AVOIDANCE IS ADDICTIVE:

WHY ARE MY PATIENTS EATING, DRINKING, AND SMOKING MORE THAN EVER? ADDICTION MEDICINE TRENDS

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Disclosures

- No financial or relevant disclosures

Objectives

01

Define avoidance and explain the pattern of avoidance conditioning.

02

Define addiction and explain the neurobiological basis for addiction.

03

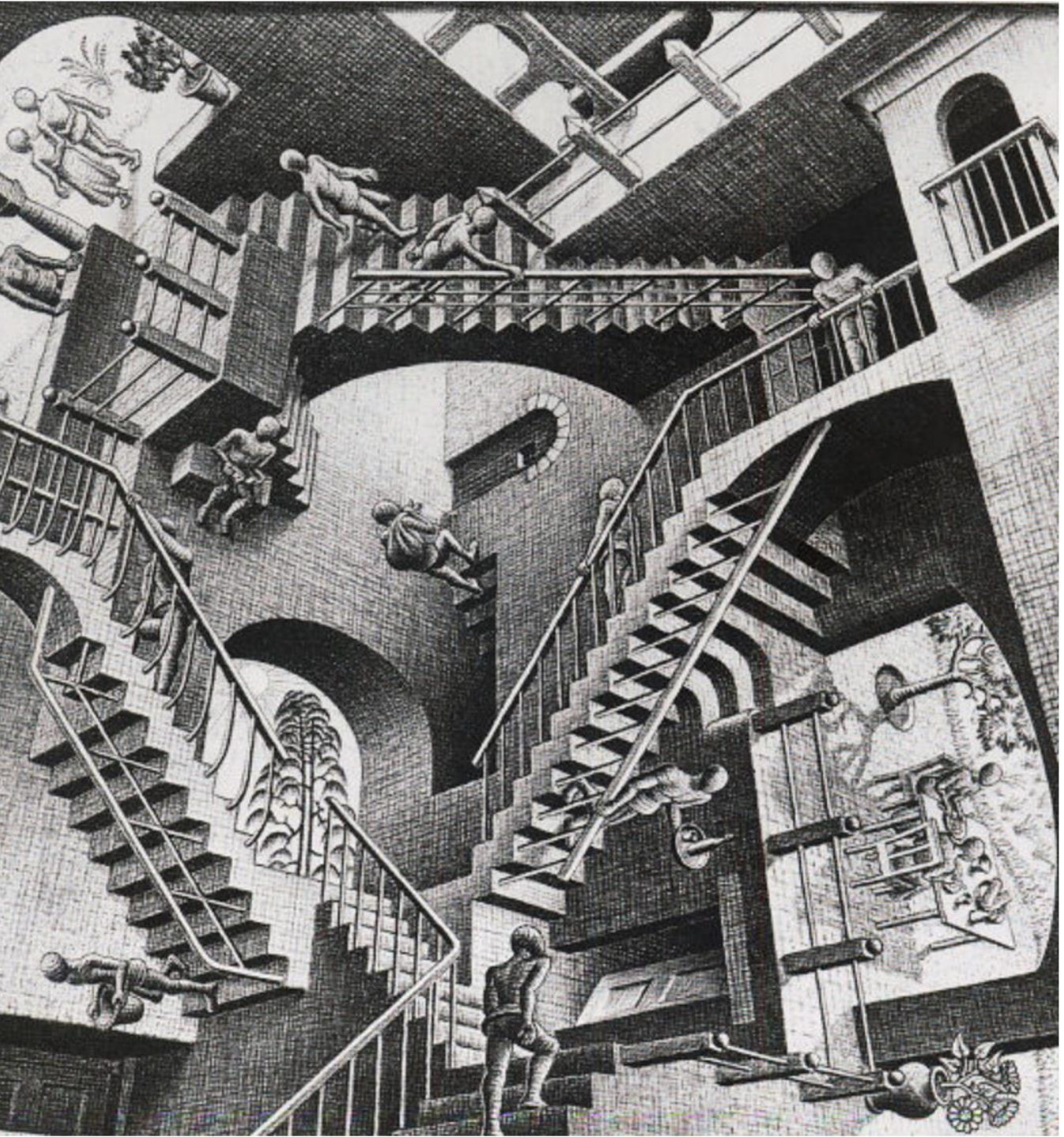
Provide a comparison between avoidant behaviors and addiction.

04

Explain how stress can impact the cycle of avoidance and addiction.

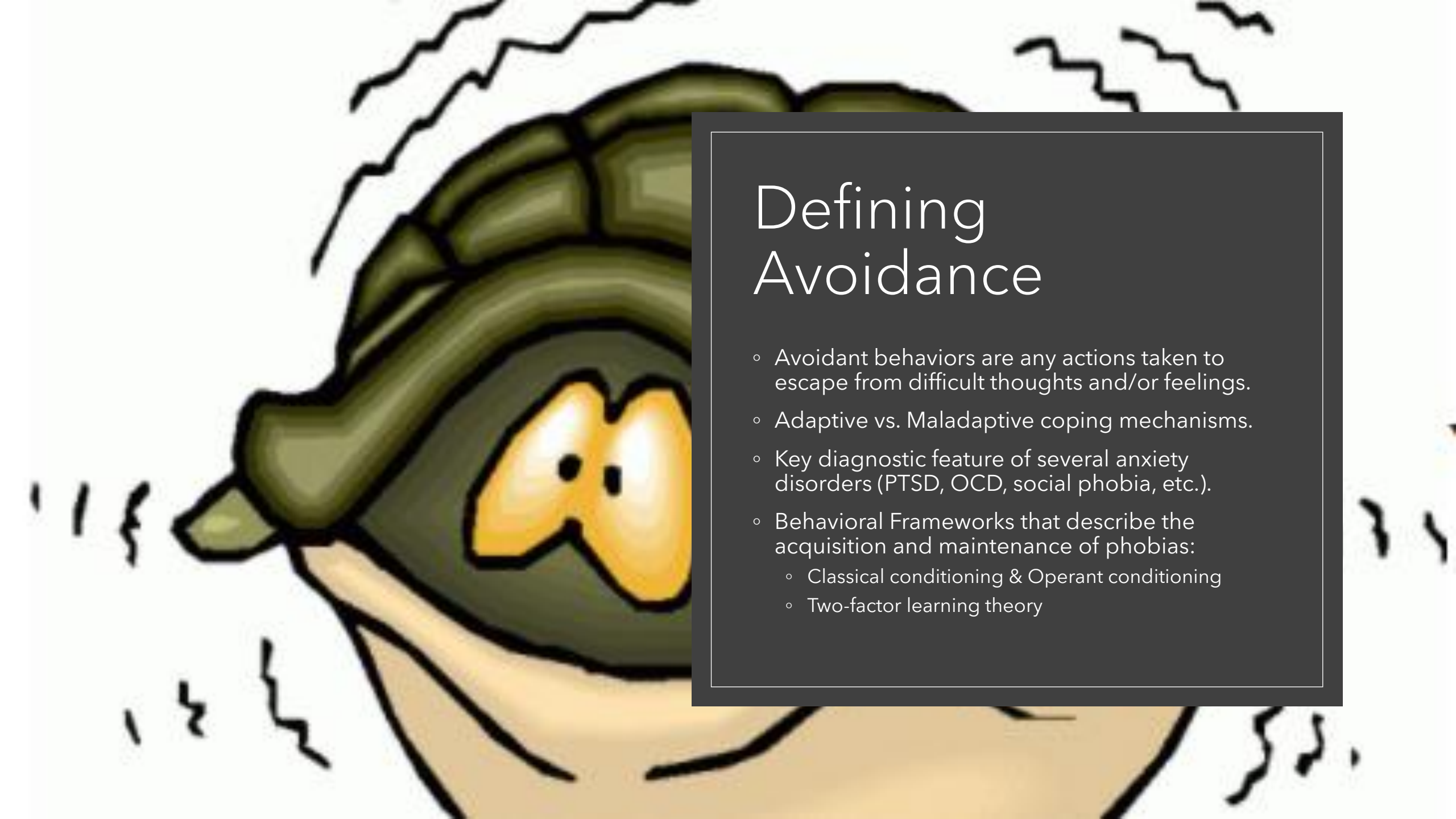
05

Identify trends in eating, drinking, and smoking during the global COVID-19 pandemic.



