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Braughtworks Consulting
Applying Science to Practice

Mindware:

Applying the Science of Addiction and Recovery

with

George S. Braucht, LPC*

Braughtworks Consulting &
The Georgia State Board of Pardons and Paroles
Email: george@braughtworks.com

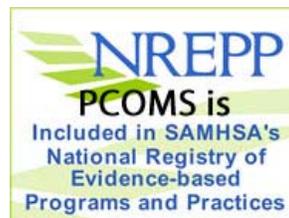
and

Tarusa Tillman, CARES

Phoenix Center Behavioral Health System
Email: tarusaadams@phoenixcenterbhs.com

*Certified Trainer in Partners for Change Outcome Management System (PCOMS) services with the Heart and Soul of Change Project: www.heartandsoulofchange.org

*Co-founder of the Certified Addiction Recovery Empowerment Specialist (CARES) Academy: www.gasubstanceabuse.org



The Endless Vine: An ancient symbol
of life, infinity or the interweaving wisdom of the
flow of time and movement on the path with That Which Is Eternal



Mindware: Applying the Science of Addiction and Recovery

This workshop highlights the combination of genetic and environmental factors that influence the brain, body, mind and behavior, and in particular, the effects of alcohol and other drug use. Understanding these influences is vital to tailoring treatment and recovery activities that work for varied individuals. Over 40 years of clinical neuroscience research and several thousands of years of mindfulness practices shows that intentionally and repeatedly focusing attention impacts the growth of brain cells (neurogenesis), the density of their interconnections and the speed with which they communicate (synaptogenesis) and the physical reallocation of brain areas (cross-modal functional neuroplasticity). Current evidence-based practices for changing behavior and health conditions includes addressing addiction, criminality, depression, and obsessions-compulsions. An enhanced awareness of one's emotions, thoughts and behaviors significantly improves how we manage and respond to the external environment, including other people. Research shows that an essential element for achieving long-term recovery is sustaining engagements in social support. During this session we will practice mindware techniques for managing our perceptions, decisions and behavior.

Objectives. Upon completion of this training participants will be able to:

- A. Identify three brain-mind changes (neuroplasticities) that are associated with lifelong brain development.
- B. Explain withdrawals, tolerance, addiction, relapse and recovery based on changes that occur in the brain-mind.
- C. Recognize the impact of self-directed mental force for identifying and replacing deceptive brain-mind generated messages that hold us back from recovery or other changes that we want to make.
- D. Practice mindfulness techniques for sustaining long-term recovery.

Notes, Doodles and **My Top Three Takeaways:**

Below is an outline of the training content that follows the PowerPoint. The slides contain copyrighted graphics and audio-visuals and, for that reason, may not be reproduced. A Science of Addiction booklet and presentation is available at:
<http://www.drugabuse.gov/publications/science-addiction>.

1. The problem: Addiction is a chronic health condition
2. The solutions: Listen to recovery stories. African proverb: Until lions have historians, tales of hunting will always glorify the hunter.
3. Attitudes about addiction and recovery: Is it a Disease? Behavior problem? Moral/emotional weakness? Or Different causes for different people? **Each view values a particular pathway to recovery!**
4. From a recovery-oriented systems of care perspective there are many pathways to recovery: Mutual support groups, Professional treatment, Faith-based groups, Medication-assisted treatment, “Natural” or on your own, And more indigenous routes. A menu of recovery pathway options.
5. *Likelihood of sustaining abstinence another year grows over time.
 - a. Over a third of people with less than a year of abstinence will sustain it another year
 - b. After 1 to 3 years of abstinence, fewer than half return to AOD use
 - c. After about 5 years of abstinence, only about 14% resume AOD use
6. *What recovery looks like on average based on duration of abstinence.
 - a. 1-12 months: More clean and sober friends; Less illegal activity and incarceration; Less homelessness, violence and victimization; Less use by others at home, work and by social peers
 - b. 1-3 years: Virtual elimination of illegal activity and illegal income; Better housing and living situations; Increasing employment and income
 - c. 4-7 years: More social and spiritual support; Better mental health; Housing and living situations continue improving; Dramatic rise in employment and income; Dramatic drop in number who live below the poverty line

*Dennis, Foss & Scott (2007). An eight-year perspective on the relationship between the duration of abstinence and other aspects of recovery. *Evaluation Review*, 31(6), 585-612.
7. Recovery Screening Test:
 - a. Lift your right foot off the floor and make clockwise circles.
 - b. With your right hand, draw a "6" in the air.
 - c. If your foot stopped or changed direction, recovery is possible for you!



