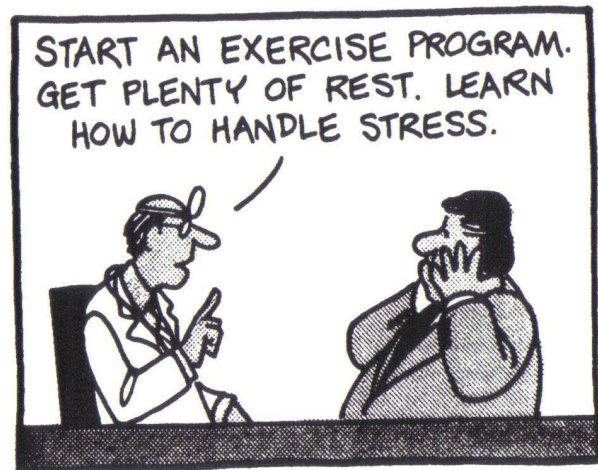


A STAGE BY ADDICTIVE BEHAVIOR INITIATION PERSPECTIVE ON ALLEN

TYPE OF BEHAVIOR	STAGE OF INITIATION				
	PC	C	PA	A	M
ALCOHOL				X	
NICOTINE					X
MARIJUANA					X
HEROIN	X				
COCAINE	X				
AMPHETAMINES		X			
LSD	X				
GAMBLING			X		
EATING DISORDER	X				

A TARGET TREATMENT BEHAVIORS BY STAGE FOR A CLIENT

TYPE OF BEHAVIOR	STAGE OF INITIATION				
	PC	C	PA	A	M
MEDICATION				X	
TREATMENT					X
RELAXATION			X		
MUTUAL HELP	X				
SMOKING	X				
ASSERTIVENESS				X	
Reduce DRINKING		X			
MARIJUANA USE	X				



Free and Unrealistic Advice Hinders Change or Shifts the Target of Change

Take Away: Be Specific

- Important to be aligned with client goals and target behavior(s)
- Multiple behavior changes increase the complexity and difficulty of change
- Be sure you understand what the changer means when talking about goals
 - taking which medications, smoking marijuana occasionally, eating a low fat diet, low risk drinking, challenging depressogenic thoughts



Puzzle Piece: Intentional Change

- The change process for **intentional behavior change** is multidimensional with interactive dimensions
 - Involves key stage **tasks** needing to be addressed along the journey of change and
 - **client processes** (activities, experiences) that need to be activated to accomplish these tasks.
 - There are other types of change:
- **Imposed change** made largely in response to or driven by external forces or extrinsic motivations (prison, some divorces, pregnancy smoking cessation).
- **Developmental changes** such as aging and child development.
- **Biological and neurological changes** separate from but often related to behaviors



Not a Model for All Types of Change



- Absence of a behavior does not signify an intentional change of a behavior
- Imposed change effect can be similar to punishment: suppress versus change behaviors
- Differences between developmental, imposed, biological, and intentional changes
- For mental health conditions there is a combo of biological/neurological and intentional change



Imposed Changes and Pregnancy

- Many women stop smoking during pregnancy and appear to be in maintenance
 - However, many relapse postpartum at rates like they just quit yesterday
- They often stop/suspend smoking but do not quit
- In fact, they do not look like women who are trying to quit
 - using few processes of change and very confident that during pregnancy they will not smoke
- Reasons for stopping involve protection of the baby and are almost entirely extrinsic not intrinsic

Take Away: Intrinsic Motivation

- Extrinsic motivation is helpful especially in getting people to consider change
 - Can be very helpful in getting people on the journey
 - Can elicit resistance and rebellion
- However, intrinsic motivation and personal ownership of change is very important for initiating and sustaining intentional change
- Not Either Or



Puzzle Piece: Processes of Change



- Personal change engines or mechanisms
- Significant co-variation between the temporal/motivational tasks of the process (STAGES) and the coping activities (PROCESSES) of the changer
- Doing the right thing at the right time:
 - different processes work better to produce change when activated in different stages of change
 - Mismatching can interfere with change
 - (Prochaska, DiClemente, & Norcross, 1992, JCCP)

What are Processes of Change?

- Each process represents some human experience or activity of a person occurring in the context of that person's life
- Each process is a distinct mechanism but often they operate in combination
 - supported by factor analysis with different behaviors
- Two sets of processes represent the two types of critical activities needed to enact behavior change
 - Cognitive/Experiential and Behavioral



Experiential Processes

Cognitive/Experiential Processes	Description
Consciousness-Raising	Increasing awareness and information known about the current status quo and the behavioral change that is needed
Emotional Arousal	Experiencing strong emotions regarding the problem behavior
Self-Reevaluation	Considering how a target behavior—either the current or the ideal future behavior—fits or conflicts with one's personal values, beliefs, and goals
Environmental Reevaluation	Individual considers how their current—or ideal future—behavior will positively or negatively impact others and their environment
Social Liberation	Considers social norms and societal sanctions regarding the current behavior and the targeted behavior change



Behavioral Processes

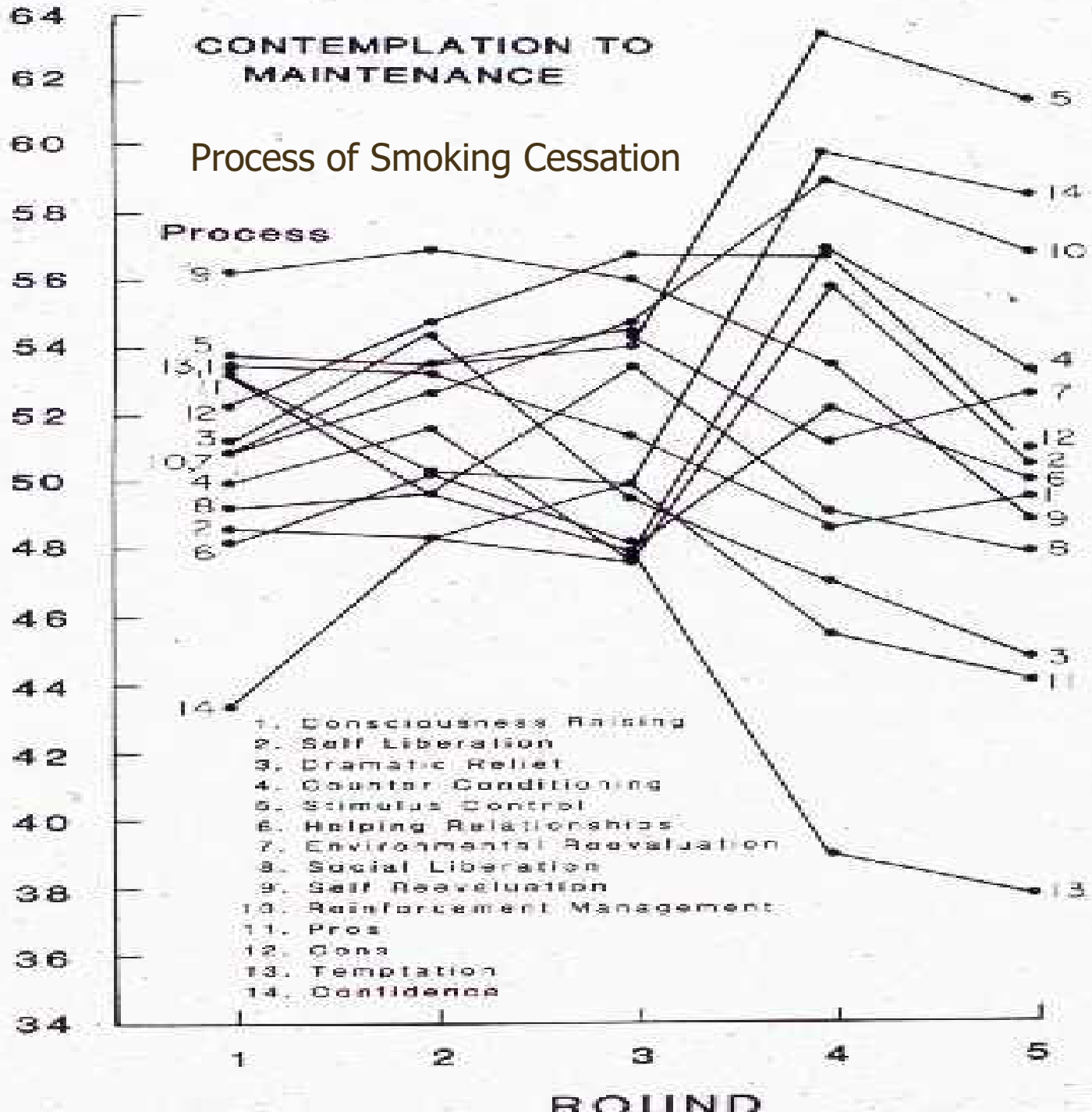
Behavioral Processes	Description
Self-Liberation	Making a choice and commitment to alter one's behavior
Stimulus Control	Creating, removing, or avoiding any cue or stimuli that might trigger one to engage a particular behavior
Counterconditioning	Substituting a new behavioral response to a stimulus instead of a problematic behavioral response
Reinforcement Management	Creating rewards for engaging in a desired behavior and eliminating any rewards received from engaging in the unwanted behavior
Helping Relationships	Enlisting the support of others specifically for eliminating an old behavior or adopting a new one

