Behavioral Addictions

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Case Vignette

Mr. Z, 25/M

'Teen Patti' player (SRK fame)

First played when depressed or bored.

Won 20,000

Started playing regularly

Gradually increased duration and amount of money spent

"No joy in playing smaller bets" had to bet big to get "thrill"

Debt in lakhs

Restlessness, irritability if not allowed to play

What is Addiction?

-maladaptive overuse of pleasurable or distress-relieving substance or activity

Sussman and Sussman (2011)

- existence of subjective appetitive needs,
- repeated attempts at satiation of these needs through engagement in specific behaviors (achieving subjectively experienced “appetitive effects”),
- preoccupation with obtaining appetitive effects via the associated behavior,
- loss of control over time spent engaged in the appetitive effect-related behavior,
- undesired or negative consequences resulting from continued engagement in the behavior

The Cambridge Handbook of Substance and Behavioral Addictions. ISBN: 9781108427166

Sussman (2017) speculations of subjective experience of satiation:

- an optimal level of pleasure: engaging in certain behaviors to feel better.
- an optimal level of arousal: the person may modify his/her behavior to obtain a more optimal level of arousal.
- an optimal level of thought activity: the person may modify his or her mental activity to obtain a more optimal level (exploratory thinking or quieting down thinking).

an illusory satiation of appetitive needs via a learned behavior may develop and become maladaptive (“addiction”)

The Cambridge Handbook of Substance and Behavioral Addictions. ISBN: 9781108427166

Behavioral Addiction

Mark Griffiths (2005)

Salience: the behavior becomes the most important activity and tends to dominate thinking, feelings, and behavior.

Mood modification: the arousing "rush" or the numbing or calming "escape". A coping strategy

Tolerance: greater duration, and/or escalation in the intensity, recklessness, destructiveness. ego-dystonic

Withdrawal symptoms: the unpleasant feeling states and/or physical effects (e.g. tremors)

Conflict: interpersonal, intrapsychic conflict and/or subjective feelings of loss of control, conflicts with other activities

Relapse: return to the most extreme patterns of excessive behavior soon after periods of control.

BEHAVIORAL ADDICTIONS: Criteria, Evidence, and Treatment ISBN: 978-0-12-407724-9

Similarities and Difference from Substance Addictions

Similarities:

Reward System

Tolerance

Stages of Addiction Cycle

Treatment similarities

Differences:

Substance vs Behavior

Lack of substance specific pathophysiological changes

Physical withdrawal symptoms less common

Treatment differences

https://canadiancentreforaddictions.org/substance-behavioural-addiction

Lifetime Estimates of Substance use Disorders in Behavioral Addictions

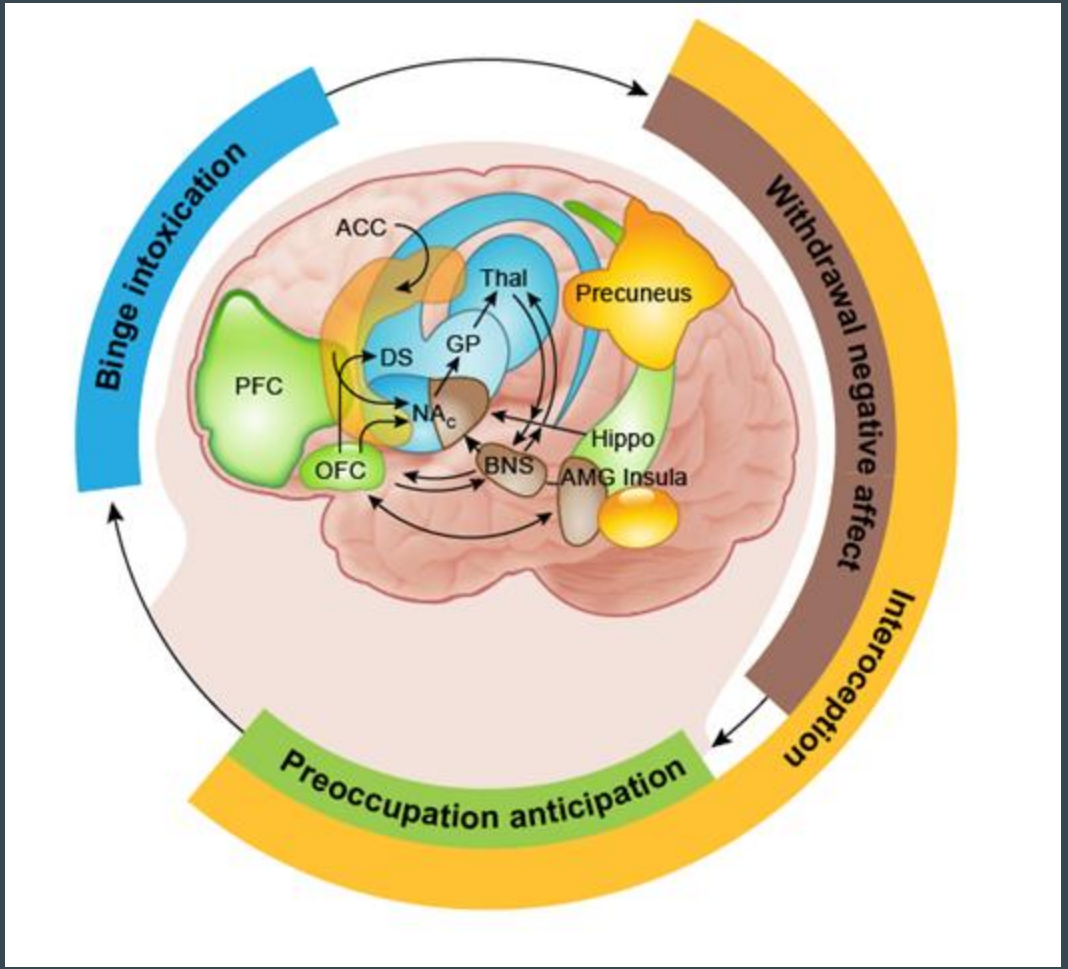
Behavioral Addictions	Lifetime Estimates of Substance Use Disorder
Pathological Gambling	35% – 63%
Kleptomania	23% – 50%
Pathologic Skin Picking	38%
Compulsive Sexual Behavior	64%
Internet Addiction	38%
Compulsive Buying	21% – 46%