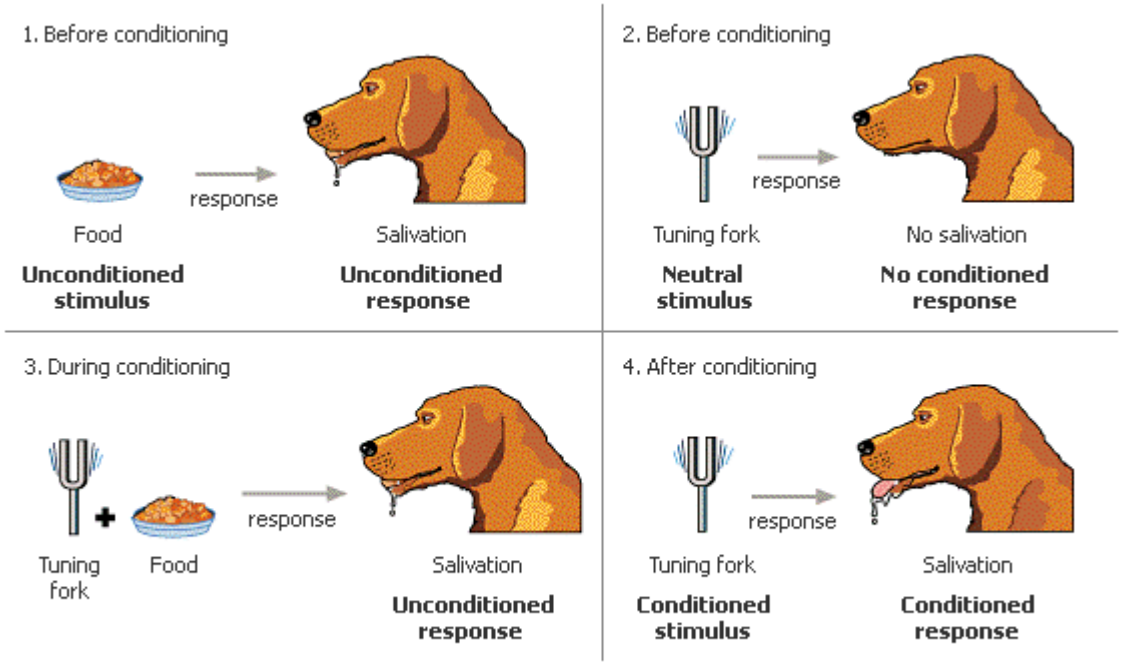
A puzzle to patients
A puzzle to treat

- Making intuitive sense vs intellectual sense of these concepts.
- Clinically puzzling.
- If avoidance is addictive, is addiction avoidance?



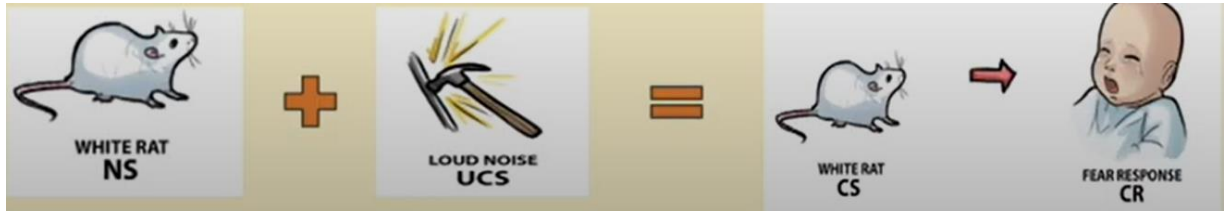
Defining Avoidance

- Avoidant behaviors are any actions taken to escape from difficult thoughts and/or feelings.
- Adaptive vs. Maladaptive coping mechanisms.
- Key diagnostic feature of several anxiety disorders (PTSD, OCD, social phobia, etc.).
- Behavioral Frameworks that describe the acquisition and maintenance of phobias:
  - Classical conditioning & Operant conditioning
  - Two-factor learning theory



Pavlov's Dog

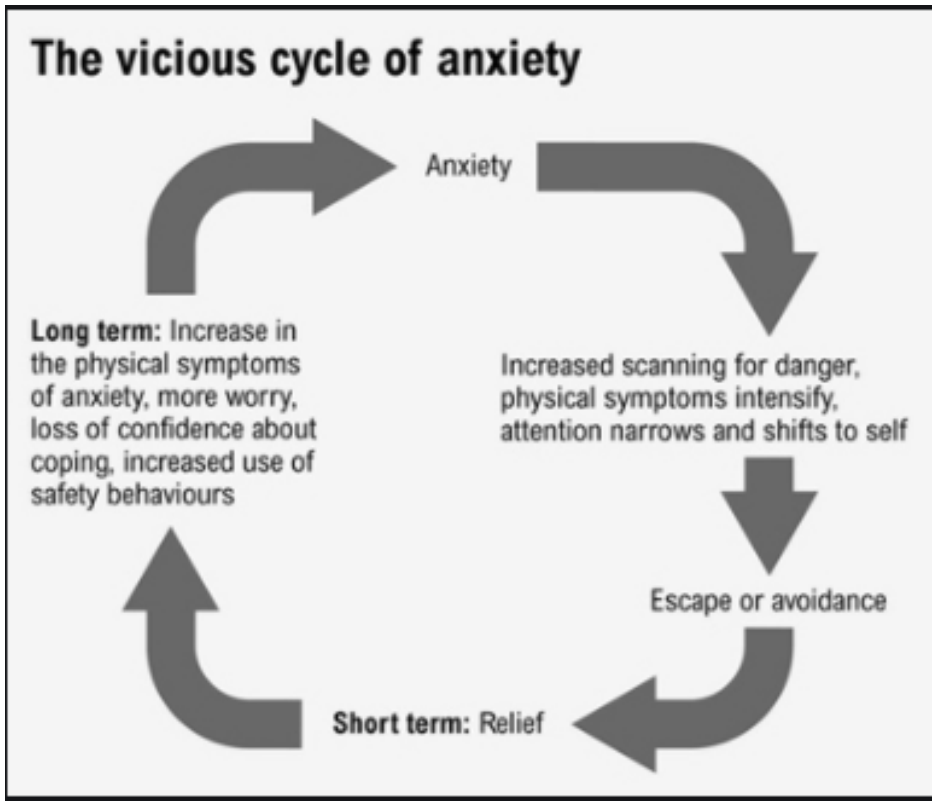
Medium.com



SMCartledge

Acquisition and Maintenance of Phobias

- Pavlov's Dog, 1890's
  - Classical conditioning
- Watson & Raynor, 1920
  - Little Albert
- O. Hobart Mowrer, 1951
  - Two-factor learning theory
  - Criticism of this learning theory: Fear-based