CONTEMPLATION TO MAINTENANCE

Process of Smoking Cessation

FREQUENCY

Process



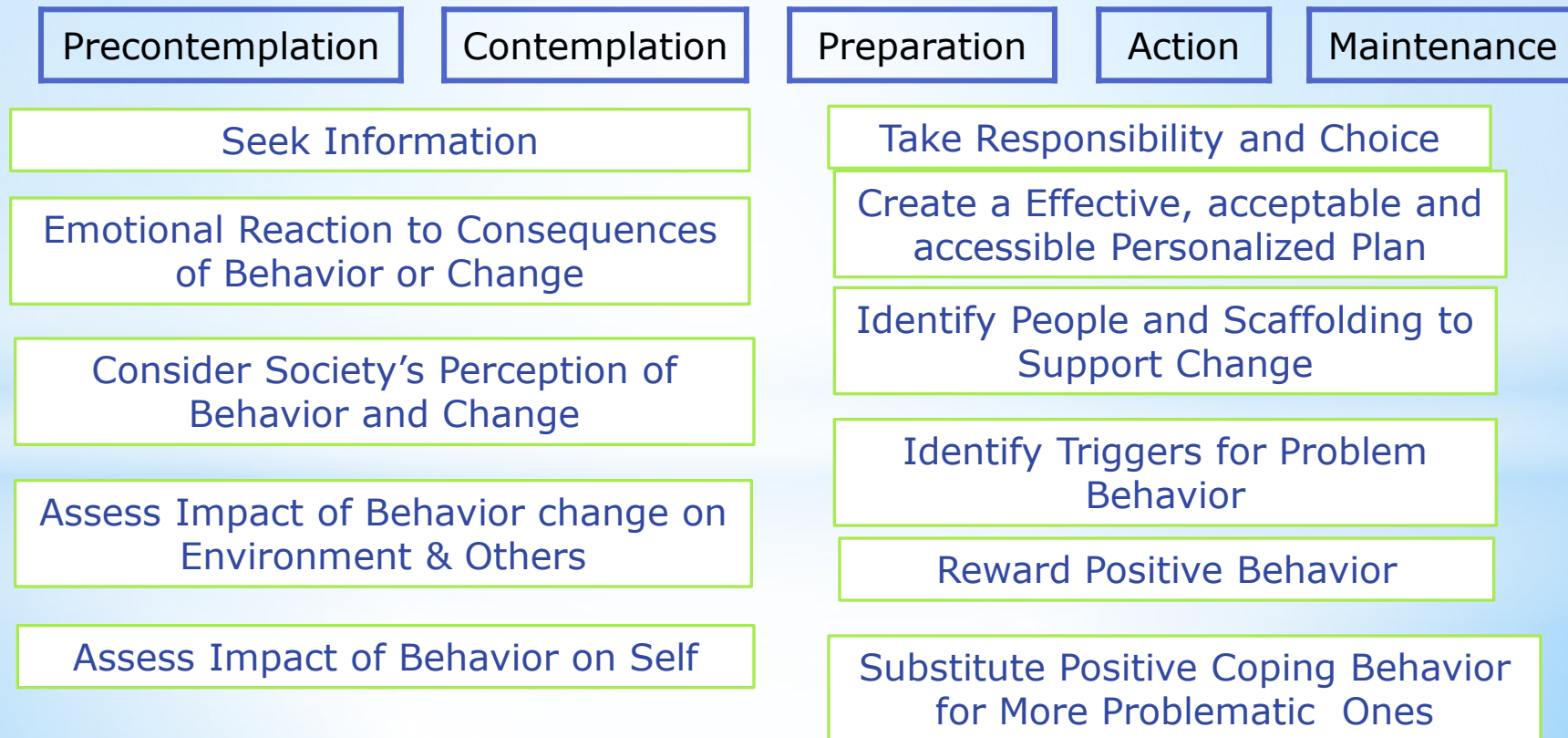
ROUND

This pattern
may differ in
emphasis
depending
on whether
Initiation,
Modification or
Cessation
of a behavior

* Mechanisms of Change

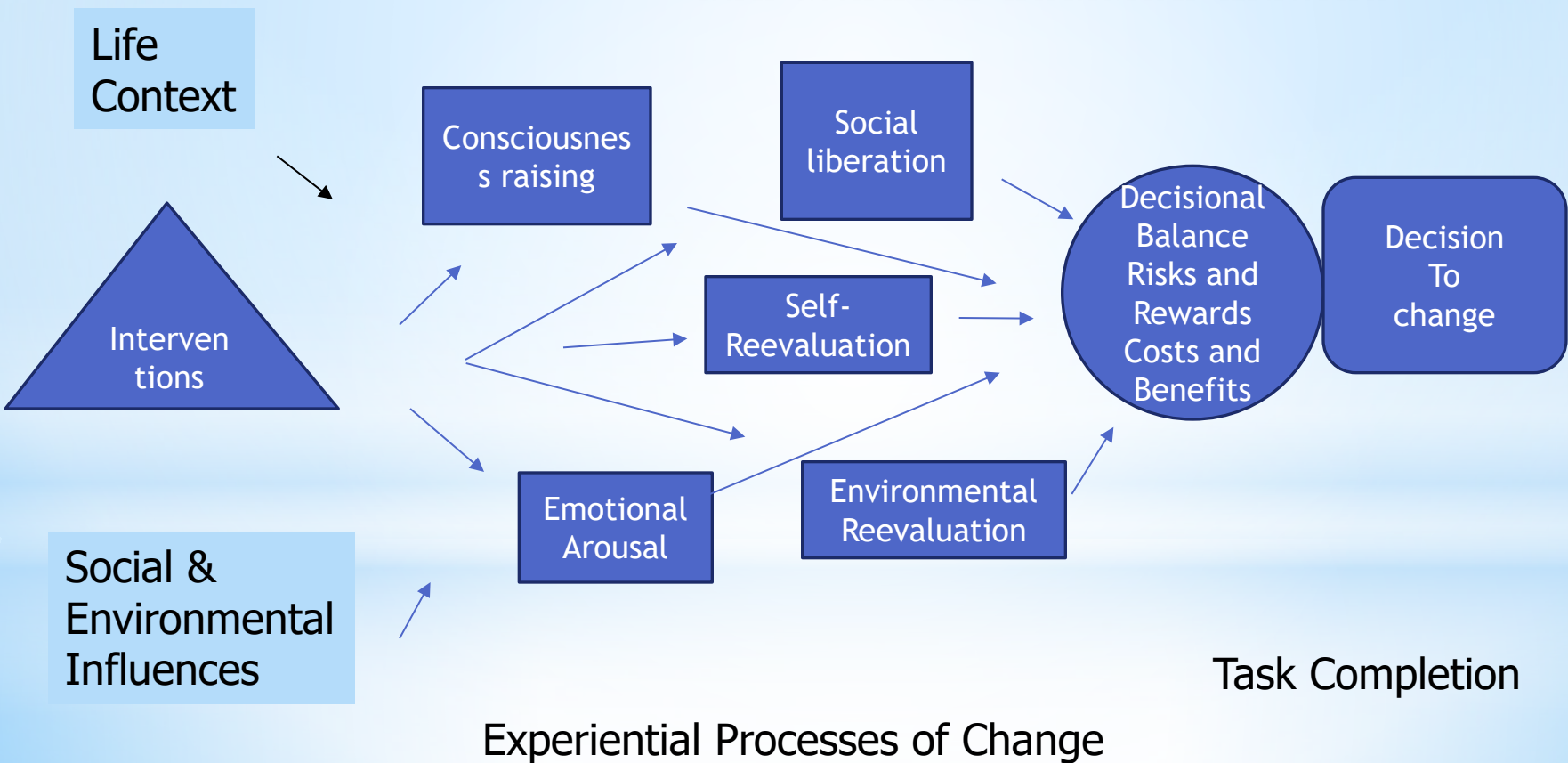
Remember, change happens bit by bit.

To Promote it you need to get
Clients to engage in these activities at
different points in the process.