Open in a separate window

Source: Grant JE. Impulse Control Disorders: A Clinician's Guide to Understanding and Treating Behavioral Addictions New York, NY: Norton Press,2008.

Addiction Cycle and other relevant concepts

Proponents of behavioral addictions propose that these contemporary models of chemical addiction apply to addictive behaviors.



Proposed Types/subtypes

Gambling

* Sex addiction
* Internet addiction
* Video game addiction
* Shopping addiction
* Food addiction
* Work addiction

But...

Do different behavioural addictions really merits separate naming?

Do these Addictive Behaviors stay same across lifetime, cultures, demographics?

To call Addiction or not to call addiction: where's the line?

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Common features across Behavioral Addictions

* Excess indulgence
* Loss of control
* Negative consequences
* Withdrawal symptoms

Underlying impulsive compulsive traits

J Behav Addict. 2020 Apr; 9(1): 44–57.
Published online 2020 Apr 7. doi: 10.1556/2006.2020.00006
PMCID: PMC8935193
PMID: 32359230

Shared gray matter alterations in individuals with diverse behavioral addictions: A voxel-wise meta-analysis

Kun Qin,[1] Feifei Zhang,[1] Taolin Chen,[1] Lei Li,[1] Wenbin Li,[1] Xueling Suo,[1] Du Lei,[✉1,3,*] Graham J. Kemp,[4] and Qiyong Gong[✉1,2,**]

Our findings on BAs were mainly derived from internet gaming disorder (IGD) and pathological gambling (PG) studies, preliminarily suggesting that GM atrophy in the prefrontal and striatal areas might be a common structural biomarker of BAs.

Neurobiology of Behavioral Addictions

* Dopamine: The neurotransmitter of reward
* Glutamate: The neurotransmitter of learning and memory
* Other neurotransmitters: Serotonin, norepinephrine, GABA, CRF

The reward pathway is a neural circuit that is involved in the processing of rewards.

stimuli, such as food, drugs, and sex. → the release of dopamine → feelings of pleasure and reward.

Incentive Salience

Principles of conditioning and reinforcement

Thus, Dopamine is not just for Pleasure. It is also involved in learning and memory.

* Low levels of dopamine have been linked to addiction.(Low tonic and high Phasic/pulse of DA)

Glutamate

* Glutamate is one of the main excitatory neurotransmitter. BasoLateral Amygdala and mPFC is implicated in addictions due to its role in learning and reward pathways.

