



Addiction, Pain, and the Brain

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Agenda

- How Pain Travels
- How the Brain Interprets Pain
- Reward Circuitry System
- Impact of COVID-19

Why?

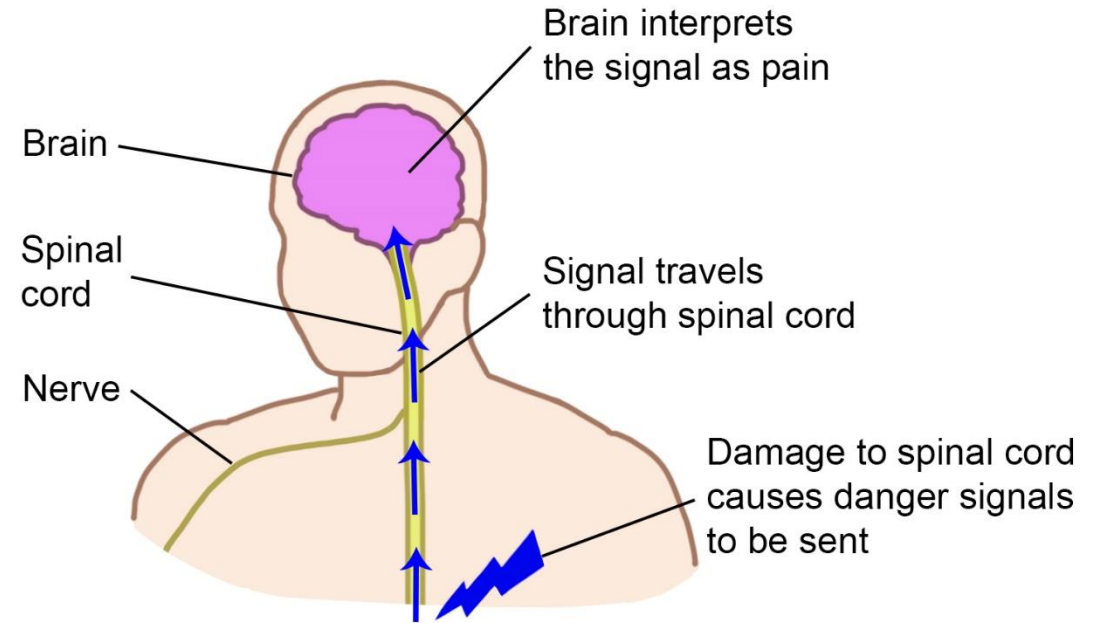
In order to understand why substance abuse and other addictions often occur, it is pertinent to first understand pain.

Pain is both emotional and physical. The mind and body communicate on a bi-directional axis to share pain (danger) signals.

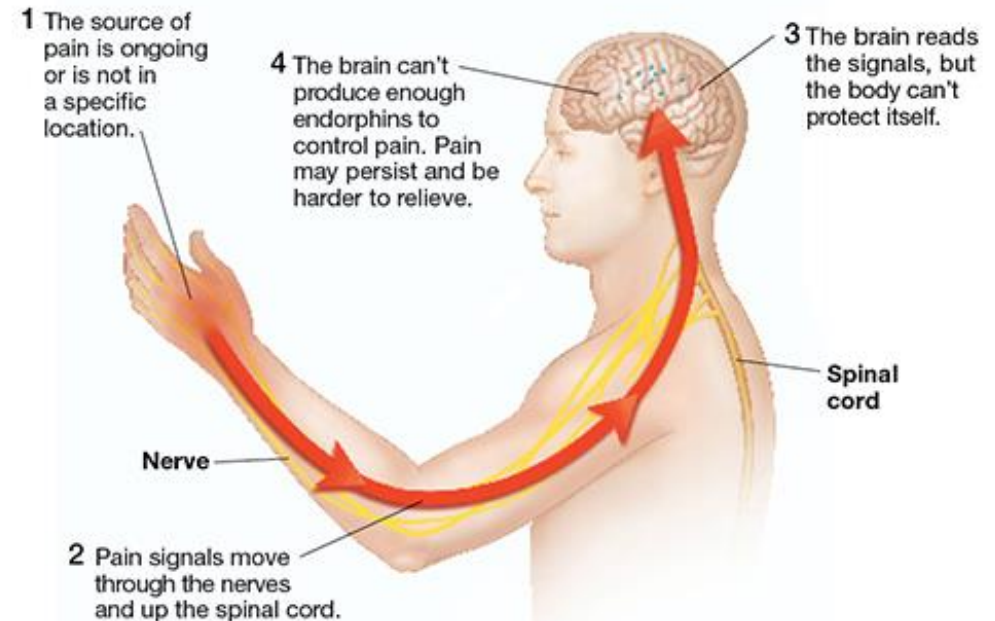
How Pain Travels / Your Alarm System

Theoretically

Acute:

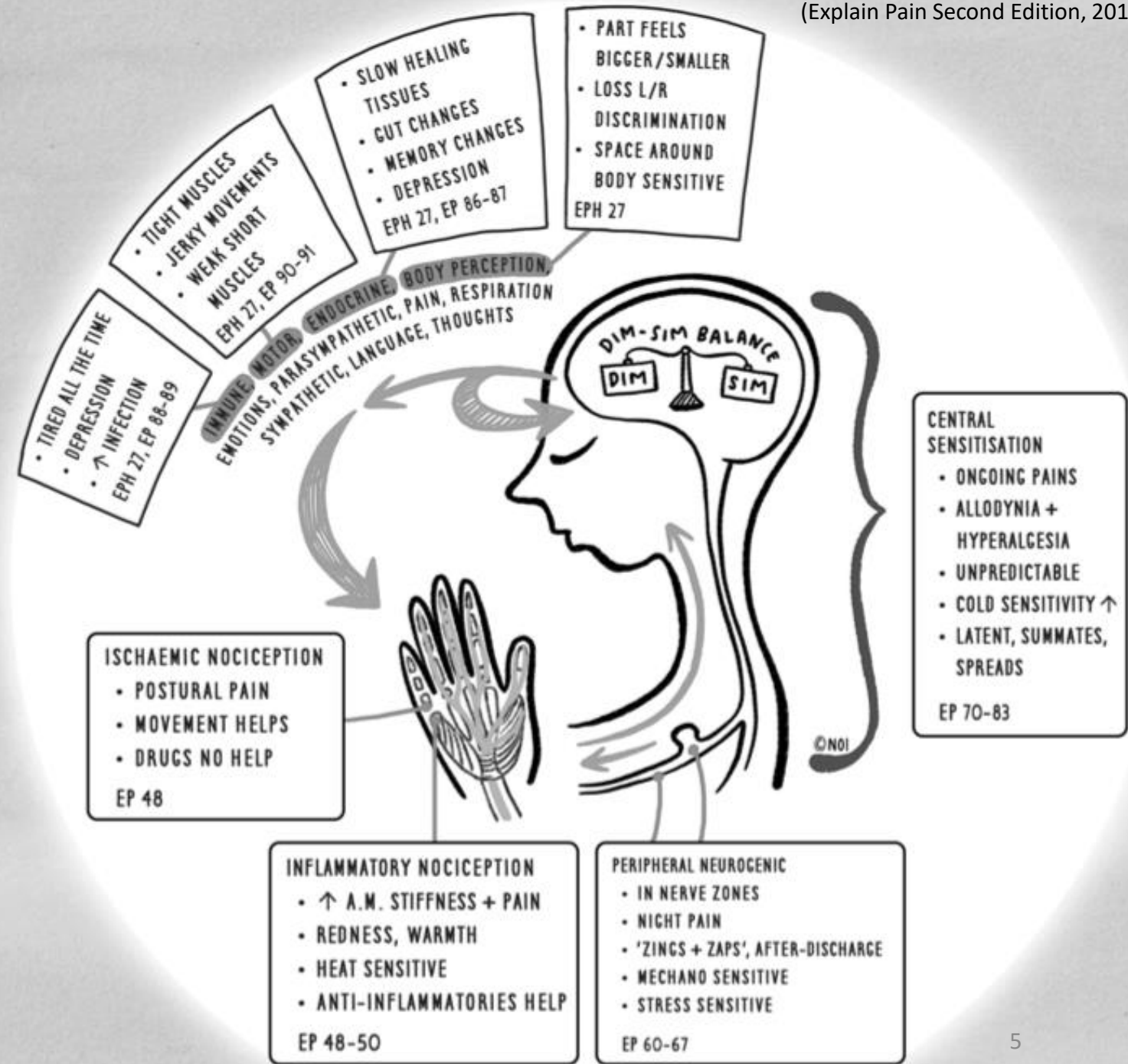


Chronic:



How Pain Travels / Your Alarm System

In Reality





How the brain interprets pain

“When pain persists and feels like it is ruining your life, it is difficult to see how it can be serving any useful purpose. But even when pain is chronic and nasty, it hurts because the brain has concluded, for some reason or another, that you are threatened and in danger and need protecting – the trick is finding out why the brain has come to this conclusion...”