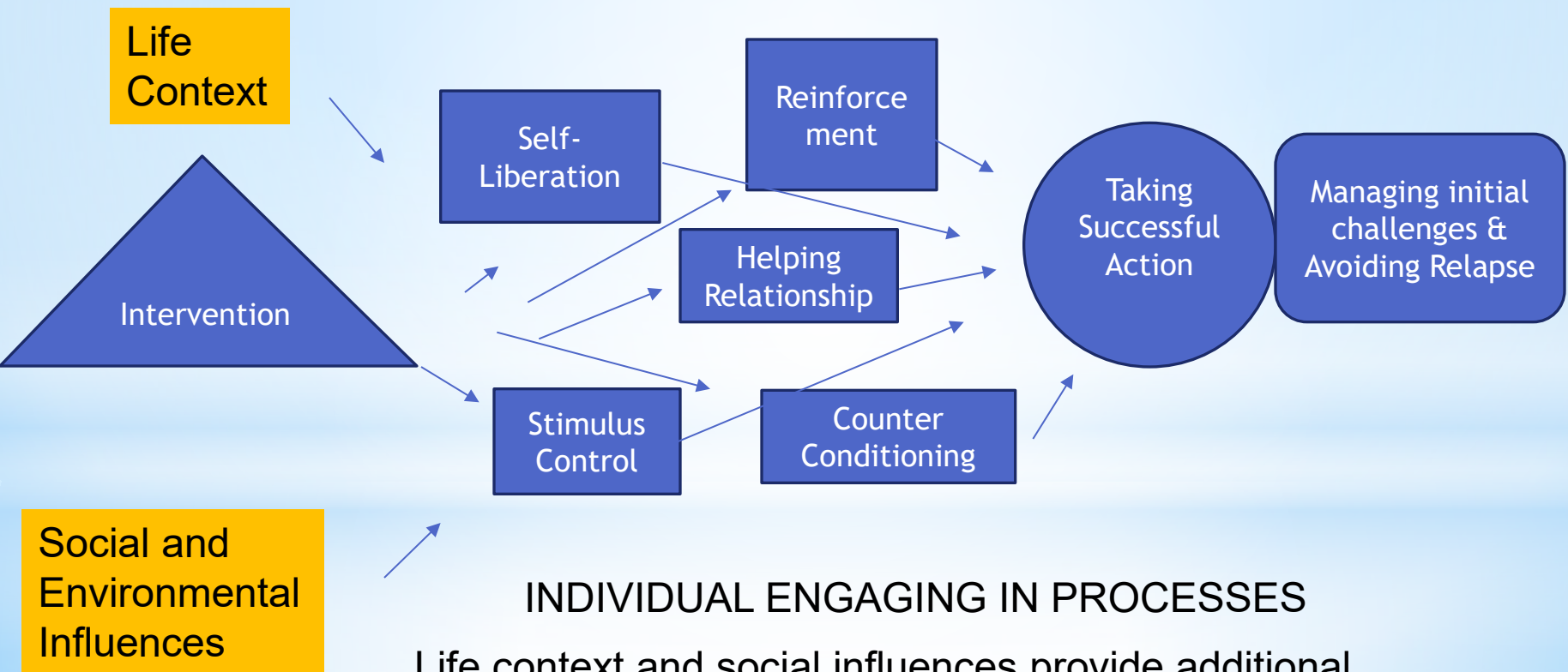
*The interaction of the stage tasks and change processes/mechanisms are the heart of the model

*How intervention activate processes that can support decision making



*The interaction of the stage tasks and change processes/mechanisms are the heart of the model

* How interventions activate processes that can support successful action



INDIVIDUAL ENGAGING IN PROCESSES

Life context and social influences provide additional mechanisms that can promote or hinder specific processes and undermine stage tasks

Take Away: Connecting what we do to client processes of change

Can we identify or develop exercises or activities that can facilitate process use?

Are specific intervention strategies better at facilitating use of the various change processes?

For example, MI seems most appropriate for facilitating experiential process use and CBT, DBT, ACT has interventions that can activate both experiential and behavioral processes.

Challenge: Can we find appropriate strategies to engage specific processes.

Can we put these together in our interventions that specifically targets use of the TTM processes of change in a more integrated fashion?

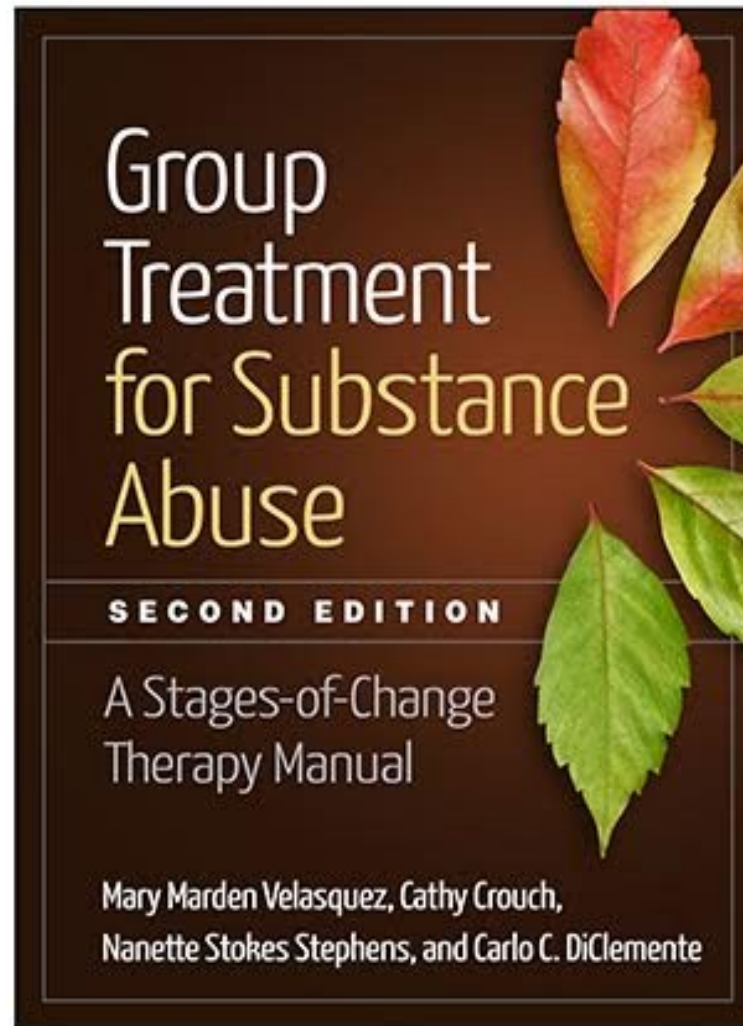
Can we facilitate change process use even in a group format?

One treatment
Approach focused
on processes of
change

Two sets of activities:

one focused specifically
on pre-action stages and
processes and activities

the other set
focused on action
oriented stages and
processes



Heterogeneity of
Group members in
Their process
Of change

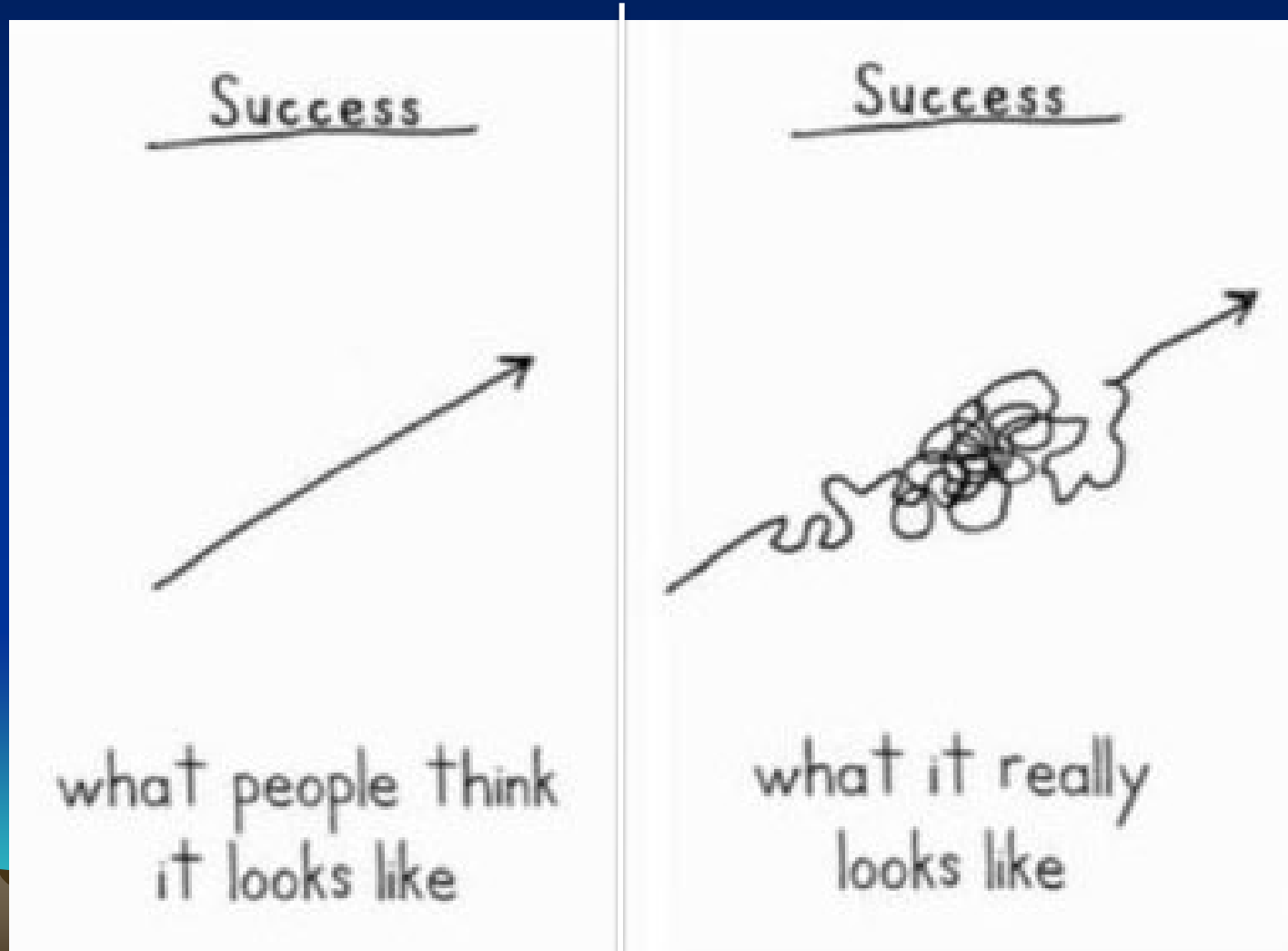
Puzzle Piece: Relapse and Recycling



- Movement through the stages is not inexorably linear:
 - consists of stasis, progression and regression, relapse and recycling
- Relapse is **not** a stage of change
- Recycling through the process is a reality
- There is a difference between successful recycling and just a redo:
 - need a learning perspective