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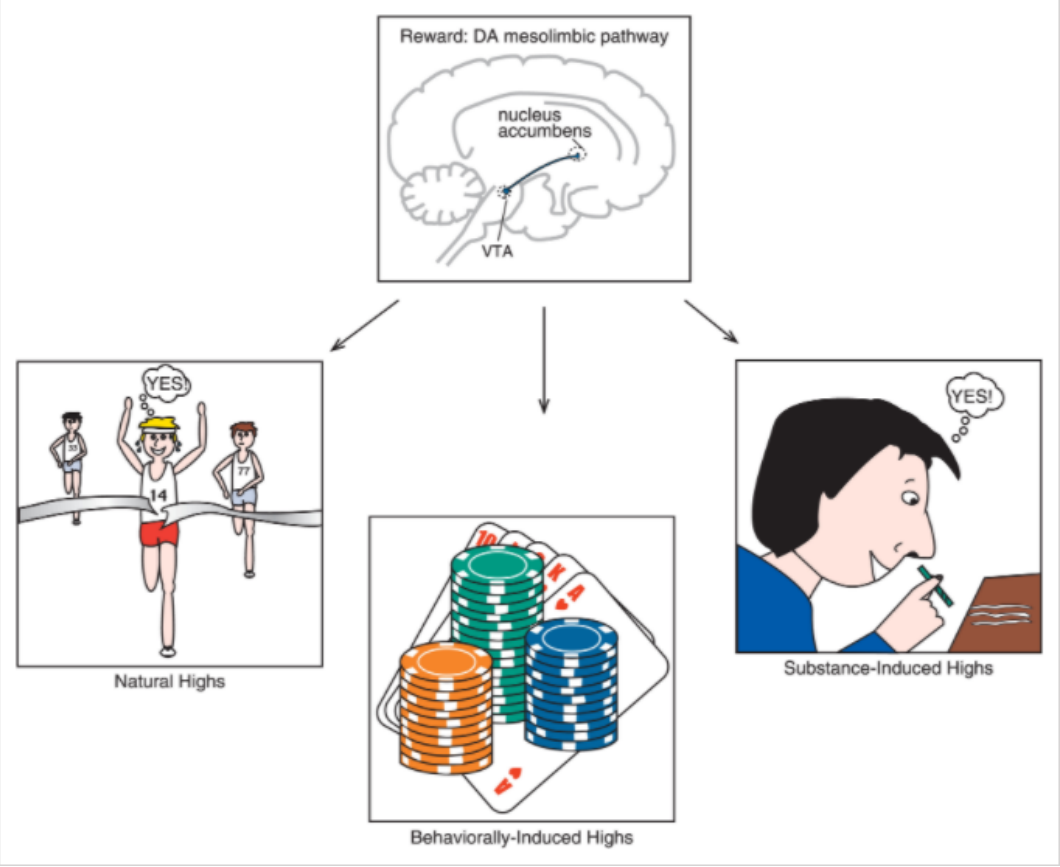
Conditioned Avoidance

- A form of implicit learning.
- Avoidance can be a healthy coping mechanism when dealing with stress or negative feelings.
- Becomes problematic when it is the primary source for stress regulation and coping.
- As avoidant behaviors (drug use, eating comfort foods, etc.) increase, the cycle is perpetuated and eventually leads to worsening anxiety.

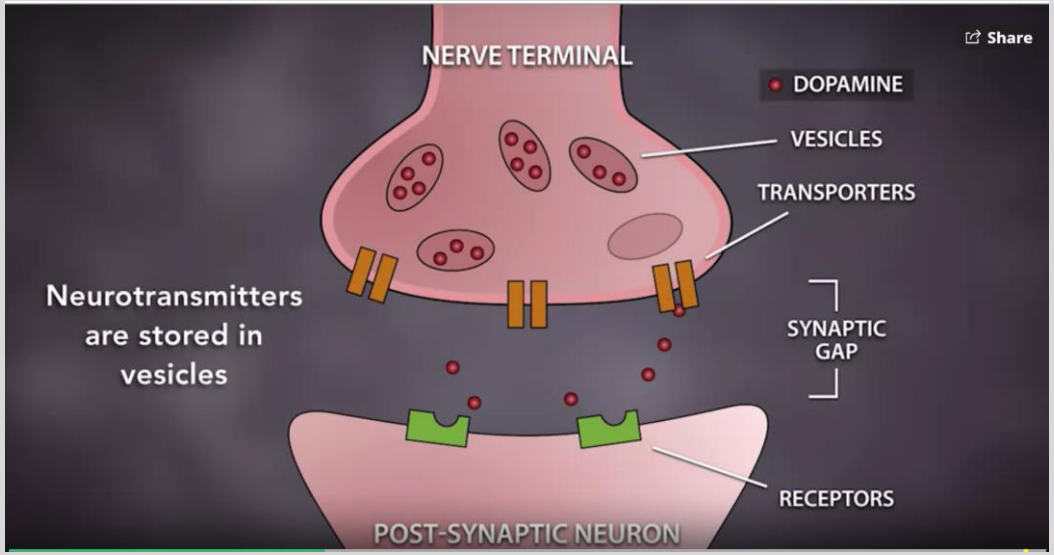
Memesmonkey.com

Defining Addiction

- Substance addiction: characterized by a recurring desire to continue taking the drug despite harmful consequences; typically has a chronic, relapse-remitting course.
- Non-substance addiction: (behavioral addiction): includes pathological gambling, food addiction, internet addiction, and mobile-phone addiction.
- Frameworks:
  - Neurobiology of Addiction
  - Addiction as a Brain Disease
- Stress Response and Drug Addiction