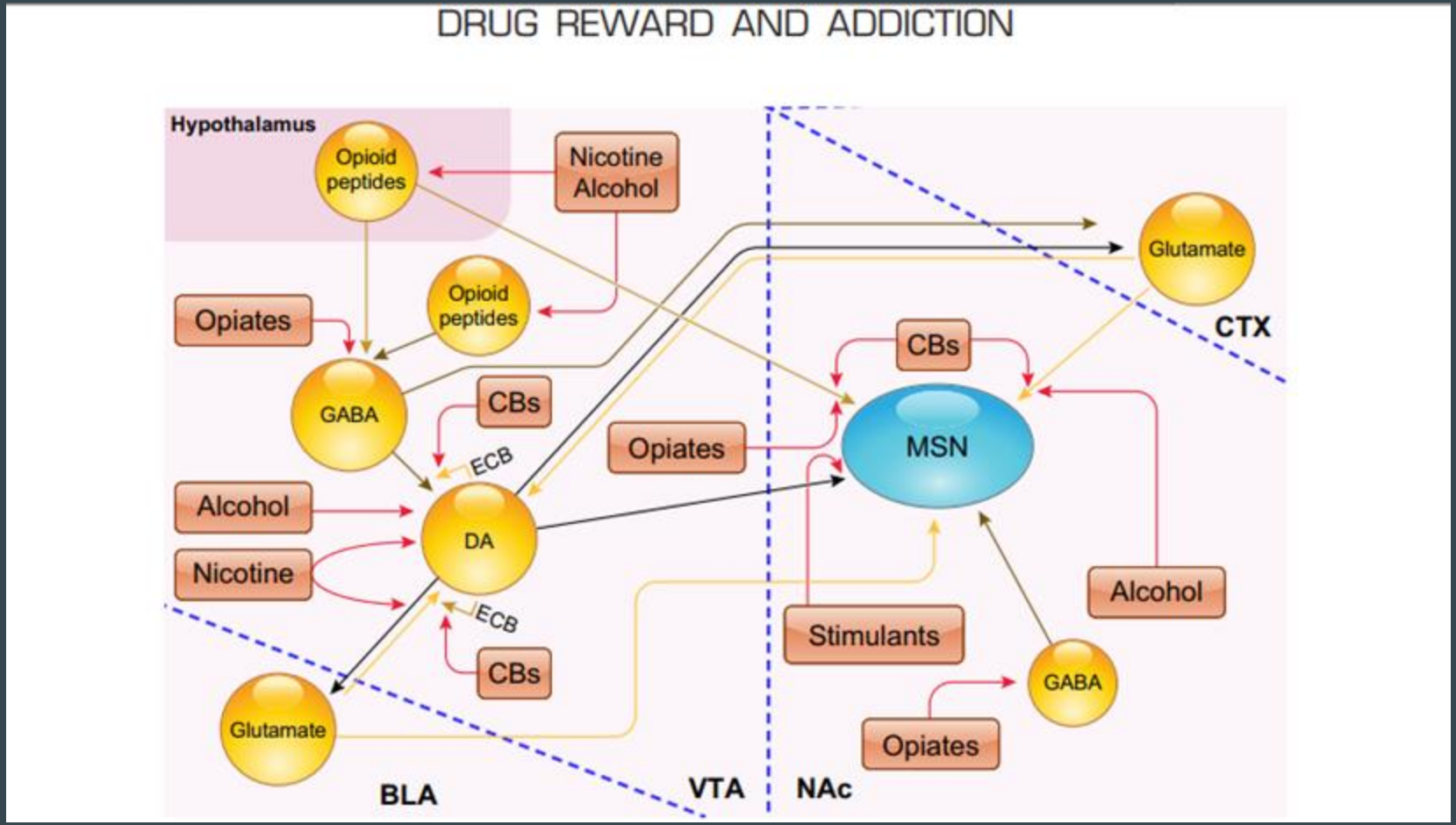
* High levels of glutamate have been linked to addiction.