Change \neq Linear Process: Relapse & Recycling

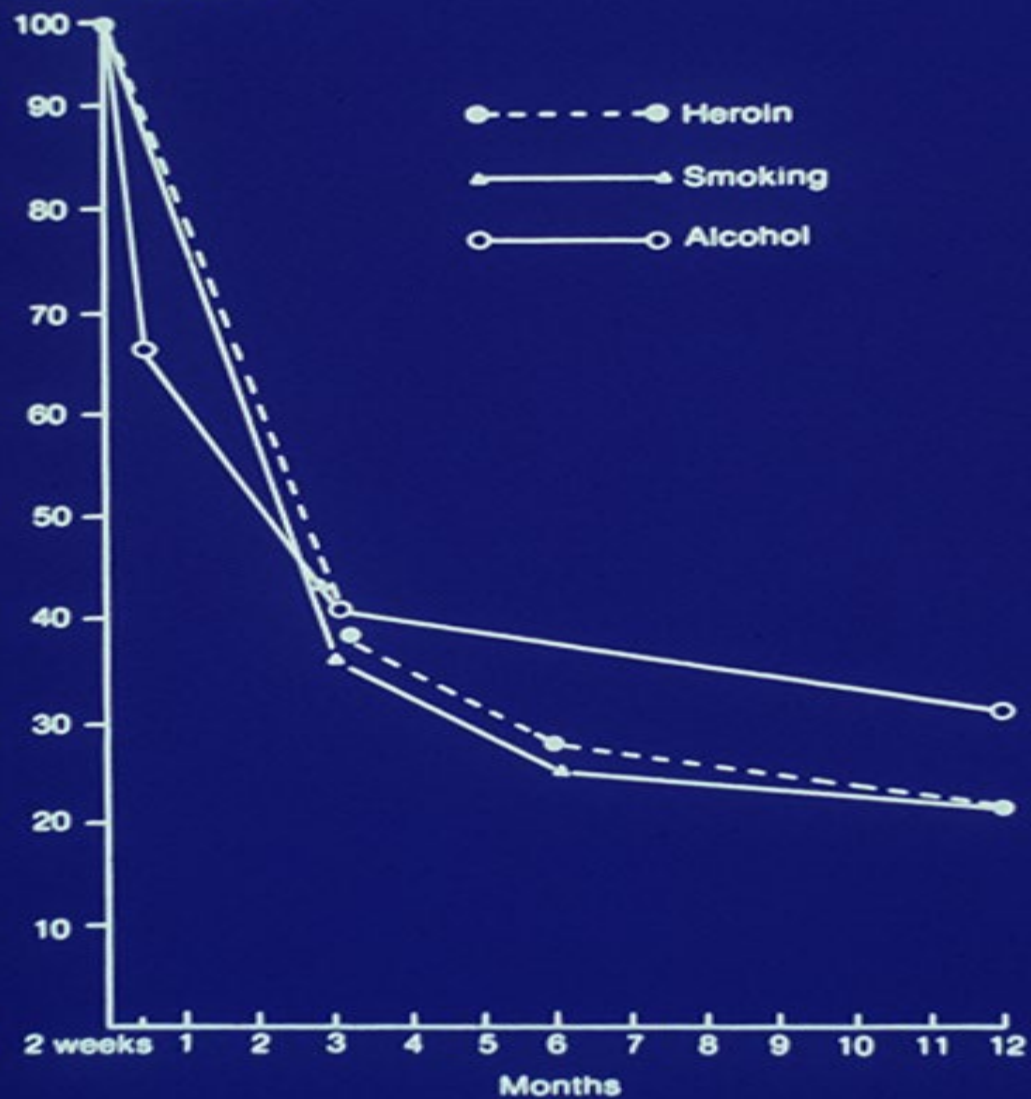


Regression, Relapse and Recycling through the Stages

- ◆ **Regression** represents movement backward through the stages
- ◆ **Slips** are brief returns to the prior behavior that represent some problems in the process or plan
- ◆ **Relapse** is the person giving up on making the change re-engaging to a significant degree the previous behavior after some initial change
- ◆ After returning to the prior behavior, individuals most often **Recycle** back into pre-action stages



Relapse rate over time for heroin, smoking, and alcohol

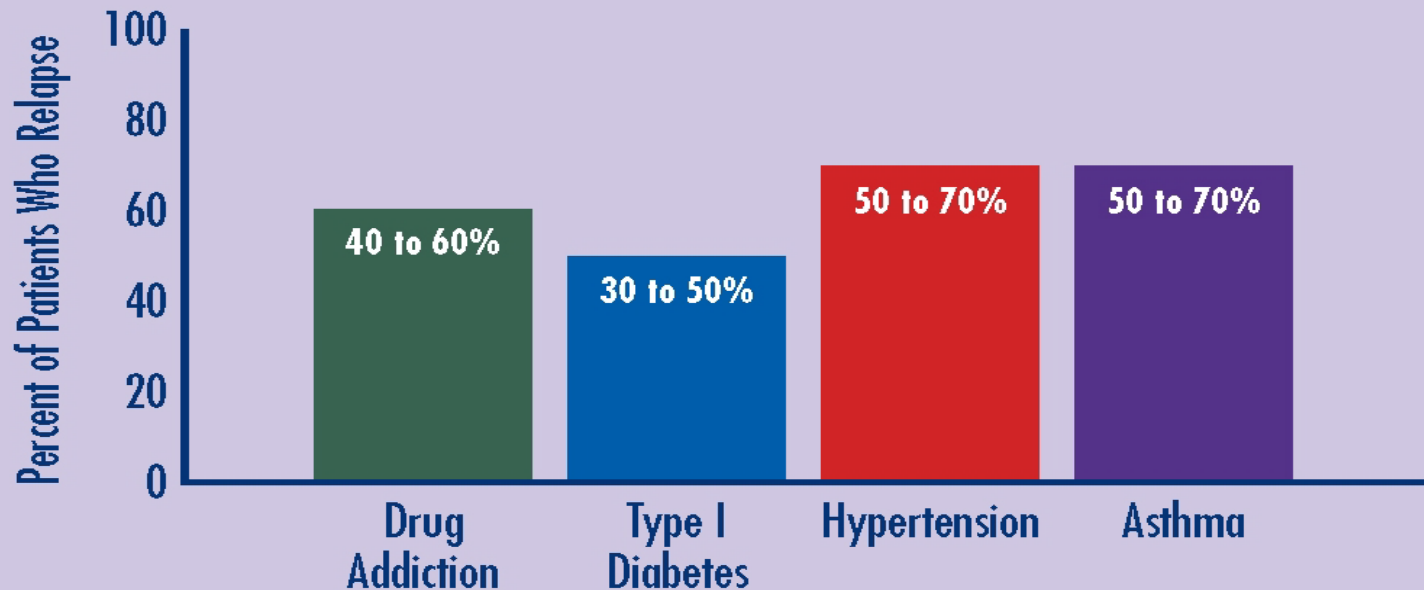


Hunt, Barnett, & Branch, 1971

Relapse is Not a Substance Abuse Problem

- Relapse is probable with any health behavior change (diabetes, diet, medication, exercise)
- Often at same rates as addictive behaviors
- A problem of instigating and sustaining behavior change
 - **Successive Approximation Learning**
- A problem of adequately completing the critical tasks of the stages of change

COMPARISON OF RELAPSE RATES BETWEEN DRUG ADDICTION AND OTHER CHRONIC ILLNESSES



Relapse rates for drug-addicted patients are compared with those suffering from diabetes, hypertension, and asthma. Relapse is common and similar across these illnesses (as is adherence to medication). Thus, drug addiction should be treated like any other chronic illness, with relapse serving as a trigger for renewed intervention.

Source: McLellan et al., JAMA, 2000.