Stahl, Essential Psychopharmacology

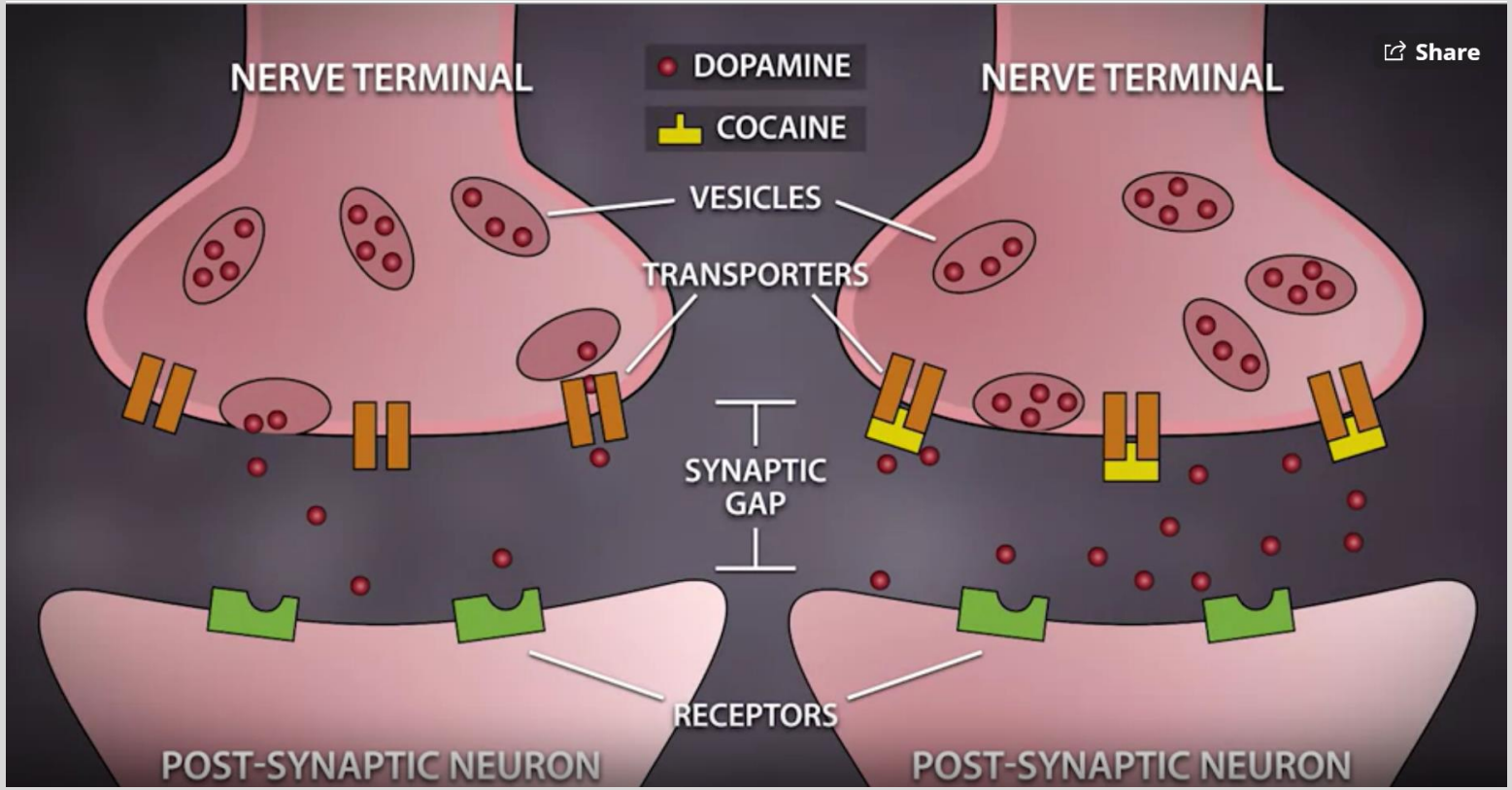


Kuhar, Coursera

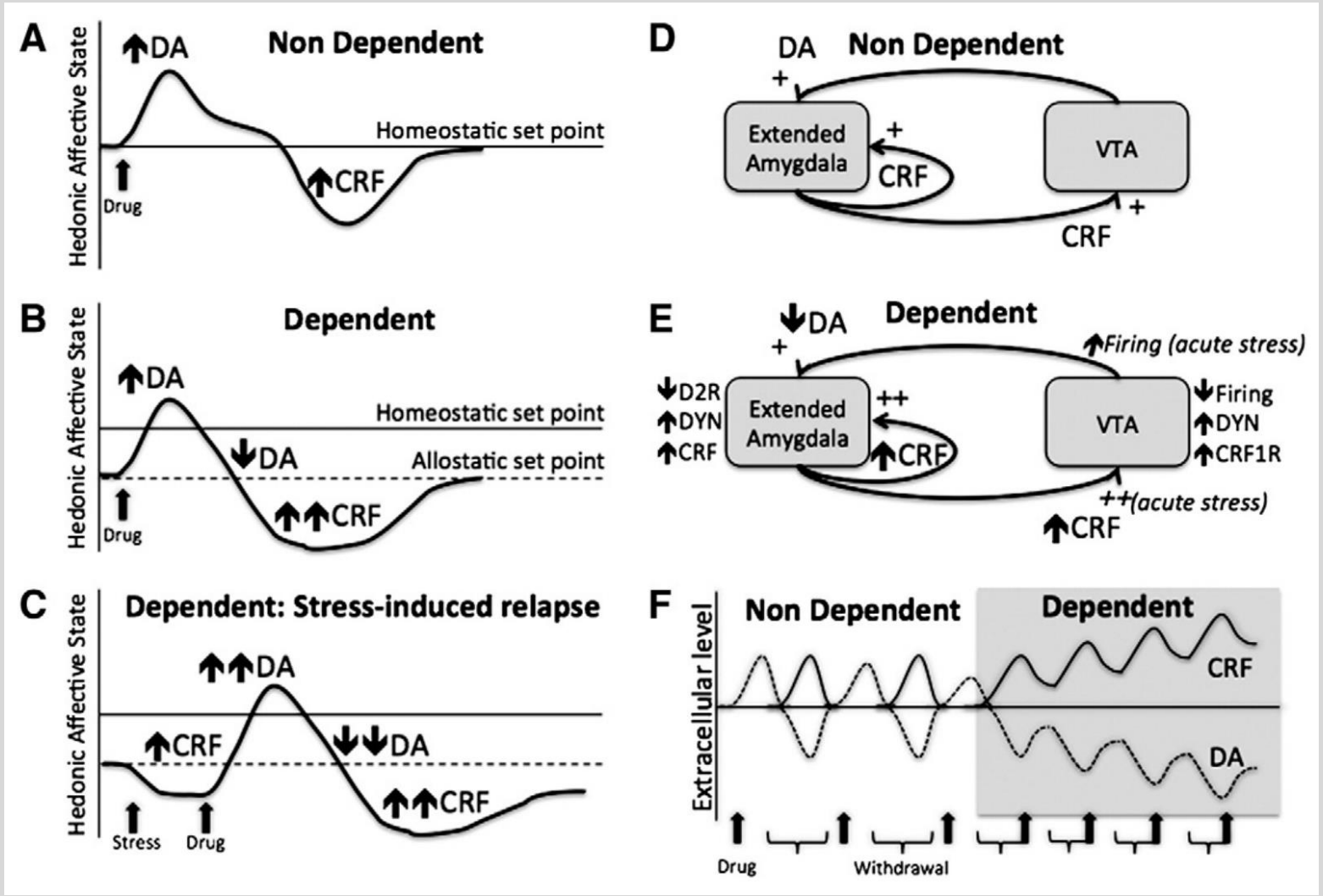
Neurobiology of Addiction

- Dopamine (DA) is central to the reward circuit
- Normal neurotransmitter (NT) transmission is tightly controlled, specific to each neuron, and is a rapid process

Disordered Neurotransmission with Drug Use

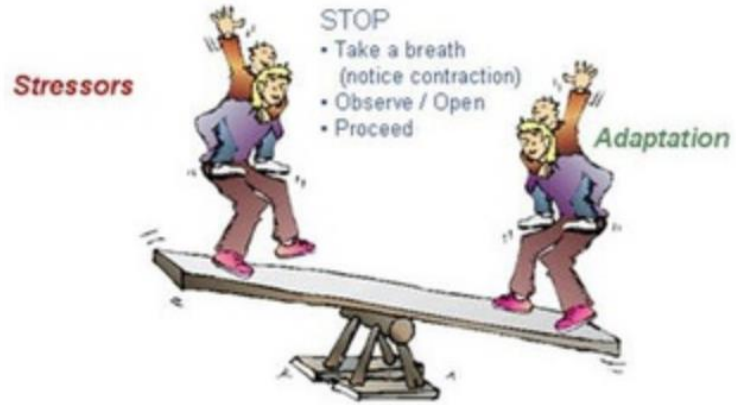


Kuhar, Coursera


A
Non Dependent
↑DA
Hedonic Affective State
Homeostatic set point
↑CRF
Drug
B
Dependent
↑DA
Homeostatic set point
↓DA
Allostatic set point
↑↑CRF
Drug
C
Dependent: Stress-induced relapse
↑↑DA
↑CRF
↓↓DA
↑↑CRF
Stress
Drug
D
DA
Non Dependent
+
Extended Amygdala
+
CRF
VTA
+
CRF
E
↓DA
Dependent
+
↑Firing (acute stress)
↓D2R
↑DYN
↑CRF
Extended Amygdala
++
↑CRF
VTA
↓Firing
↑DYN
↑CRF1R
++(acute stress)
↑CRF
F
Non Dependent
Dependent
Extracellular level
CRF
DA
Drug
Withdrawal

George et al

Stress Response:



Allostasis

Some stress can be energizing and toning to the system. Body systems adjust well to stressors without over taxing resources.

Stress Reaction:

Allostatic Load

Body systems achieve a kind of balance, but everything is working too hard and we begin to slowly break down.

