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When Neuroscience and Therapeutic Community Meet
Most people who use AOD’s do not develop AOD addiction. Many factors contribute to the transition from use ⇒ abuse ⇒ dependence/addiction.
In Therapeutic Community

- The psychosocial aspects of AOD Disorders & MH comorbidities have long been understood
Baseline Psychosocial Factors

- The degree of access within mainstream Australian society to AOD substances from a very early age.
- The degree of tacit cultural/societal acceptance and tolerance toward AOD substance use in mainstream Australian Society.
The interaction of the individual’s cognitive style and the individual’s emotional experience with the pharmacogenic effects of the AOD substance available within a given social/cultural context are critical to establishing AOD abuse and addiction/dependence.
The way an individual within their culture/social setting labels or evaluates a situation determines the emotional and behavioral response to it and how they experience the pharmacological effects of a substance (positive, negative or neutral).
Psychosocial Factors

- Invalidating environments (family-of-origin; family-of-choice; current peer social network)
- Defects in identity formation and cognitive processing of personal self-efficacy
Psychosocial Factors

- Maladaptive coping strategies in the face of stressors or subjective experience of physical/psychological stress
Psychosocial Factors

- Imbalances in lifestyle and lifestyle choices
- Negative affect states particularly those associated with experiences that are negatively interpreted via affect-laden cognitions when recalled
Psychosocial Factors

- Positive affect states particularly those associated with anticipated or current experiences that are positively interpreted via affect-laden cognitions.
- Inter-personal and intra-personal conflict
Encounters with high risk stimuli /cues/ triggers “people, places & paraphernalia”

History of chronic and sustained AOD use from an early age,
Psychosocial Factors

- Frequent episodes of AOD “binging” and/or AOD abuse disorder
- Separation from partner or rarely in a sustained intimate relationship
Psychosocial Factors

- Unemployed, never employed or never sought employment
- Comorbid personality disorders particularly dissocial personality disorder,
- Lack of realistic long-range goals,
Psychosocial Factors

- Poor sense of responsibility,
- Poor frustration tolerance,
- Poor impulse control
- Poor ability to delay gratification of immediate desires for the sake of achieving long-term goals
Is There Much Comorbidity?

Depends who you are counting

“You can use statistics to say anything Occasionally, this includes the truth.”

Mark Twain
12-Month Prevalence Rates as %

- **AOD Disorders**
  - Males: 7%
  - Females: 3.3%
  - Total: 5.1%

- **Anxiety Disorders**
  - Males: 11%
  - Females: 18%
  - Total: 14.4%

- **Affective Disorders**
  - Males: 5.3%
  - Females: 7.1%
  - Total: 6.2%

- **Comorbid AOD-MH**
  - Males: 11.9%
  - Females: 5.2%
  - Total: 8.7%

National Survey of Health and Wellbeing, 2007
12-Month Prevalence Rates as %


- AOD Disorders
- Anxiety Disorders
- Affective Disorders
- Total AOD-MH

1997:
- AOD Disorders: 7.7
- Anxiety Disorders: 9.7
- Affective Disorders: 6.2
- Total AOD-MH: 11.9

2007:
- AOD Disorders: 5.1
- Anxiety Disorders: 14.4
- Affective Disorders: 5.8
- Total AOD-MH: 8.7
12-Month Prevalence Rates as %

- AOD Disorders: 7.7% (1997), 5.1% (2007), 5.8% (Goldbridge)
- Anxiety Disorders: 9.7% (1997), 14.4% (2007), 6.2% (Goldbridge)
- Affective Disorders: 41.6% (1997), 26% (2007), 11.9% (Goldbridge)
- Total AOD-MH Comorbidity: 100% (1997), 37.1% (2007), 11.9% (Goldbridge)

Personal Powerlessness To Alter Internal States Or External Circumstance without AODs

Change Cognitive Processes (How & What We think)

Change Affective Processes (Our Mood & Emotional Valence)

Change Behavioural Processes (What we do & How we do it)

Increase Responsivity
Think More Feel More Behave More

Decrease Responsivity
Think Less Feel Less Behave Less

Modify Responsivity
Think Differently Feel Differently Behave Differently
Genetic factors, most likely polygenic,
- alcohol dependence have a 50% and 64% potential predisposing heritability factor
- Other Drugs - highly variable - probably less than 34% to 44% potential predisposing heritability factor.
5 Neuroscience Contributions to AOD