(Explain Pain Second Edition, 2013)

Pain is Multifaceted

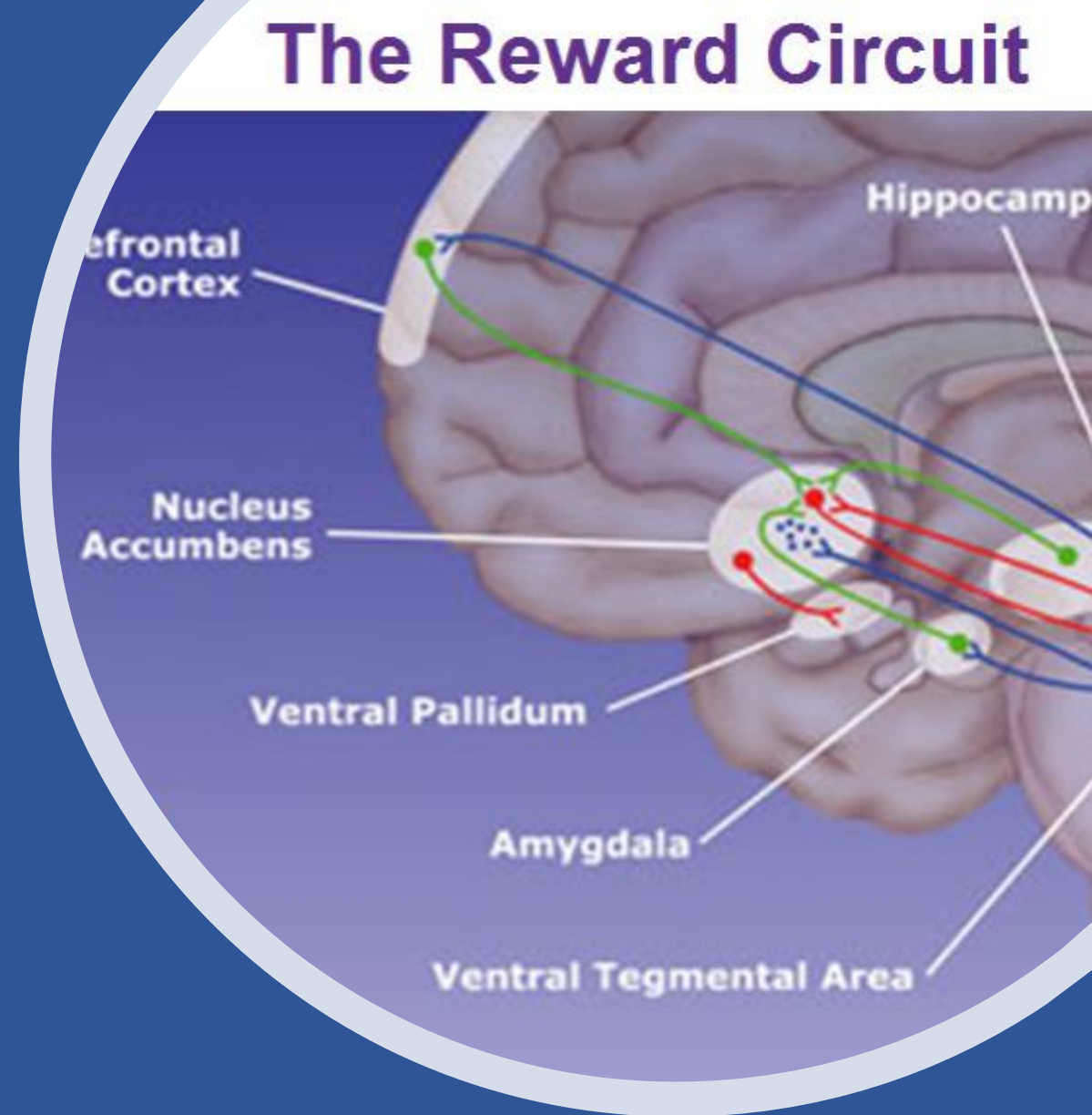
Pain is both emotional and physical. The mind and body communicate on a bi-directional axis to share pain (danger) signals.