8. Your brain on drugs in the 1980s: Egg in the frying pan
9. Today's brain imaging: Magnetic resonance imaging (MRI) machine
10. Your brain on drugs today
 - a. Yellow = where cocaine binds in the brain
 - b. The Mind says, "This must be life enhancing (or not)!"
11. Individual variability: The \$64 million question. Why do some people become addicted while others do not?
12. A genetic contribution to how the brain reacts to AODs exists but both genetic and environmental contributions are important to prevention, treatment and recovery. Behavior is a function of people interacting in an environment: Behavior = People X Environment.
13. People vary in what they find pleasurable because of how their brain reacts to experiences: sex, drugs...
14. Dopamine (DA) receptors and responses to Ritalin (methylphenidate; MP): One theory suggests that subjects with less DA receptors find MP pleasant while those with higher numbers find MP unpleasant
15. Thinking about addiction and recovery: three causes. 1) Biological (genetic, feelings), 2) Psychological (emotions & thoughts) and 3) Social (context). To understand the causes we turn to neuroscience to help explain addiction and recovery
16. The brain is complex:
 - a. Approximately 4-6 pounds
 - b. An estimated 100 billion neurons
 - c. 10,000 varieties of neurons
 - d. Neurons communicate via an electro-chemical process
 - e. Miles of blood vessels
 - f. Connections among neurons estimated at 10^{10}
 - g. A sensory pattern-detection and map/meaning-making organ → **The Mind**
17. Dualism - An automatic meaning-making process = perception
18. Mindware 1: Perception (meaning-making) is automatic subconscious and conscious triggering of thoughts, feelings and/or images. Genetic based sequence: 1. Figure vs. ground,

2. Safe vs Unsafe, 3) Trust vs Untrustworthy, 4) Makes sense vs WTH, 5. ??? vs ??? We automatically create Mind Maps: Me Map, You Map, We Map
19. You cannot not “see” center lines of unequal lengths
 20. Mindware 2: What one focuses on (sensations, thoughts, feelings and/or images) activates specific circuits or connections among neurons in the brain and nerves in the body
 21. One can choose what is focused on
 22. Context/environment helps us define reality: A, B, C vs 12, 13, 14
 23. Mindware 3: Our social brains have evolved to be especially sensitive to others
 24. Do you see the the mistake? 4, 5, 6, 7, 8, 9, 11, 12, 13, 14
 25. Where and on what we focus our attention matters!
 26. “I’ll only have one drink!!!” Do you automatically think “Liar” or see the face of a client/peer? Here’s an alternative truth.
 27. Mindware 4: Focusing attention creates a state of activation. Repeatedly creating an intentional state over time changes the brain and produces a trait that is automatic & unconscious = habit
 28. It all begins and ends with neurons: from your sensory receptors to the nerves that control your muscles. Everything you feel, remember or dream is written in these cells.
 29. The parts of a neuron: dendrites, soma (cell body), and axon – information flows in that direction
 30. Good luck! Neurotransmitters
 31. Picture of a synapse, the tiny gap between neurons
 32. All drugs target the brain’s pleasure/reward pathway. Releases oxytocin, dopamine, etc. Triggers prediction error learning, and integrates body-based and other’s emotions into the decision-making process
 33. Dopamine levels with food (+50) and sex (+100)