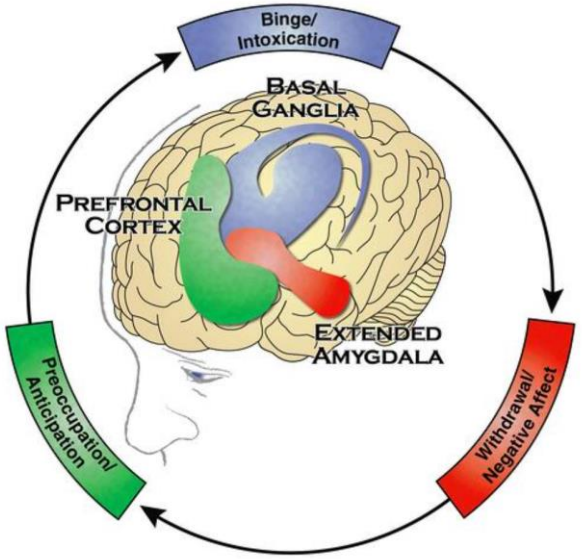
David McPhee, PhD

ALLOSTASIS IS THE SYSTEM THAT HELPS TO ACHIEVE HOMEOSTASIS.

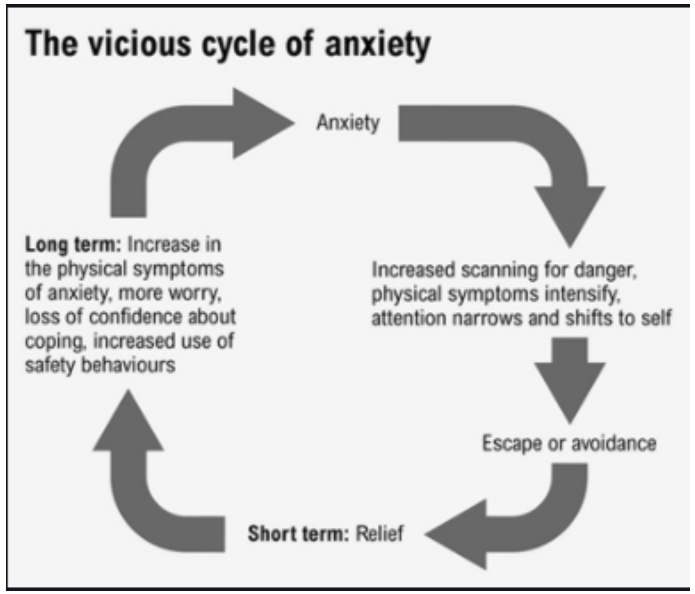
ALLOSTATIC LOAD IS THE COST TO THE SYSTEM.

Addiction as a Brain Disease

- The “addicted” brain is distinctly different from the “nonaddicted” brain:
  - There are changes in brain metabolic activity, receptor availability, gene expression, and responsiveness to environmental cues which become chronic, marked by periods of relapse and remission.
  - These physiological alterations should be approached in a similar manner as chronic disease states like hypertension and diabetes.
- The idea that addiction is initially a voluntary behavior, then transitions into a “state of addiction” with compulsive drug seeking and use.



Substance Abuse and Mental Health Services Administration



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Is Avoidance Addictive?

- Avoidant behaviors can become non-substance addictions.
  - Avoidance is the act of preventing negative reinforcement from occurring.
  - Non-Substance addictions typically do not result in the degree of dysregulation that is seen in substance use disorders because the pathophysiology is different.
- Vicious Cycles that are parallel ideas.
  - Dysregulation of the neurobiological circuits coupled with negative reinforcement becomes extremely difficult to treat.
    - Example: alcohol use and PTSD

The global pandemic: Covid-19

- Significant source of stress for many people around the world.
- Social Isolation, increased stress at home, fewer resources and support.
- Decreased access to fresh foods, gyms, health care, etc.

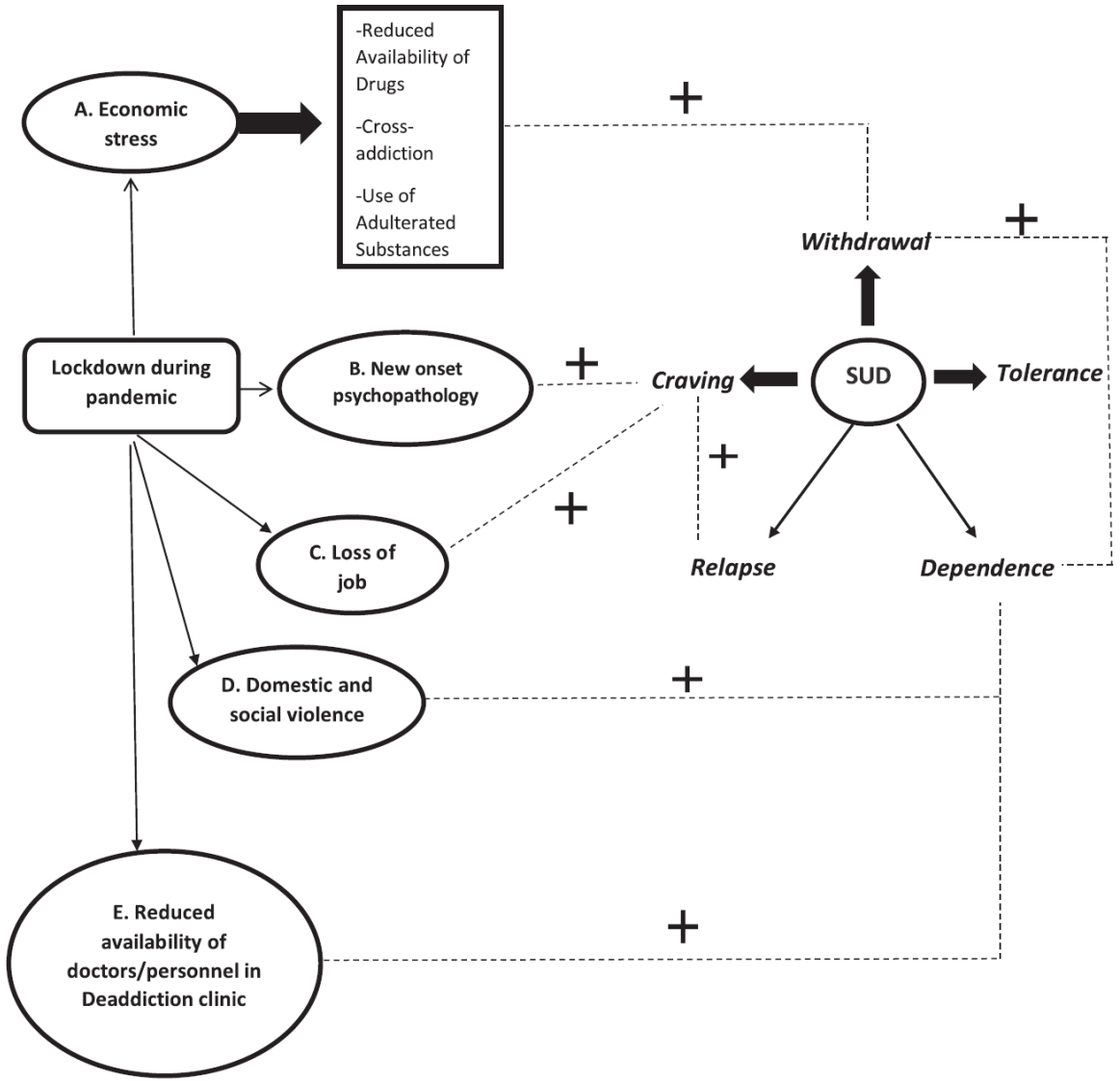


Fig. 2. Bidirectional relationship between COVID-19 and addiction.