Endocannabinoid System

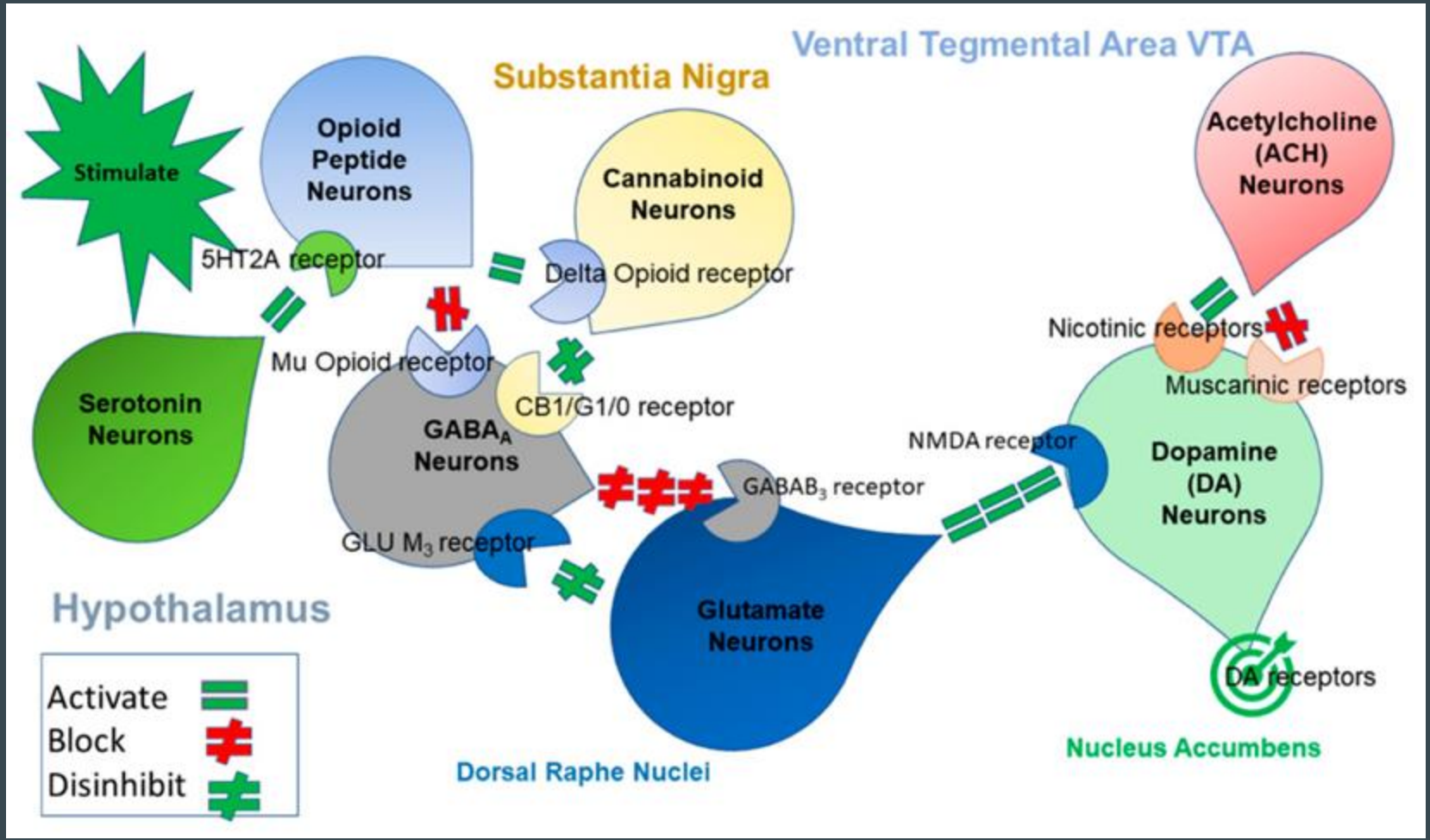
Endoopioid System

Stress hormones like cortisol, Hippocampal GlucoCorticoid receptors

CRF



The Neuroscience Of Drug Reward And Addiction. Volkow et al. Physiol Rev 99: 2115–2140, 2019



J. Pers. Med. 2022, 12(11), 1772; https://doi.org/10.3390/jpm12111772

Impulsivity, Compulsivity and Behavioral Addictions

Impulsivity and Compulsivity both multifaceted constructs

impulsivity

maladaptive predisposition toward rapid reactions, reduced motor or response inhibition, automatic response to urges or impulses, delay aversion, insensitivity to delayed rewards, and lack of reflection when making decisions

Compulsivity

to persistent or perseverative behavior that is inappropriate to the situation and has no obvious relationship to an overall goal. These behaviors are often unpleasantly repetitive and performed in a habitual or stereotyped way

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Single spectrum: Low perseverance -impulsivity, high perseverance-compulsivity

conditions characterized by inadequate control, behavioral disinhibition,

and risk seeking clustered at the “impulsive” end of the dimension,

conditions characterized by harm avoidance and risk aversion clustered at

the “compulsive” end.

Or 2 related but different Dimensions? Simultaneous presence of both impulsive and compulsive behaviors

impulsive and compulsive features may occur either simultaneously or at different times within the same disorder.

Eg. different stages of addiction

Earlier Impulsivity contributes to repeated indulgence(eg via reduced ability to resist urge)

Pleasure/'High'/'kick' positive reinforcement for repeated indulgence.

With regular drug use over an extended period of time, these learning

mechanisms become over-trained and so develop into compulsive habits.

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In neurobiological terms,

a shift in control over responding from prefrontal cortical to striatal control → the transition from voluntary action in substance abuse to more habitual or compulsive modes.

correlates clinically with a move away from positively reinforced behavior motivated by reward seeking, toward negatively reinforced behavior motivated by the avoidance of withdrawal symptoms.

To note: Dorsal striatum-compulsivity , ventral striatum-impulsivity

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Instead of considering the two constructs as polar opposites,

consider impulsivity and compulsivity as orthogonal factors across a range of disorders, where either construct may be present to a greater or lesser degree independent of the other construct.