Recycling and Recovery

- What is a “relapse”?
 - Not an arbitrary number of slips, lapses, or collapses
 - Defines as when the individual **gives up** on the change attempt
 - Not a total failure but a learning opportunity
- Individuals who give up on this change attempt **return to a pre-action stage**
- Role of recycling is to learn how to **adequately accomplish** the tasks and engage the mechanisms needed for sustained change and recovery
 - To achieve recovery must **try again** to more successfully move through the stages



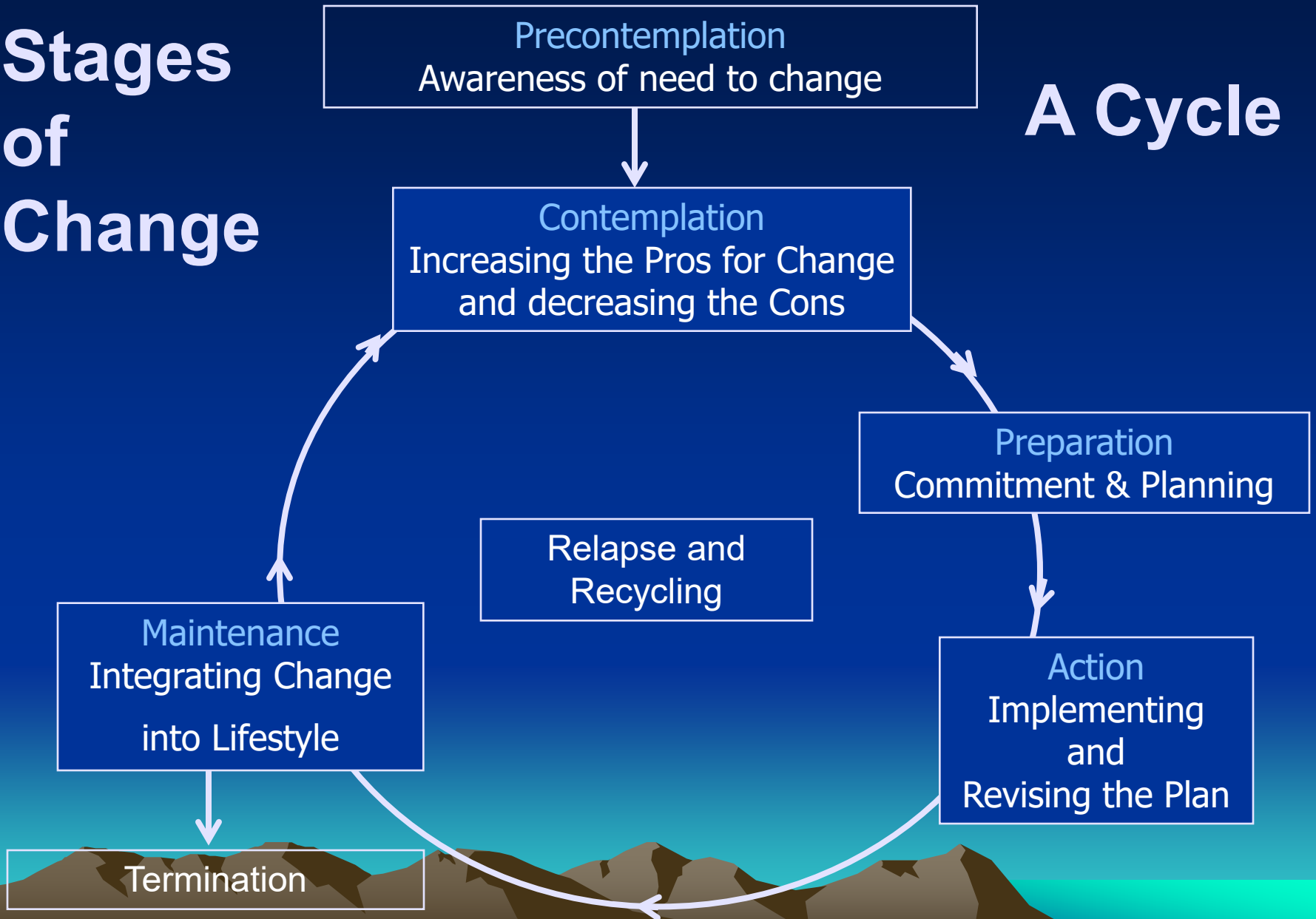
Theoretical and Practical Considerations Related to Movement Through the Stages of Change



What would help or hinder completion of the tasks of each of the stages and deplete the self-control strength needed to engage in the processes of change needed to complete the tasks?

Stages of Change

A Cycle



Puzzle Piece: The Function of Failure

- Failure is important for successive approximation learning: figuring out what went wrong and fixing it.
- The TTM offers a blueprint for HOW change happens and key ingredients
- Getting these tasks done adequately may take multiple attempts
- Recycling Is not just doing the same thing over and over expecting a different result



TASK COMPLETION AND MOVEMENT BETWEEN STAGES

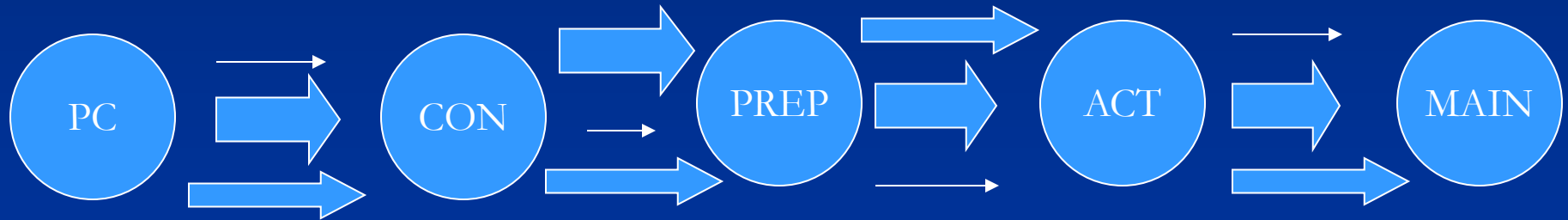
INTEREST
CONCERN

RISK/REWARD
DECISION

COMMITMENT
PLANNING
PRIORITIZING

IMPLEMENT
THE PLAN
REVISE

LIFESTYLE
INTEGRATION
AVOID
RELAPSE



When Debriefing a Relapse: Focus on more than immediate context and triggers

- When debriefing a relapse:
 - Examine whether there was personal and strong interest and concern (not spouse, family, court)
 - Decision – how strong, good reasons, solid risk benefit analysis, supported by important values? Pros and Cons of status quo and of the change
 - How good was the plan (accessible, acceptable, feasible, effective)? Did you revise parts not working?
 - Was your commitment sufficient to manage withdrawal and all the fall out from initiating a change?
 - Did you find some valuable alternatives ,reinforcements and supports?





Relapse is
NOT the
opposite of
recovery.

NOT trying is

- **It is stigmatizing, blaming, and contributes to a fatalistic/failure identity**
- **Recycling on the Road to Recovery**
 - A setback in sustaining change, a mistake that can be corrected, an opportunity to learn, a reoccurrence with lessons learned
 - Need a Long-term multidimensional perspective
 - Focus on Getting Well and Getting Better

Let's retire the term “Relapse”



Puzzle Piece: the Role of Self-Regulation and Control

- Tasks of the stages require not only change generating activities like processes of change
- They require adequate self regulation and self control strength.
- Often Underestimated Change Regulating Mechanism in Addiction and Behavior Change



Self Regulation is closely connected to the Personal Process of Change


- Most self regulation models include self-observation, self-evaluation, decision making, willingness to consider change, and planning (Miller & Brown, 1991, Bandura, 1986; Kanfer, 1986)
- Self Regulation Components (skills, abilities) include:
 - Executive Cognitive Functioning
 - Affect Regulation
- Self Control and self regulation are essential in both initiation and modification of health behaviors
- Both are also critical to beginning and completing the tasks of the stages of change



- “Acts of volition and control require strength”
- This strength is a limited resource that is like a **muscle** that can become **fatigued** and depleted but can be **replenished** with regular exercise followed by periods of rest
 - Not just a Skill or a Capacity

Self-Control Strength

Managing Self-Control Strength

- **Not a limitless resource**
 - **Must be conserved**
 - **Can be increased but not infinitely**
 - **Can be strengthened by exercise of self-control**
 - need time to consolidate gains in strength
 - **Is involved in all efforts to inhibit or perform behaviors**
 - less involved when they become automatic or habitual
- **What depletes SC strength?**
 - **Coping with stress & life**
 - focus attention, monitor, stop thoughts, urges, etc.
 - **Affect Regulation**
 - managing negative emotions of depression, anxiety, anger
 - **Modifying or stopping addictive and excessive behaviors**
 - **Inhibiting thoughts and behaviors may require more self-control than performing behaviors**
- 



Scaffolding: A strategy for
Managing Self Control Strength

- Recognize that this can disrupt the client's work and the process of change
- Provide “scaffolding” - external support systems that can support the change process
- Provide a way the client can build and rebuild self-control muscle
- Make sure the building is well built before you take down the “scaffolding”
- Initial recovery requires adequate time and significant scaffolding

What Can We Do About
Impaired Self Regulation?

A stylized landscape with brown mountains and a blue sky. The mountains are in the foreground, and the sky is a gradient of blue. The text is overlaid on the sky.