- AOD-related maladaptive neuroplastic changes to the motivational reward system
  - parts of the limbic system,
  - hippocampus,
  - amygdala,
  - caudate nucleus,
  - ventral tegmental area,
  - parts of the frontal lobe and
  - nucleus accumbens
Neuroscience Contribution to AOD

- Specific dysregulation of the interactions of centrally and peripherally acting neurotransmitters and hormones:
  - γ-aminobutyric acid (GABA),
  - glutamate,
  - dopamine,
  - opioids,
  - epinephrine,
  - norepinephrine,
  - serotonin,
  - dopamine,
  - acetylcholine,
  - cannabinoids,
  - corticotropin-releasing factor (CRF),
  - neuropeptide Y.
**Neuroscience Contribution to AOD**

- Significant neurological impairment in the ability to tolerate biopsychological stress
- Extensive over-learning of self-destructive, semi-automated, cognitive-affective-behaviour loops ("Habits")
The Big Three in AOD

- Personalized Stress
- People, Places & Paraphenalia;
- Negative Emotional States
Acute Stress

- Amygdala: increased dendritic growth of spiny processes
- Hippocampus: increased formation of synaptic spines in the CA1 region

Chronic Stress

- Amygdala: Increased dendritic growth of spiny processes
- Hippocampus: debranching of dendrites
- Pre-frontal cortex: debranching of dendrites
- Dentate Gyrus (DG): suppressed neurogenesis

Tsunami (Examples) Addiction
Neurogenesis suppressed in DG

Dendritic shrinkage in hippocampus

smaller cell bodies in hippocampus

Chronic Exposure to Stressors including AODs
Neural Basis of Reward & Craving

- Components of reward:
  - hedonic component
  - incentive motivation component
Pleasurable Feeling

Hedonic Component

Individual’s Internal Homeostatic State

Conditioned Behaviour

AOD Seeking & Using

Stimuli (AOD-cues)

“People, Places & Paraphernalia”

Individual’s Social & Physical Environment
Neural Basis of Reward & Craving

- Hedonic pleasure - the core of reward processing
  - A subjective state
    = positively perceived sensations + affect-laden cognitions in response to different stimuli
The First Truth of Addiction

“The Life of Addiction is a Life of Disorder & Suffering”

Even in the best moments of my addiction there was disorder, pain & suffering in my body, my mind and my relationships.
- “This Disorder & Suffering is Created” - I understand that my addiction is but a symptom of the greater disorder and suffering that has been created throughout my life thus far and which I keep re-creating.
The Third Truth of Addiction

- “This Disorder & Suffering Can be Transformed” - My life will be transformed when I cease re-creating the causes of disorder & suffering, and begin creating the causes of recovery which are a new identity and a new lifestyle.
There are Eight Habits that Transform Disorder & Suffering

- When I fully adopt the Eight Habits of Effective Recovery Living, I will cease recreating the causes of suffering and disorder in my life and begin creating the causes of recovery.
8 HABITS

- **HABIT 1 - PRACTICE AWARENESS**
  - Self Awareness
  - Awareness of My Environment
- **HABIT 2 - LIVE RESPONSIBLY**
  - Self-responsibility
  - Responsible Concern
  - Self-Care
HABIT 3 - BE TRUSTWORTHY
- Honesty
- Integrity
- Reliability

HABIT 4 - DEVELOP A SUPPORTIVE NETWORK
- Engage in Pro-Social Behaviour
- Maintain a Minimum of Eight Supportive people

HABIT 5 - LIVE RESPECTFULLY
- Self Respect
- Respect for others
- Respect for Property
8 HABITS

- HABIT 6 – THINK CONSEQUENTIALLY
  - Uses STOP –THINK-DO Reasoning
  - Challenges Irrational Thinking
  - Accountability

- HABIT 7 – PROCESS THE PAST
  - Forgive Others
  - Forgive Self

- HABIT 8 – PLAN YOUR LIFE THEN LIVE YOUR PLAN
  - Weekly Planning
  - Contingency Planning (“Fire Escape”)
  - Relapse Prevention