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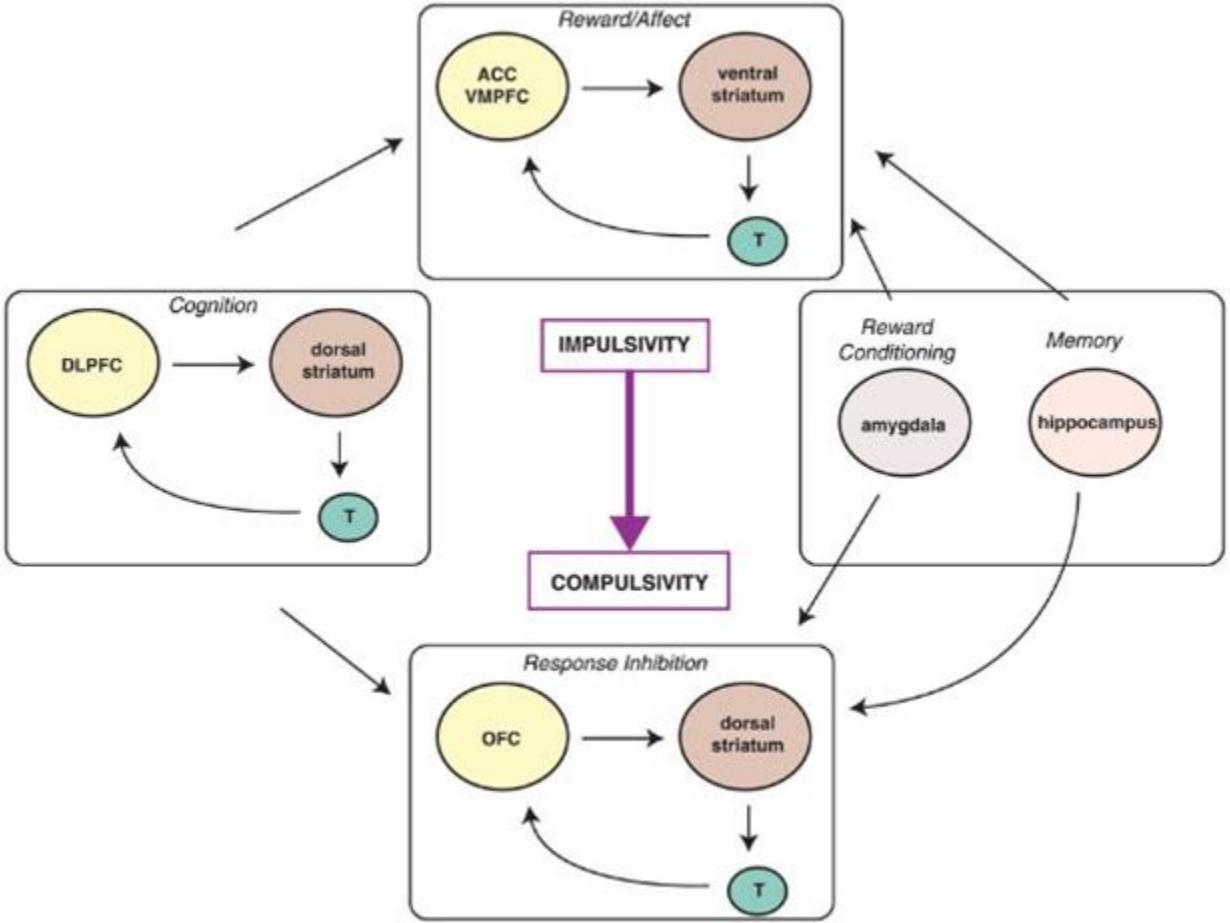


Figure 14-4. **Spiraling circuits of impulsivity and compulsivity.** The progression from occasional, impulsive drug use to compulsive use and addiction involves both the dysregulation of bottom-up reward circuits and insufficient top-down inhibition of these circuits. The amygdala and hippocampus provide regulatory input to this system as well. ACC, anterior cingulate cortex; DLPFC, dorsolateral prefrontal cortex; OFC, orbitofrontal cortex; T, thalamus; VMPFC, ventromedial prefrontal cortex.

So what actually happens?