- NOI Concept: DIMS/SIMS (Explain Pain Second Edition, 2013)
- Many of us do not know how to take control of our emotional and physical pain, the brain can become overwhelmed with the imbalance of DIMS vs. SIMS
- This leads to desire for escape from the pain...

The Reward Circuit

The Reward Circuit

- The Reward Circuit is a collection of brain structures and neural pathways that are responsible for motivating and rewarding a person's behaviors.
 - The reward system involves two main processes: **hedonic pleasure (i.e. "liking")** and **motivation to obtain rewards (i.e. "wanting")**
 - The neurobiology of the reward system includes **endogenous opioids** in brain regions including the orbitofrontal cortex, the anterior cingulate cortex, the amygdala, and the nucleus accumbens.
 - **Motivation** to pursue rewards is primarily driven by **dopamine** signaling in the mesolimbic circuit.



Pain and Addiction

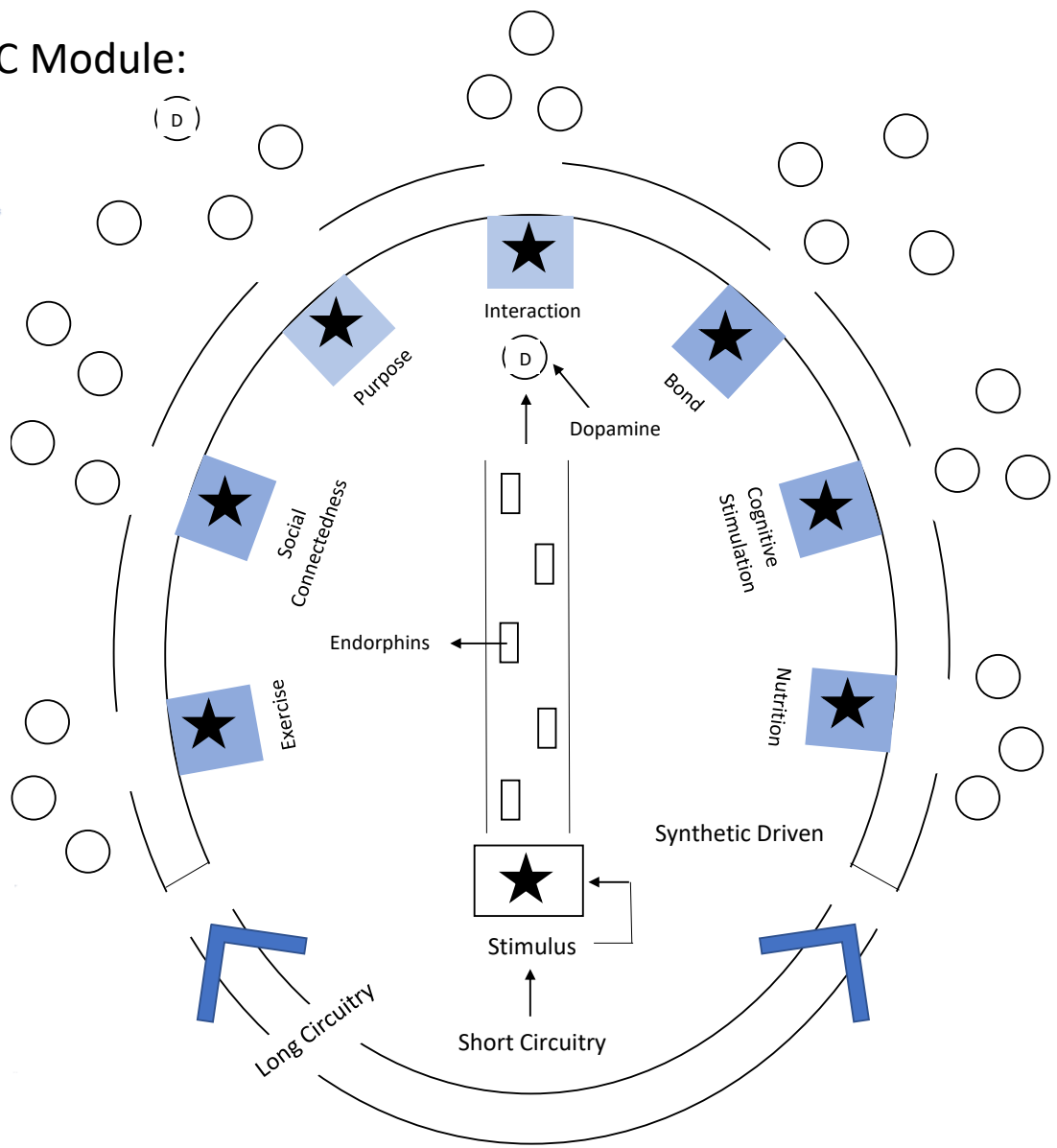
When in pain, sometimes the easiest way to cope is to numb the pain or escape through use of synthetic stimuli, such as substances, gambling, food, etc.