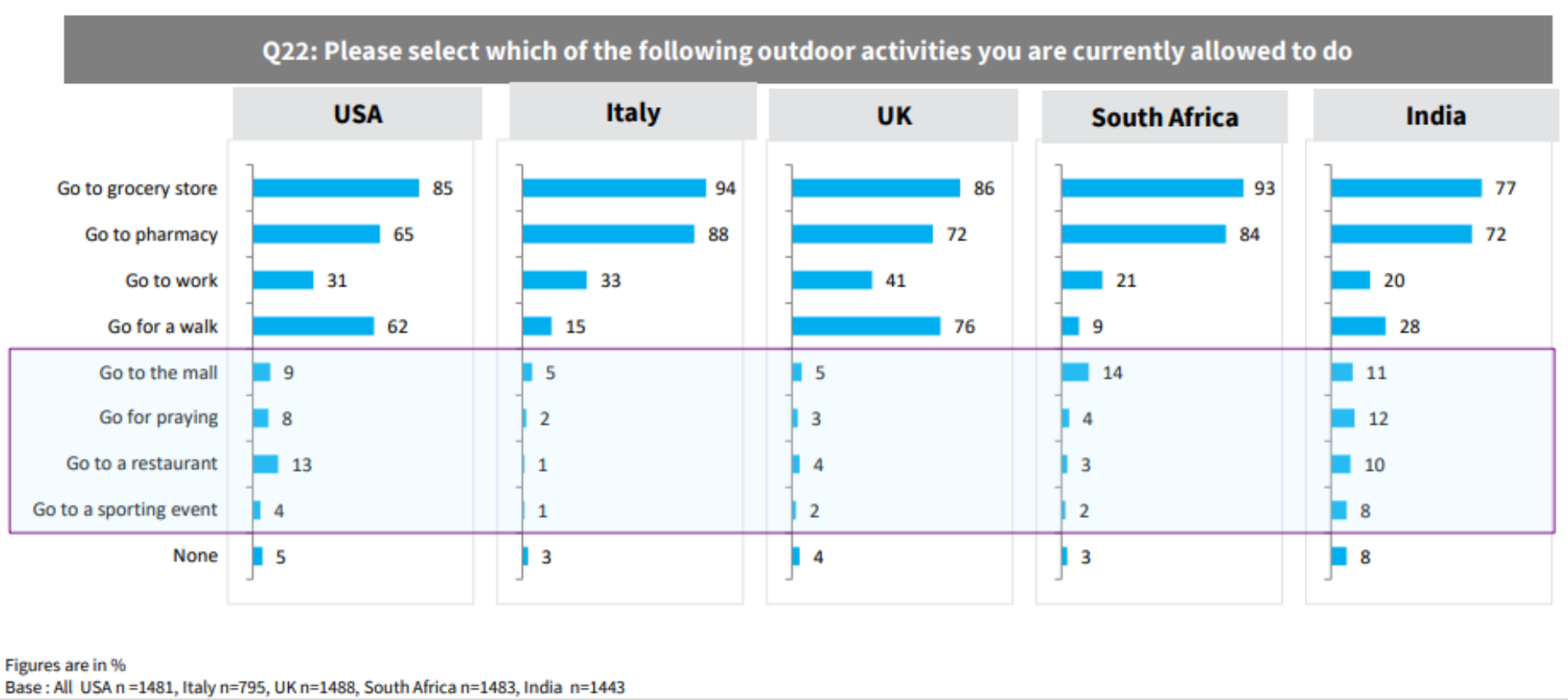
Dubey et al

Stress & Addictive Behaviors

- *"Stress has been regarded as the single most powerful and reliable trigger of cravings and relapse."*

  – Ruisoto, 2019

Lockdown Across Multiple Countries



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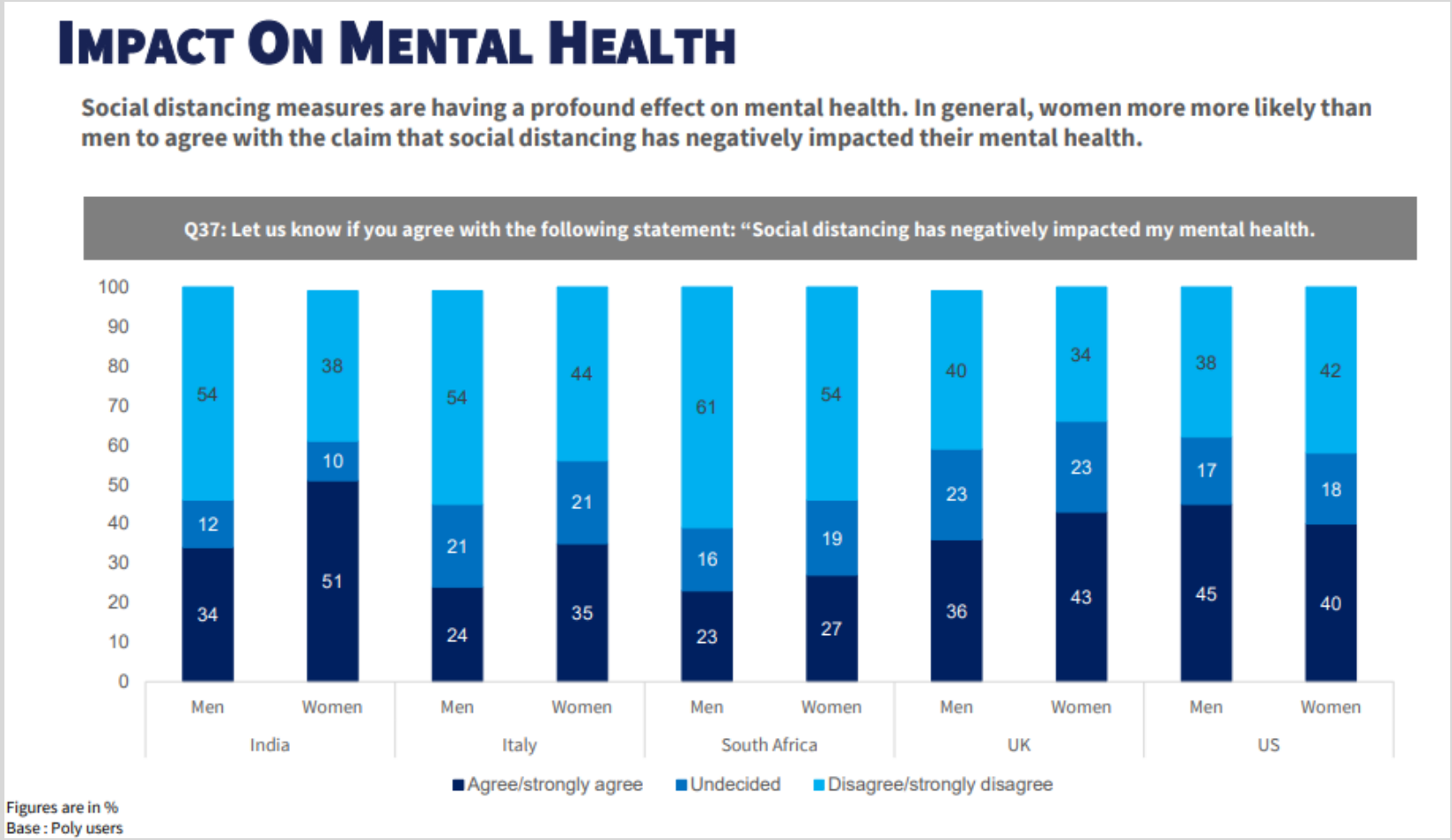
The Stress Felt Around the World



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TRENDS IN DIETARY HABITS

- Eating trends varied widely across the world with some adopting healthier eating habits and others struggling more with food consumption.
- As BMI increases, there is a significant increase in the frequency of eating and snacking with the highest amongst obese populations.