Background traits of

Low hedonic tone: tendency to get bored, reduced ability to experience pleasure

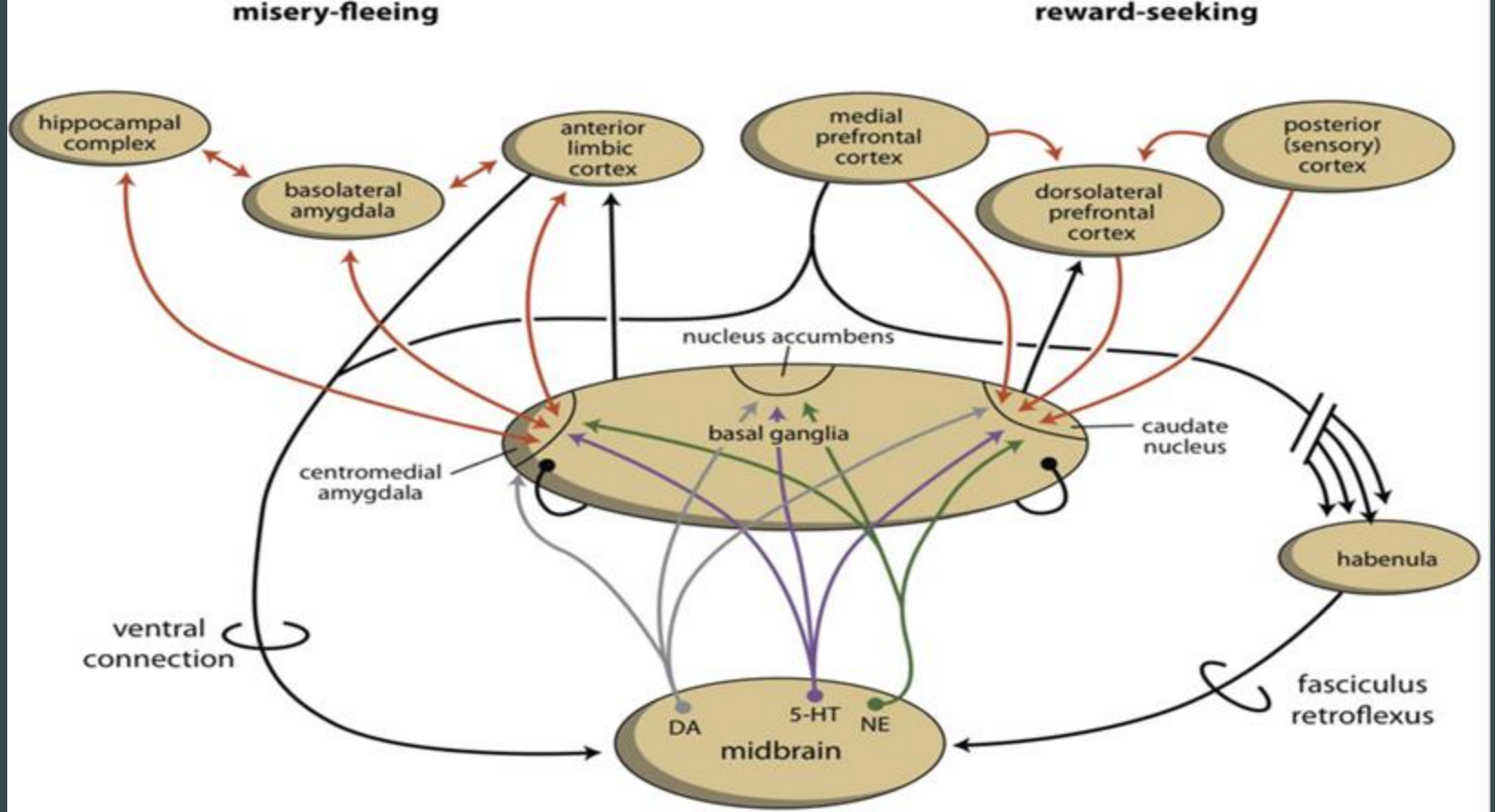
Impulsivity and ADD traits, reduced emotional regulation/inhibitory control

Experimentation/exposure → high → repeated indulgence due to positive reinforcement

Incentive salience now makes innocuous environmental stimuli a ‘cue’ →urge or craving

Later compulsive/habitual indulgence to avoid negative mood states (proposed anti-reward system)

Ie a person keeps engaging in behavior to either get reward or avoid misery



Schematic representation of four levels of regulation of *misery*-fleeing (left) and reward-seeking (right) behavior.

http://dx.doi.org/10.3389/fncir.2017.00035

Does this only happen in Addictions?

OCD: Giacomo Grassi: Subthreshold symptoms → anxiety-alarm stage (clinical 'onset') → "behavioral Addiction" to compulsions (1)

Impulse Control Disorders- Kleptomania, Nymphomania..

Compulsive behaviors- Compulsive sexual behavior

Eating Disorders

Does one "Addictive Behavior" stay the same over time?