This “escape” rewards us through a different channel than healthy means of escape.



Reward Circuitry of Addictive Behaviors

Recovia, LLC Module:



Short vs Long Term Reward Circuitry

What The Reward Circuit and Addiction Studies Teach Us

The importance of:

- Connection, socialization, community
- Sense of purpose
- Exercise/ nutrition
- Hobbies/ cognitive stimulation

This knowledge in combination with the current pandemic begs to question the impact of COVID-19 on our mental health and the rise in addiction issues.

(Gage & Sumnall, 2019)

Initial Psychological Impacts of COVID-19

- Societal/environmental change in individuals, families, and communities
 - increase in anxiety and danger signals
 - Reactions built on fear, igniting Fight or Flight response (ex. Toilet paper)
 - Trying to gain a sense of control in uncertain times
- Hopelessness, despair, grief/bereavement, loss of purpose
- Social isolation
- Poor emotional regulation/ stress tolerance
- Hypervigilance can arise from fear, anxiety, and result in PTSD and/or depression

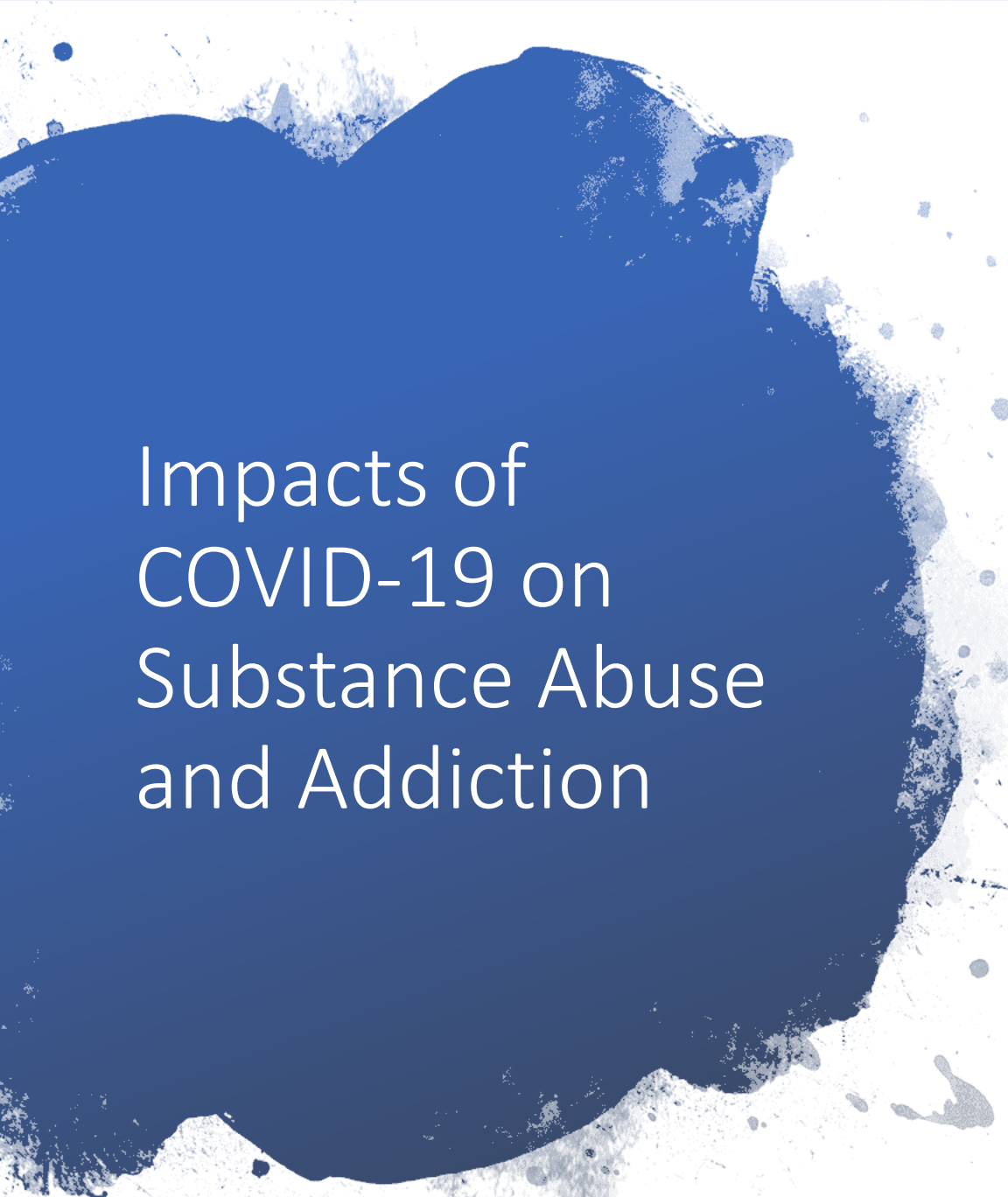
(Usher et al., 2020)