Puzzle Pieces: Interventions, Treatment and Self-Change



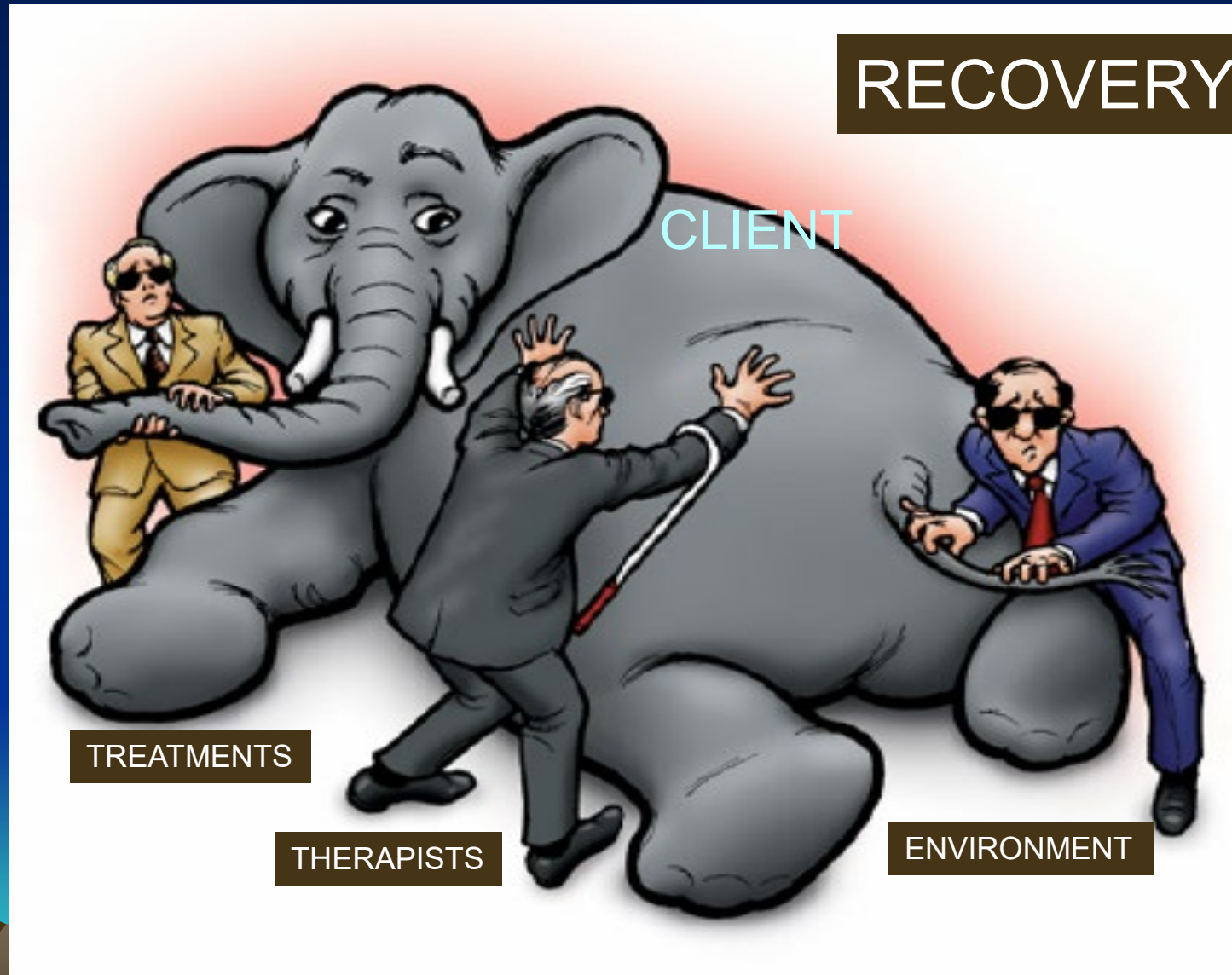
- Treatment behavior change is a version of self change and not a completely different phenomenon
- Interventions can enhance or hinder the personal process of change
- Treatment strategies have to engage client mechanisms of change to have any chance of influencing change
- There is a significant difference between a treatment plan and a change plan

- Many advances in understanding of recovery and the process of change involved in addiction and recovery
- Current scientific and clinical search is for key mechanisms of change –the engines that make behavior change happen in addiction and health.
 - “How” and not just “Why”
- Shifts our understanding of the role of treatment in recovery once we understand the personal process of change

Understanding Recovery over the Past 40 years

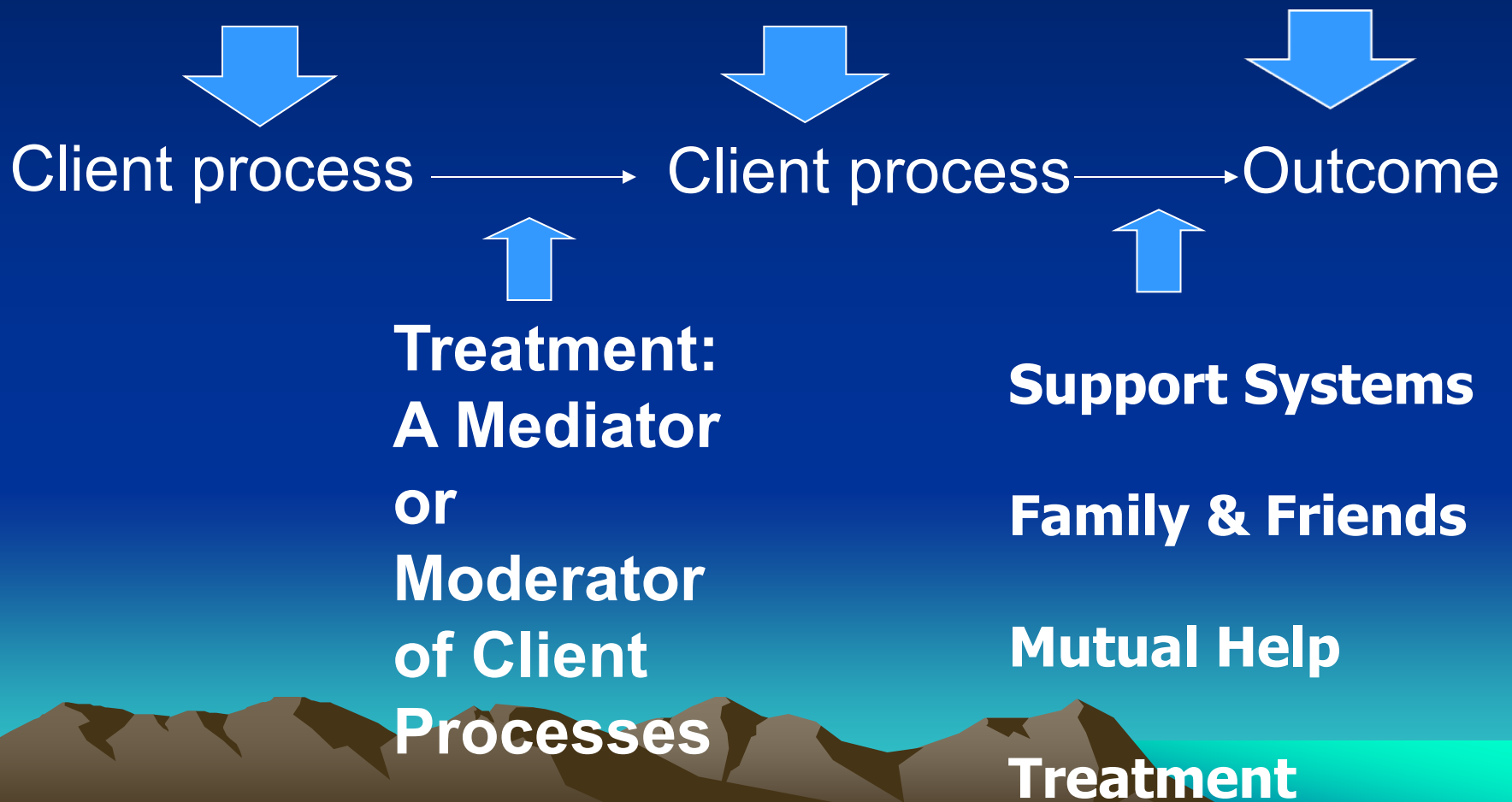


Major Focus of Research on Mechanisms of Change



How Do Treatment and Mutual Help Fit In

Self Regulation: a moderator of change



Evidence for Personal Process of Change Variables

- **Importance of patient behavior during treatment**
 - Commitment language (Amrhein et al., 2003)
 - Patient to therapist talk ratio
 - Setting a date for change (stated intention)
- **Patient evaluations of strengths and vulnerability**
 - Temptation and Craving (PMRG, 1997b; Anton, 2000)
 - Self Efficacy (PMRG, 1998; DiClemente et al., 2001)
 - Temptation minus Confidence (PMRG, 1998 Shaw & DiClemente, 2016)

DiClemente in Miller & Carroll, 2006, ACER 2007



Success Profiles From Project MATCH

- TSF, CBT, and MET treatments produced similar drinking outcomes
- **No important treatment differences on**
 - Stage Subscales, Working Alliance, Temptation to Drink, Abstinence Self Efficacy, Experiential and Behavioral Processes of Change by TX at End of Treatment.
- However, **process dimensions** discriminated between the drinkers outcomes in Project MATCH
- What happens to process dimensions during treatment?
- How do they relate to long-term drinking outcomes?