1. http://dx.doi.org/10.1016/j.euroneuro.2015.06.031

Research article | Open Access | Published: 22 January 2015

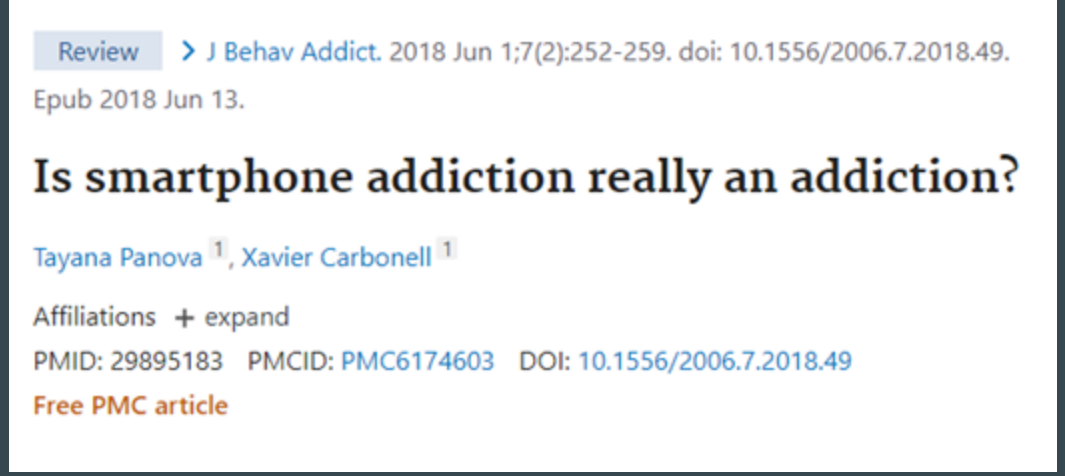
Natural course of behavioral addictions: a 5-year longitudinal study

Barna Konkolÿ Thege, Erica M Woodin, David C Hodgins & Robert J Williams

BMC Psychiatry **15**, Article number: 4 (2015) | Cite this article

Conclusions

The present results indicate that self-identified excessive exercising, sexual behavior, shopping, online chatting, video gaming, and/or eating tend to be fairly transient for most people. This aspect of the results is inconsistent with conceptualizations of addictions as progressive in nature, unless treated.



Review > J Behav Addict. 2018 Jun 1;7(2):252-259. doi: 10.1556/2006.7.2018.49. Epub 2018 Jun 13.

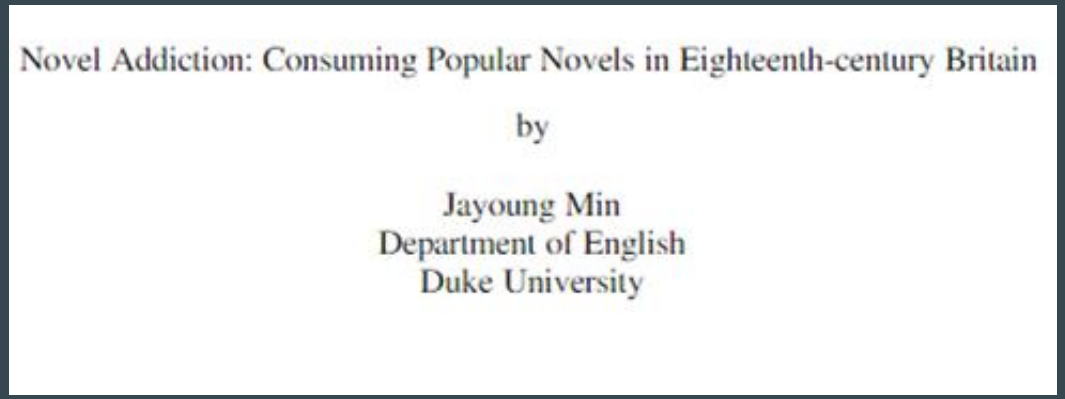
Is smartphone addiction really an addiction?

Tayana Panova [1], Xavier Carbonell [1]

Affiliations + expand

PMID: 29895183 PMCID: PMC6174603 DOI: 10.1556/2006.7.2018.49

Free PMC article



Novel Addiction: Consuming Popular Novels in Eighteenth-century Britain

by

Jayoung Min
Department of English
Duke University

News paper addiction
Comic Book Addiction
Radio addiction
Tv addiction(1)
Playing Cards addiction

1. J Behav Addict. 2013 Sep;2(3):125-32. doi: 10.1556/jba.2.2013.008. Epub 2013 Jun 14

ADDICTION

SSA SOCIETY FOR THE STUDY OF ADDICTION

ADDICTION DEBATE

doi:10.1111/add.13763

How can we conceptualize behavioural addiction without pathologizing common behaviours?