Population-Specific Psychological Impacts of COVID-19

Increased Psychological Symptoms

- General Public
 - Indignation, anxiety, depression, stress, dream anxiety, cognitive change, compulsive behavior, loss of social functioning, somatization, paranoid ideation, psychosis
- Healthcare/Essential Workers
 - Anxiety, depression, PTSD, eating disorders, insomnia, somatization, OCD, hostility, psychoticism, vicarious traumatization, fear, dream anxiety, resilience

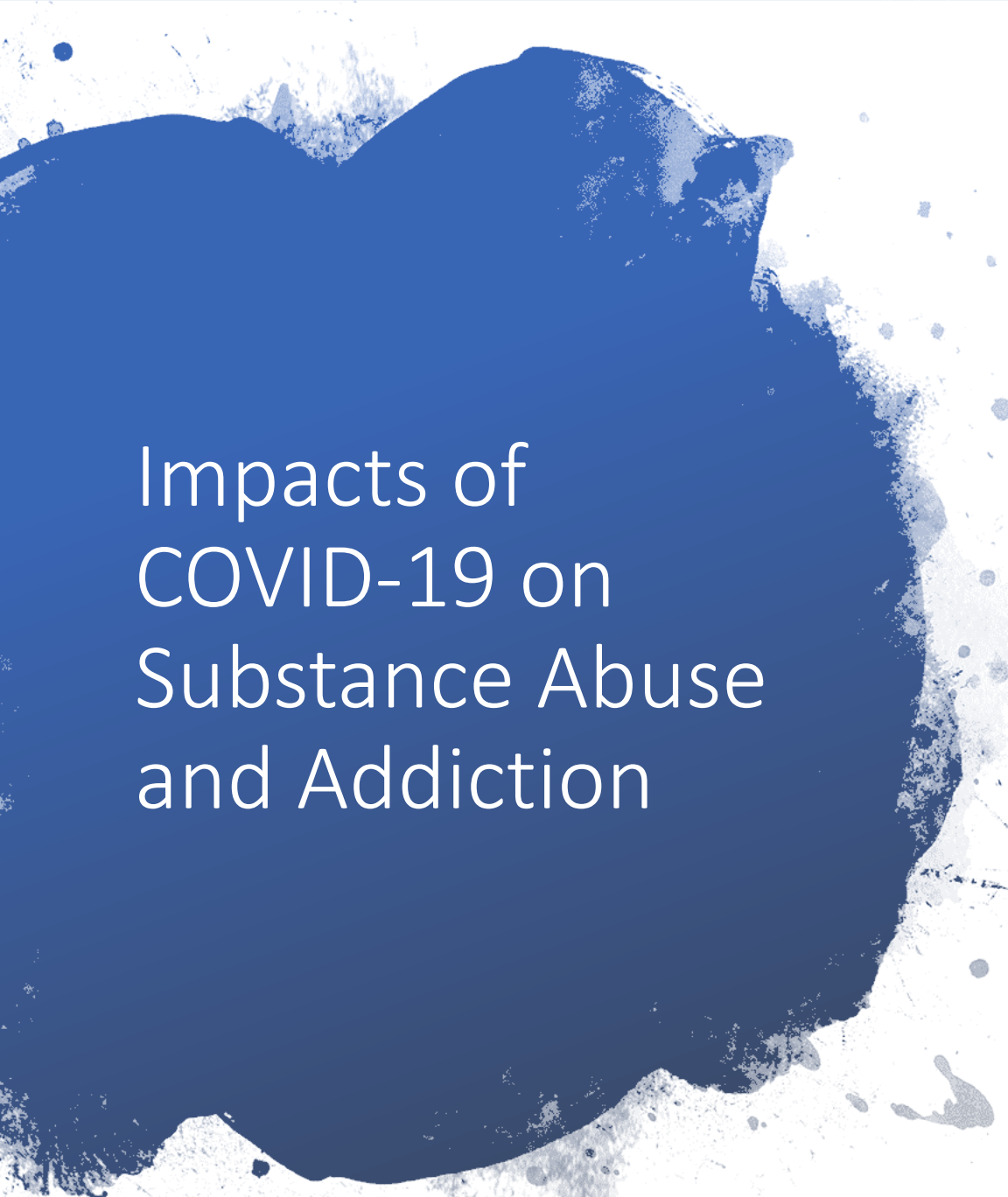
(Vindegaard & Benros, 2020)