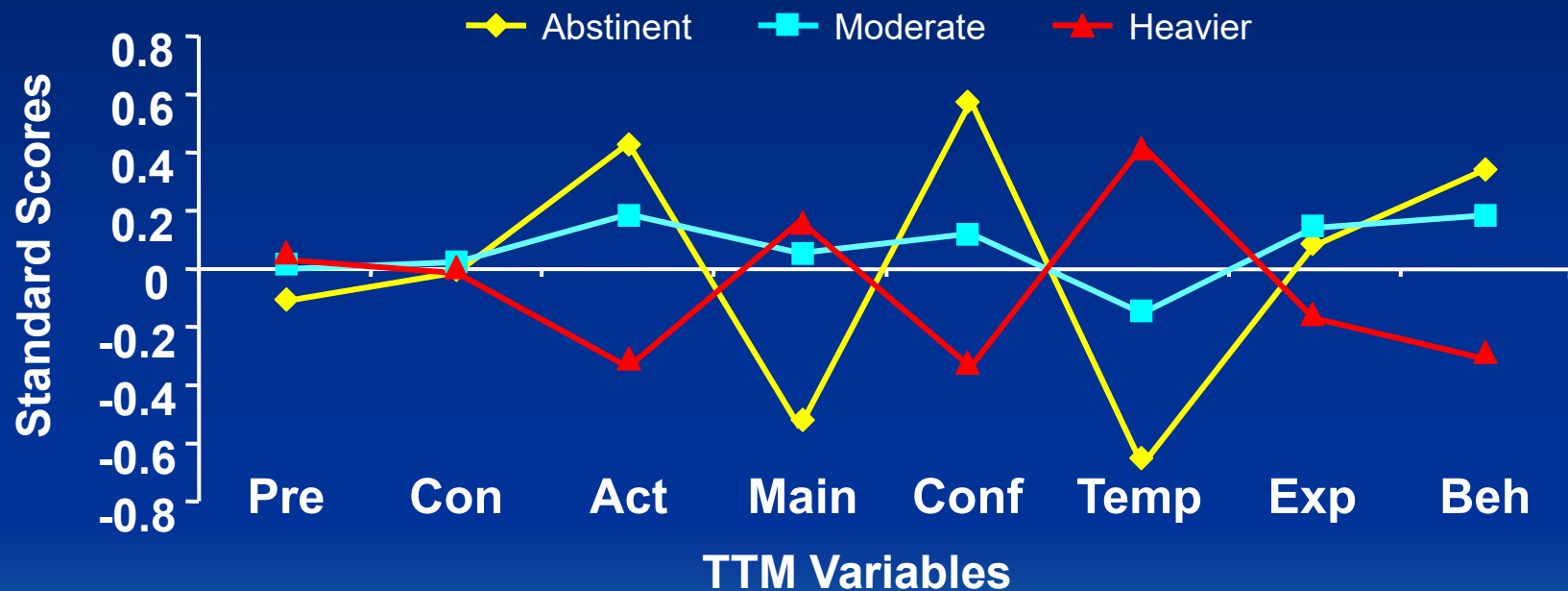
End-of-Treatment-Process Profiles

Predict Outcomes

- **Looking at client drinking during one year follow-up period:**
 - Abstinent
 - Moderate drinking (no binge day)
 - Heavier drinking
- **Baseline and End of Treatment Client profiles:**
 - Stage of Change subscales
 - Temptation to drink,
 - Abstinence self-efficacy
 - Experiential and Behavioral processes of change

TTM Profile:

Outpatient PDA Post-treatment and drinking in the follow-up year

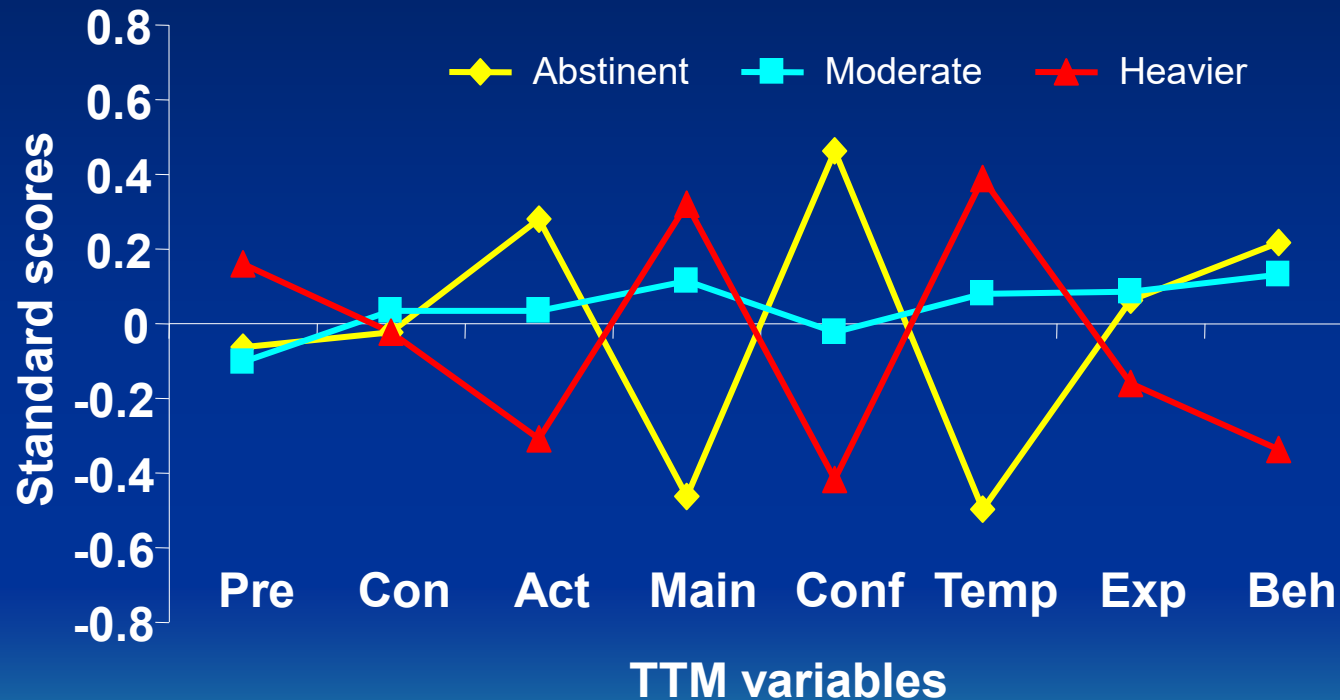


PDA = percent days abstinent

Carbonari, JP & DiClemente, CC. *J Consult and Clin Psych.* 2000; 68:810.

TTM Profile:

Aftercare PDA Post-treatment and drinking in the follow-up year



- The Combining Medications and Behavioral Interventions for Treatment of Alcoholism trial (COMBINE)
- evaluated use of two medications acamprosate and naltrexone,
 - coupled with a low intensity medication management intervention and/or
 - a higher intensity behavioral intervention, CBI.
- Clients received treatment for 16 weeks, and then were followed until 68 weeks after baseline.
- The clients were divided into three groups on post treatment drinking: **abstinent, lighter, and heavier** based on the median percent days abstinent for each time period.
- Treatment group was not significantly related to TTM profile scores.

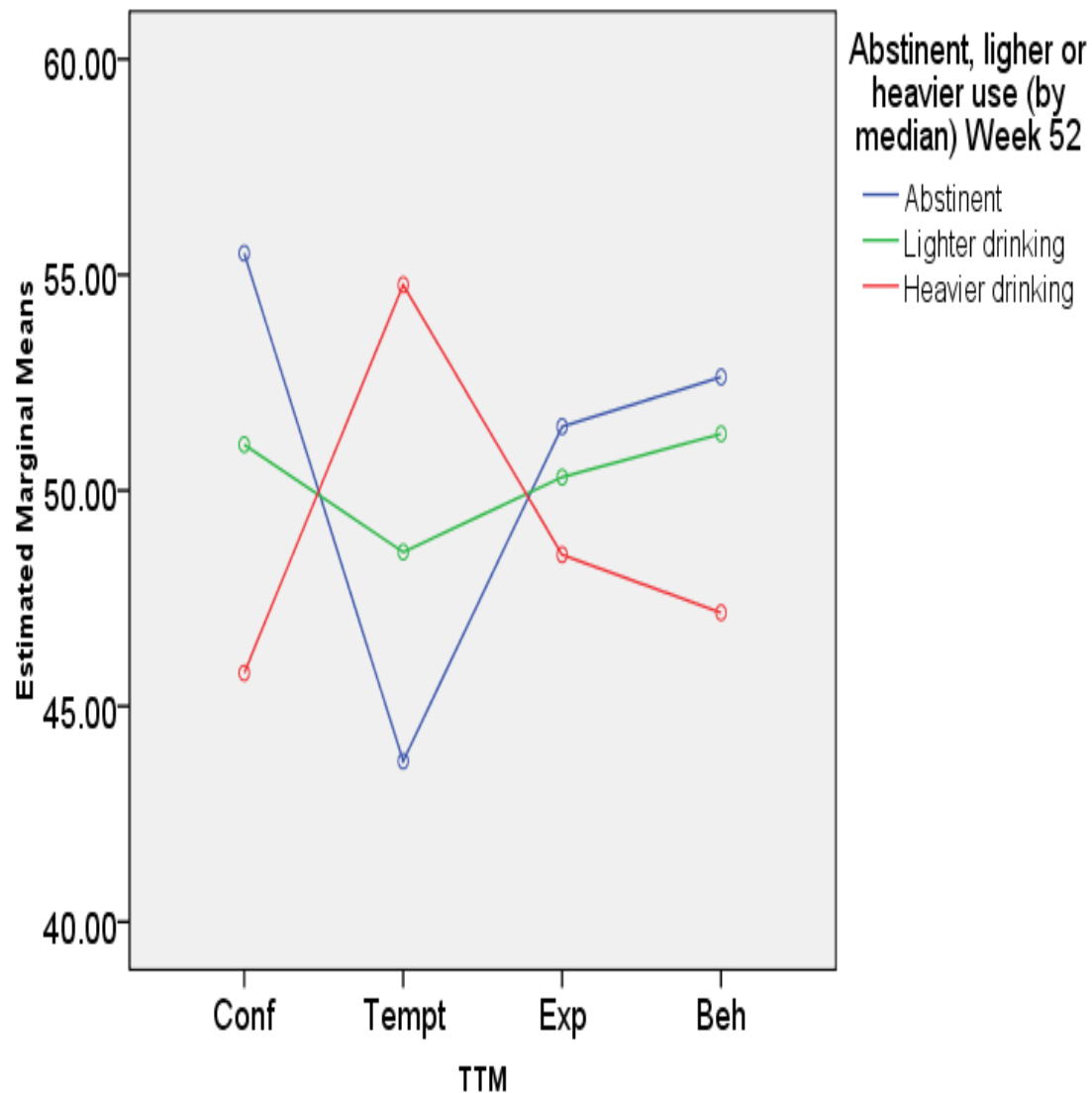
The COMBINE Study



Post treatment(Week 16) Profiles and 52 week drinking: The Combine Study

Drinking at Week 52

- significant differences among on change variables
- Post hoc tests found a significant mean difference between
- heavier drinking group and moderate drinking group ($p=.001$) and
- between the heavier drinking group and the abstinent group ($p<.001$).