Table 3 Positive answers to MEDAS questionnaire and adherence to the MD

	Whole sample (n = 3533)	Northern Italy (n = 547)	Center Italy (n = 2009)	Southern Italy and Islands (n = 977)
Olive oil, main dressing	*3368 (95.8)*	*518 (94.7)*	*1940 (96.6)*	*928 (95.0)*
Olive oil, >= 4 ts/day	*1827 (51.7)*	257 (47.0)	*1076 (53.6)*	*494 (50.6)*
Vegetables, >= 2 s/day	*2430 (68.8)*	*398 (72.8)*	*1396 (69.5)*	*636 (65.1)*
Fruits, >= 3 s/day	1202 (34.0)	180 (32.9)	666 (33.2)	356 (36.4)
Read meat, < 1 s/day	*1854 (52.5)*	*307 (56.1)*	*1039 (51.7)*	*508 (52.0)*
Butter, < 1 s/day	1668 (47.2)	301 (55.0)	888 (44.2)	479 (49.0)
Sweet beverage, < 1 s/day	1676 (47.4)	293 (53.6)	916 (45.6)	467 (47.8)
Wine, 7 s/week	396 (11.2)	60 (11.0)	245 (12.2)	91 (9.3)
Legumes, >=3 s/week	*1826 (51.7)*	267 (48.8)	966 (48.1)	*593 (60.7)*
Fish and seafood, >= 3 s/week	1376 (38.9)	198 (36.2)	750 (37.3)	428 (43.8)
Sweets, < 3 s/week	1753 (49.6)	*280 (51.2)*	970 (48.3)	*503 (51.5)*
Nuts, >= 3/week	1675 (47.4)	281 (51.4)	909 (45.2)	485 (49.6)
White meat over red	*2653 (75.1)*	*427 (78.1)*	*1515 (75.4)*	*711 (72.8)*
"Soffritto"	*1890 (53.5)*	*309 (56.5)*	*1067 (53.1)*	*514 (52.6)*
MEDAS score	7 [6–9]*	7 [6–9]	7 [6–9]	7 [6–9]
Adherence to the MD				
Low	765 (21.7)	108 (19.7)	463 (23.0)	194 (19.9)
Medium	2228 (63.1)	344 (62.9)	1261 (62.8)	623 (63.8)
High	540 (15.3)	95 (17.4)	285 (14.2)	160 (16.4)

Di Renzo et al

Table 2. The frequency (%) of increased food consumption, snacking, and cooking in the surveyed group (n = 1097) across the BMI groups.

	Underweight	Normal BMI	Overweight	Obese	Pearson's χ^2
Eating more	40.7	30.6	48.8	55.3	$p < 0.05$
Snacking more	46.5	50.1	55.3	61.7	$p < 0.05$
Cooking more	63.3	62.1	62.6	63.3	$p > 0.05$

Sidor et al

TRENDS IN ALCOHOL CONSUMPTION

- Multi-faceted, complex problem as most avenues for socialization have closed.
- The data on alcohol consumption is nuanced.
  - Example: Study out of Poland

Table 3. A comparison of drinking patterns in subjects during the pandemic.

	Group 1 N = 182		Group 2 N = 77		Group 3 N = 61		Group 4 N = 123		F	Post-Hoc Test
	M	SD	M	SD	M	SD	M	SD		
Age	32.39	10.43	26.77	8.92	31.54	11.45	34.61	12.80	8.02	2 < 1,3,4
AUDIT	4.83	3.627	5.701	3.671	7.049	4.853	5.520	4.272	4.77	3 > 1,4 *
PSS 10	18.45	6.931	18.77	6.782	20.64	6.463	19.03	6.099	1.65	-
MINI COPE active coping	3.28	1.68	3.06	1.51	2.79	1.71	3.41	1.70	2.36	-
Planning	3.91	1.56	3.47	1.52	3.62	1.59	3.90	1.53	1.93	-
Positive reframing	3.75	1.74	3.32	1.69	2.97	1.90	3.77	1.67	4.13	3 < 1,4
Acceptance	4.76	1.24	4.68	1.13	4.44	1.69	4.65	1.29	0.90	-
Humor	2.50	1.31	2.42	1.22	2.54	1.35	2.00	1.28	4.12	1, 3 > 4
Religion	1.42	1.79	1.10	1.56	1.03	1.67	2.14	2.13	7.53	4 > 1,2,3
Use of emotional support	3.96	1.69	3.44	2.06	4.02	1.73	3.56	1.76	2.49	-
Use of instrumental support	3.40	1.68	3.16	1.90	3.44	1.87	3.17	1.71	0.73	-
Self-distraction	3.92	1.43	3.84	1.30	3.48	1.58	3.80	1.36	1.51	-
Denial	0.65	1.08	0.78	1.23	0.80	1.34	1.03	1.35	2.43	4 > 1
Venting	3.23	1.55	3.21	1.73	3.48	1.51	3.05	1.49	1.03	-
Substance use	0.83	1.27	0.27	0.72	2.39	1.79	0.20	0.89	51.59	3 > 1,2,3 1 > 2,4
Behavioral disengagement	1.33	1.52	1.53	1.60	1.56	1.59	1.48	1.49	0.57	-
Self-blame	1.56	1.48	1.52	1.44	1.92	1.84	1.52	1.61	1.04	-
GHQ 28 somatic	8.97	4.84	9.55	4.51	9.85	4.69	8.71	4.91	1.03	-
GHQ 28 anxiety & insomnia	8.9	5.91	9.1	6.05	10.4	6.03	8.6	5.53	1.39	-
GHQ 28 dysfunction	9.0	4.03	9.4	5.08	11.2	5.20	8.8	4.05	4.55	3 > 1,2 *,4
GHQ 28 depression	4.94	4.79	5.96	5.88	7.03	6.03	4.40	4.78	4.21	3 > 1,4
GHQ TOTAL	31.7	16.2	34.0	18.0	38.5	17.7	30.5	16.3	3.43	3 > 1,4

1–2; 1–3; 1–4; 2–3; 2–4—significant differences ($p \leq 0.05$) between groups, * $p > 1$ statistical tendency

Chodkiewicz et al

TRENDS IN TOBACCO USE

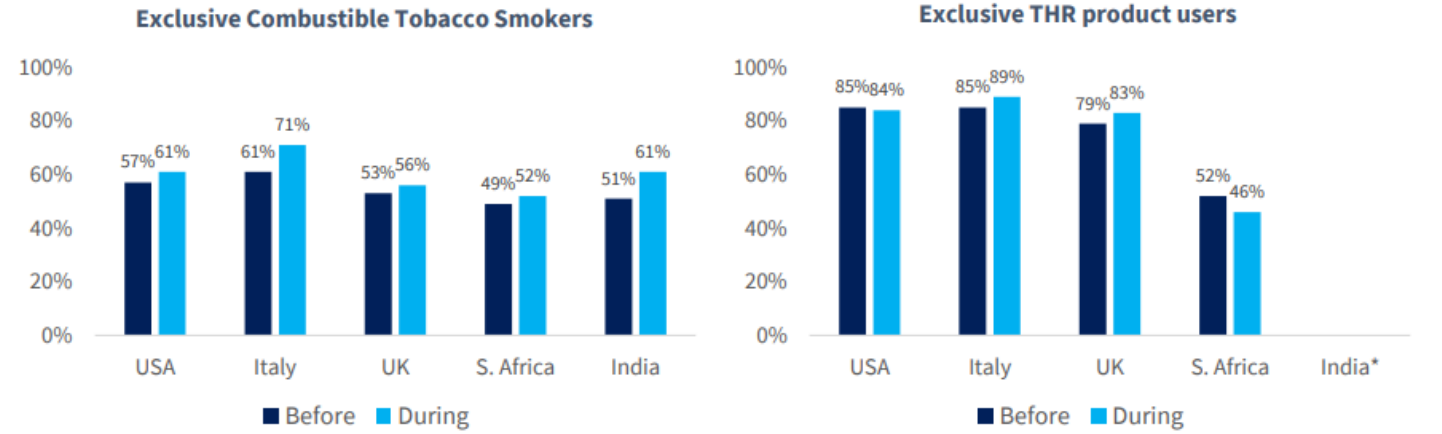
- Consumption of combustible and electronic cigarettes varied across studies.
- Variation was due to differences in belief as to whether smoking is a risk factor for contracting COVID-19.