34. Dopamine levels with amphetamine (+900), cocaine (+250), nicotine (+250) and morphine (+100)
35. Brain adaptation to alcohol and other drug use/repeated behavior: 1) Use → change (increase) in neurotransmitter levels, 2) Brain → stops neurotransmitter production to re-establish biological balance (homeostasis), 3) Result → a period of reduced brain functioning before returning to normal → Craving
36. The triune brain. Three systems in the brain evolved over time and changes continue from conception to death. Oldest parts develop first, newest last and from the bottom of the brain to the top and from the back to the front.
37. Reptilian brain: maintains homeostasis. Subconscious mind controls autonomic functions essential to sustain life
38. Limbic system: adds emotions and memory that can modulate the reptilian system. Subconscious mind and autonomic functions. The five F's: feeding, fighting, freezing, fleeing and mating. Manages stress. Promotes self-regulation by predicting then avoiding negative and repeating positive experiences
39. Neocortex or cerebral cortex: Thinking, planning, problem solving, dreaming, etc.
40. Where addiction starts in the brain: The limbic system. Reacts subconsciously to environmental stimulation/patterns. Creates powerful emotions and memories, both pleasant (joy) and unpleasant (fear), that drive survival (instinctual) behavior
41. The circuits in all brain regions must be considered in developing strategies to effectively treat addiction
42. The brain/body/mind adapts to repeated alcohol and other drug use. Anticipation of use triggers a change (increase) in neurotransmitter/hormone levels that boost emotions and pre-use preparation. Results in more of the drug being needed to get the desired effect = Tolerance
43. Understanding people's behavior while addicted or struggling with recovery. Brain systems change due to AOD use. The mind: a) **overrides** factual memory storage (hippocampus), b) **dampens** recall of negative emotions due to the intensity of even temporary, positive ones (amygdala) and c) **re-sets** logical reasoning and behavioral priorities (prefrontal cortex). Thus we can explain behavior that "flies" in the face of logic, e.g., return to AOD use
44. Decreased brain function in methamphetamine abuser compared to a non-user

45. What about returning to alcohol and other drug use? Cravings are due to **external & internal** triggers/anchors that set off a physiological chain reaction from the brain or the body - fight/flight/tend/etc. Examples of external triggers: People: “That wrong crowd”, Places: The Corner, Celebrations, and Things: Cash, Payday, Fridays, overhearing a conversation, a song/tune, a commercial, drug paraphernalia, etc.
46. Examples of internal triggers: **HALT: states of deprivation or excess** – Hungry or Happy Angry or Aggravated, Lonely or Love, Tired or Tempted
47. Brain adaptations: Cravings and returns to alcohol and other drug use. The complex brain systems affected by AOD use set and re-set our behavioral priorities
48. So, prolonged AOD use Causes both structural/physical changes in neurons and functional adaptations in brain structures and neurotransmitter pathways and...Changes the **mind!**
49. However, recovery is real. Partial recovery of brain dopamine transporters in methamphetamine abuser after protracted abstinence – 1 month detox vs 14 months detox
50. Brains off drugs today: Prolonged substance use injures the brain and healing takes time. 10 days of abstinence vs 100 days of abstinence
51. Brain-Mind-Behavior Changes. Brain adaptation accounts for: Drug intoxication & withdrawal, Tolerance & wanting to use, Cravings (relapse) & needing to use, and Recovery
52. Comparing addiction with other chronic medical conditions: Hypertension, diabetes and asthma
53. Why compare to these Illnesses? No Doubt They Are Illnesses, Influenced by Genetics and Behavior, Chronic Conditions, and No Cures but Effective Treatments are Available
54. Relapse rates are similar for addiction and other chronic health conditions
55. Recovery can and does happen! Research has shown that: The brain has a remarkable ability to adapt, heal and change. The key is the length of time and one’s experiences after drugs leave the body.
56. The recovery process takes time for the brain to adapt and: Heal = adjust to the absence of the drug, Replace conscious and subconscious responses to relapse triggers, and Learn new ways to experience pleasure