Impacts of COVID-19 on Substance Abuse and Addiction

- Isolation, loneliness led to increased substance abuse
- According to research:
 - 47% percent of respondents in a study indicated their substance use had increased during COVID-19
 - 38% said they believed they were at higher risk of overdose due to supply disruptions that made drugs more expensive, harder to get, and of unknown origin.
 - Among those using syringes or other paraphernalia, 47% responded that they started re-using or sharing for the first time after the beginning of the pandemic due to COVID-19-related restrictions decreasing access to harm reduction or needle exchange programs.
 - 7% of survey respondents indicated they had relapsed during the COVID-19 pandemic.
- The researchers said that sudden disruptions in the supply of street drugs when the pandemic began were associated with an increase in overdose deaths.
- In Canada, where the survey was conducted, the number of illicit drug overdose deaths increased by 72% during the first 4 months of the pandemic compared to the previous year.

(Kenney, 2021)



Impacts of COVID-19 on Substance Abuse and Addiction

- As of June 2020, 13% of Americans reported starting or increasing substance use as a way of coping with stress or emotions related to COVID-19 (CDC)
- A reporting system called [ODMAP](#) (Overdose Detection Mapping Application Program) shows that the early months of the pandemic brought an 18% increase nationwide in overdoses compared with those same months in 2019.
- “There’s sort of a perfect storm of factors that we know increase drug use. People are more stressed and isolated, so they make unhealthy decisions, including drinking more and taking drugs.” - William Stoops, PhD

(Abramson, 2021)

- Educate others on the importance of mental health treatment
- Cognitive Behavioral Therapy and Relapse Prevention techniques
- Improved accessibility to treatment and higher level of care if warranted
- Encourage community support

How we
can help

General Overview



Emotional and physical pain is bidirectional and needs to be approached from a multifaceted perspective.



The interpretation of pain often leads to a desire to escape, impacting our reward circuitry (leading to issues with addiction).



COVID-19 has led to a natural human experiment on these concepts. Isolation, economic struggle, and health anxiety have unfortunately resulted in an increase in substance abuse and overdoses. As a profession, psychologists can begin to help by advocating and helping others understand the support that exists.

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Cigna Behavioral Health Awareness

If you are a Cigna customer and have questions about Substance Use treatment or about your benefits and how to use them, please contact:

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