IN-HOME CONSUMPTION BEFORE AND DURING COVID-19 LOCKDOWN

Rates of smoking in the home increased in Italy (pre-lockdown: 61%, during lockdown: 71%) and in India (pre-lockdown: 51%, during lockdown: 61%) among exclusive combustible tobacco smokers.

Q25: Did you consume "following tobacco product" inside your home before the COVID-19 lockdown?

Q24: Do you currently consume "following tobacco product" inside your home, including within any room, or out of an open window or balcony?



Figures are in %

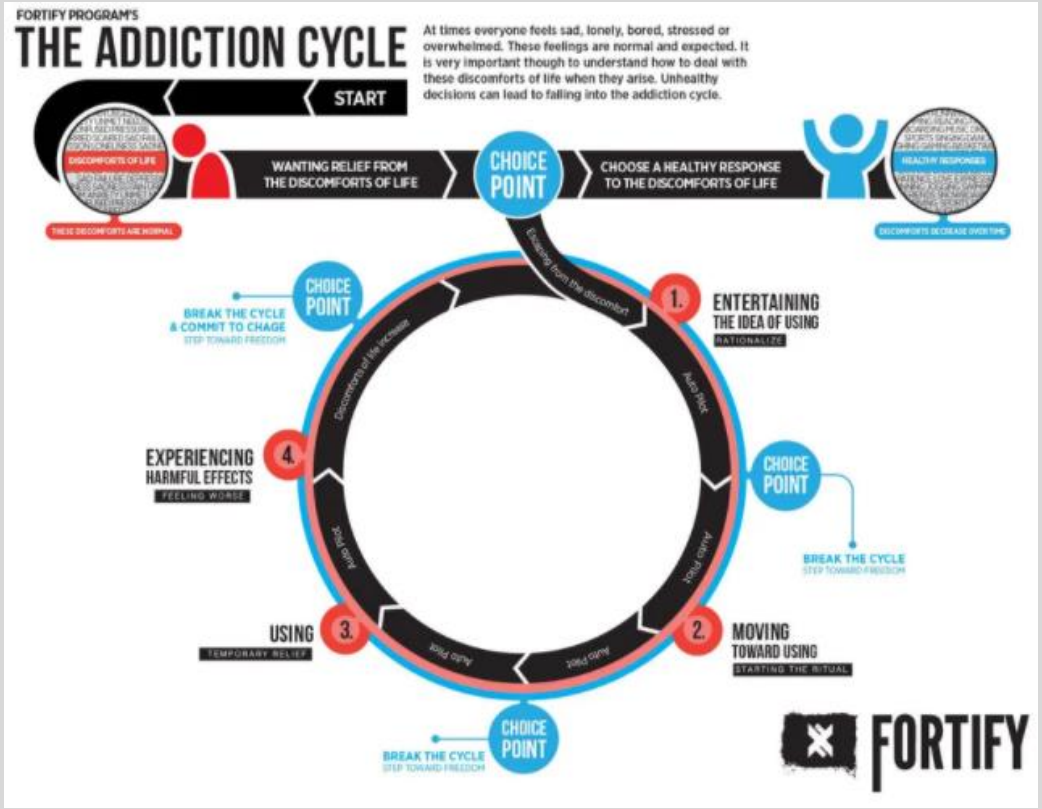
Base : Exclusive Tobacco Product Users - USA: n=802 ; Italy: n=393 ; UK: n=769 ; S. Africa: n=1026 ; India: n=888 / Exclusive THR product users- USA: n=81 ; Italy: n=81 ; UK: n=189 ; S. Africa: n=63 ; India*: n=10 – Low

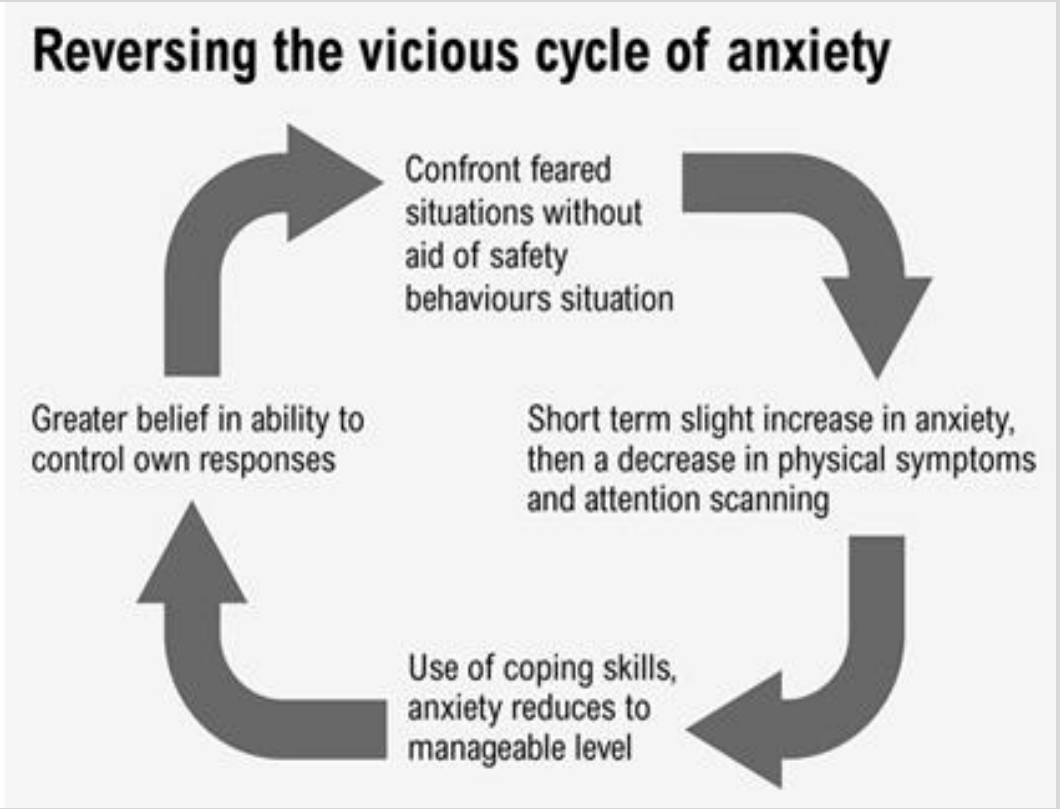
Solomon et al

Unifying these concepts

- Avoidant behaviors allow for immediate relief from unpleasant thoughts or feelings.
- People tend to gravitate towards activities that are more pleasurable.
- Stress is a trigger!
- Trends in addiction medicine identify high-risk groups:
  - Eating habits are worse for those with higher BMIs.
  - Alcohol consumption is increased for those with higher AUDIT scores, less adaptive coping skills, and potentially less social support.
  - Smoking consumption has varied according to whether they believe their risk for contracting Covid-19 increases or not.

Breaking and Reversing the Vicious Cycles





Back to the Puzzle

- Making intuitive sense vs intellectual sense of these concepts.
- How are these concepts inter-related?
- Is addiction *a form of* avoidance?

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Questions?
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