57. Managing recovery = healing and rewiring the brain by: Active and sustained engagement with the recovery community and Mindful focus on progressive wellness - Biological/physical, Emotional/behavioral, Environmental
58. Mindware Summary.
- a. Perception (meaning-making) is automatic and subconscious triggering of thoughts, feelings and/or images
 - b. What one focuses on (sensations, thoughts, feelings and/or images) activates specific circuits or connections among neurons in the brain and nerves in the body
 - c. Our social brains have evolved to be especially sensitive to others
 - d. Focusing attention creates a state of activation. Repeatedly creating an intentional state over time changes the brain and produces a trait that is automatic & unconscious = a habit
 - e. Mindful reflection: a. activates the social circuitry of the brain that also overlaps with the regulatory circuitry = reduced stress and improved immune function, enhances the capacity for compassion and empathy, balancing emotions and thoughts, creating insight, and shifting identity. Adapted from Siegel, D. J. (2010). Mindsight: The new science of personal transformation. New York: Bantam. www.drdansiegel.com (Mindfulness: paying attention to the moment with intention while letting go of judgment as if your life depends on it – Dr. Jon Zabat-Zinn; www.psychalive.org)
59. Recommended resources
- Dr. Dan Siegel: www.drdansiegel.com
 Faces and Voices of Recovery (FAVOR): facesandvoicesofrecovery.org
 HBO's Addiction: hbo.com
 Join Together: jointogether.org
 Dr. Jon Zabat-Zinn; www.psychalive.org
 National Institute on Alcohol Abuse and Alcoholism (NIAAA): niaaa.nih.gov
 National Institute on Drug Abuse (NIDA): nida.nih.gov
 Substance Abuse and Mental Health Services Administration (SAMHSA): samhsa.gov
 William L. White: williamwhitepapers.com
 Georgia Council on Substance Abuse: gasubstanceabue.org
 Brauchtworks Consulting: brauchtworks.com
60. Three key takeaways: 1) Addiction, very much like other chronic health conditions, affects the brain, mind and behavior, 2) Recovery, very much like other chronic health conditions, requires daily management.
61. The main takeaway: HOPE is everywhere because over 23 million Americans are in long-term recovery!

62. Do what works for recovery! Start by doing what's necessary, then do what's possible, and suddenly you are doing the impossible! St. Francis of Assisi





Participant Feedback

Title: **Mindware: Applying the Science of Addiction and Recovery**

Presenter: George Braucht

Date: _____ Location: _____

Please ✓ **all** that apply: Male Female

- American Indian/Alaska Native
- Asian.....
- Black or African American
- Hispanic or Latino
- Native Hawaiian/Other Pacific Islander.....
- White
- Other: _____

	Poor				Excellent
	1	2	3	4	5
1..Please rate your overall impression of this seminar/presentation.	<input type="checkbox"/>				
Please rate the presenters on the following aspects of effectiveness.					
2. Explained the purposes of the session.	<input type="checkbox"/>				
3. Defined terms and concepts clearly.	<input type="checkbox"/>				
4. Gave clear instructions.	<input type="checkbox"/>				
5. Is knowledgeable about the concepts presented.	<input type="checkbox"/>				
6. Established an environment that was conducive to learning.	<input type="checkbox"/>				
7. Answered questions clearly and completely.	<input type="checkbox"/>				
8. Provided reasonable opportunities of participations and interaction.	<input type="checkbox"/>				
9. Made learning interesting and exciting through his enthusiasm.	<input type="checkbox"/>				
	1	2	3	4	5
	Poor				Excellent

Please continue on the back.

Participant Feedback (cont.)

Please rate the seminar/presentation on:	Poor				Excellent
	1	2	3	4	5
10. Content relevance.	<input type="checkbox"/>				
11. Training methods.	<input type="checkbox"/>				
12. Handouts.	<input type="checkbox"/>				
13. Training site and location.	<input type="checkbox"/>				
14. Training room comfort - space, lighting, temperature, acoustics & ventilation.	<input type="checkbox"/>				

Based on this workshop, I am able to:

15. Identify three brain-mind changes (neuroplasticities) that are associated with lifelong brain development;	<input type="checkbox"/>				
16. Explain alcohol and other drug tolerance, craving and recovery based on changes that occur in the brain-mind	<input type="checkbox"/>				
17. Explain alcohol and other drug tolerance, craving and recovery based on changes that occur in the brain-mind	<input type="checkbox"/>				
18. Practice mindfulness techniques for sustaining long-term recovery.	<input type="checkbox"/>				
	1	2	3	4	5
	Poor				Excellent

19. What aspects of the workshop did you find most helpful?

20. What aspects could be improved?

21. If an advanced workshop were held on this topic, what content would you hope to see addressed or covered? Please comment.

22. In summary, I would like the workshop organizers and trainer(s) to know...

Thank **you** for providing this feedback!