Take Away: Getting into and Staying in Recovery for both mental health problems and addictions

- Requires completion of the specific, critical behavior change stage tasks in a manner sufficient to support long term recovery
- Using Processes of Change that can promote and deepen completion of these tasks
- Building confidence, avoiding overconfidence, being realistic about risks; building a healthy and rewarding self-directed life (SAMHSA)
- Keep Trying; Working smarter not harder



Why is Recovery a Marathon?

- Behavior changes are only the beginning
- Recovery is not simply abstinence or the absence of the use disorder or mental health symptoms
- These disorders have disrupted psychological functioning, development, social relations and one's meaning in life
- Sustaining change involves lots of changes in the entire context and functioning of the individual's life
- Need short-term and long-term perspective on recovery



Intentional Behavior Change Process: Puzzle Status

- Not complete but found important pieces:
 - Change is a Process not a Product
 - Motivation is multidimensional
 - Personal Change Process involves tasks and processes - experiential and behavioral activities
 - Sustaining change OFTEN involves successive approximations with chronic conditions
 - Natural or Unaided and Treatment Assisted Change involve a similar process



Current and Future Puzzle Pieces

- Adding More Neuroscience of Behavior Change and Integrating with Treatment
- Measuring the Quality of Completing Stage Tasks (how well tasks like decision making and planning are done)
- Understanding how Intrinsic and Extrinsic influences interact with the Process of Change



Current and Future Puzzle Pieces

- Understanding how to manage the function of failure in successful behavior change
- Exploring the role of self-regulation and self control of making and sustaining change
 - a change regulating mechanism
- Measuring Change Burden and the impact of Life Context on Change and Treatment



Recent Projects

- Screening, Brief Intervention and Referral to Treatment (SBIRT; www.sbirt.umaryland.edu)
- Maternal Infant and Early Childhood Home Visiting (MIECHV) Training Center (www.homevisitingtraining.umbc.edu)
- HABITS Lab (www.umbc.edu/psyc/habits)



Acknowledgements

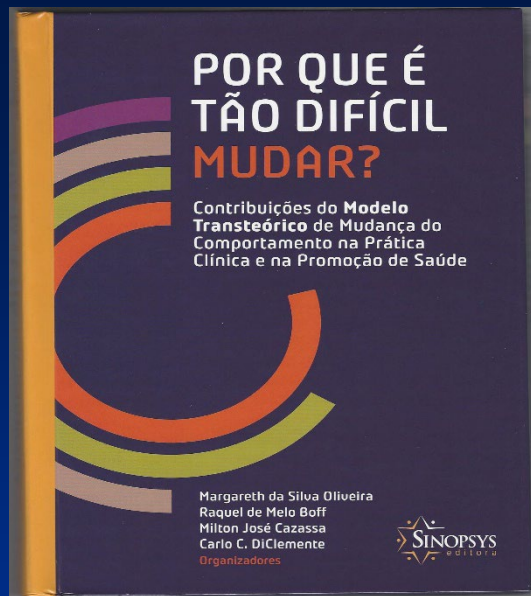
- Thanks to the many colleagues and students who have contributed to this work and have advanced and challenged our thinking and research
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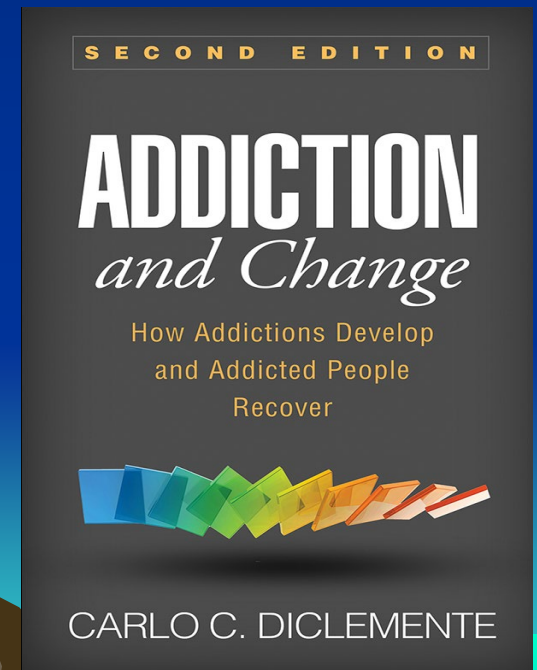
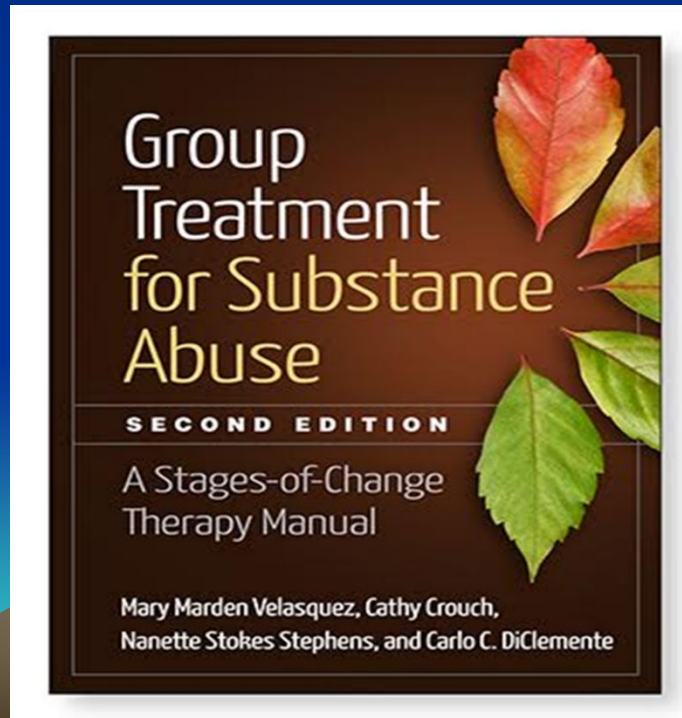
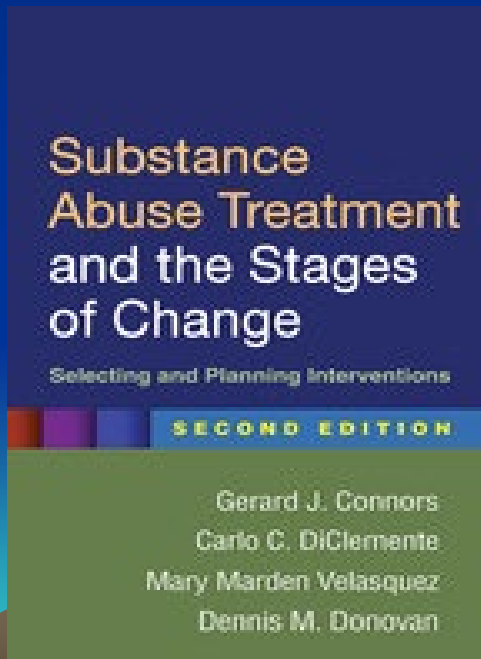
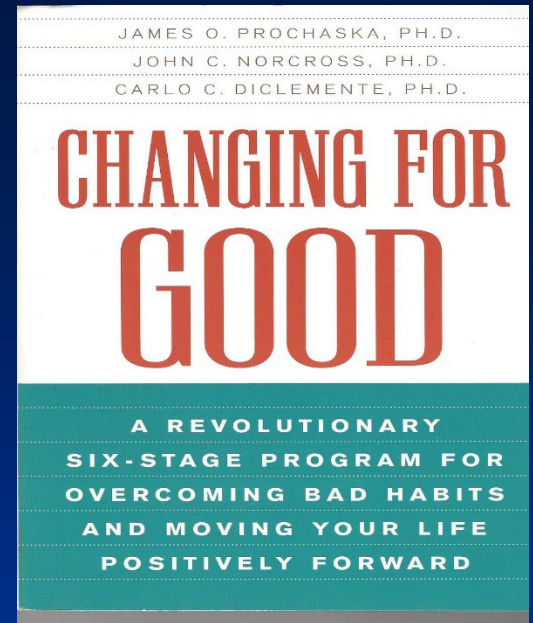
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Health and Addictive Behaviors: Investigating Transtheoretical Solutions





Questions?



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