Daniel Kardefelt-Winther[1], Alexandre Heeren[2], Adriano Schimmenti[3], Antonius van Rooij[4], Pierre Maurage[5], Michelle Carras[6], Johan Edman[7], Alexander Blaszczynski[8], Yasser Khazaal[9] & Joël Billieux[5,10,11]

following the release of DSM-5, an expanding body of research has increasingly classified engagement in a wide range of common behaviours and leisure activities as possible behavioural addiction. If this expansion does not end, both the relevance and the credibility of the field of addictive disorders might be questioned, which may prompt a dismissive appraisal of the new DSM-5 subcategory for behavioural addiction. We propose an operational definition of behavioural addiction together with a number of exclusion criteria, to avoid pathologizing common behaviours and provide a common ground

Diagnosis of behavioral addictions

* There is no single diagnostic test for behavioral addictions.

* Diagnosis is based on a clinical assessment of the individual's symptoms and history.

Multiple Scales have been devised like POGQ

* A common theme across behavioral addictions is the comorbidity with mood and anxiety disorders as well as some personality disorders(1)

1. BEHAVIORAL ADDICTIONS: Criteria, Evidence, and Treatment ISBN: 978-0-12-407724-9

DSM and ICD

DSM 5

Gambling Disorder

Internet Gaming Disorder - kept in Section III, “Conditions for Further Study”

ICD – 11

Gambling disorder – Impulse control disorders;

Gaming Disorder

Problematic internet use not included due to lack of scientific evidence

Beyond DMS/ICD diagnosis

Transdiagnostic Approaches

Avoiding the re-invention of wheel

Longitudinal, lifespan approach

Treatment

There is no one-size-fits-all treatment for behavioral addictions.

Even all principles of Substance Addiction don’t apply

But many of the treatment options for Impulse Control Disorders and Compulsive Behaviors do seem to work

* Treatment options may include therapy, medication, and lifestyle changes and adequate treatment of underlying or comorbid conditions

Pharmacotherapy

Gambling Disorder

Naltrexone: mean dose 188 mg/d

Nalmefen: variable. 20-40mg/d,25 to 100mg/d

N-AC:

Antidepressants: mixed results. Sertraline, Fluvoxamine, Bupropione

Lithium: 0.87 mEq/L. for Comorbid BMD

olanzapine-not different from placebo

Pharmacotherapy for Behavioral Addictions. Jon E. Grant & Samuel R. Chamberlain
Curr Behav Neurosci Rep (2016) 3:67–72 DOI 10.1007/s40473-016-0065-6

Compulsive Buying

fluvoxamine 2 studies. not much difference from placebo

citalopram improvement in 1 study

Kleptomania

Escitalopram: 1 study. Open-lable ->response. double-blind-> not statistically significant.

Naltrexone 116.7±44.4mg/d

Compulsive Sexual Behavior

1 study. Gay and Bisexual. 12 week. Citalopram

Pharmacotherapy for Behavioral Addictions. Jon E. Grant & Samuel R. Chamberlain
Curr Behav Neurosci Rep (2016) 3:67–72 DOI 10.1007/s40473-016-0065-6

Nonpharmacological Approaches

Stimulus control

Aversive approaches

Imaginal Desensitisation

Motivational Enhancement

Various “Anonymous” eg Gamblers Anonymous, Overeaters Anonymous

controversies

The term “Behavioral Addiction” itself

Impulse Control Disorders

Compulsivity phenomena

Is each excessive behavior an addiction?

Does each behavior need separate diagnosis?

‘Addicted to Internet’ akin to ‘Addicted to Glass or Bottle’

Future directions

case for Specific Phobia, Compulsive Spectrum Disorder

Phenomenological hair-splitting vs Neurobiologically aligned approaches(at least from pharmacology point of view)

Treating it as any other Compulsive or Impulsive Disorder

Treating with molecules targeted at lifelong underlying traits

Did We forget Mr. Z?

What does he have?

Gaming disorder? Gambling disorder? Internet addiction? Mobile addiction?

Or simply compulsive, maladaptive overuse of a process/behavior as “self medication” or “self treatment” of negative mood states?

Ultimately Mr. Z got better with combination of

Atomoxetine and Desvenlafaxine.

Complete Abstinence that game

Only free games, no real money(Harm Reduction), that too after completing other daily activities and responsibilities.

Some elements of MET as needed.

Conclusion

- Diagnostic category of Behavioral Addiction still debatable
- Yet these problem behaviors are clinically relevant and need to be treated
- In some cases (eg. Gambling) Abstinence may be possible but not always (Eg. Food/Eating Addiction)
- When Underlying Impulsive-Compulsive issues are taken care of, it largely treats these Behavioral or Process Addictions too
- Antidepressants, Naltrexone, ADHD meds are likely to help significantly. They'll also be indicated for seemingly comorbid anxiety and depressive features

Reading material

- BEHAVIORAL ADDICTIONS: Criteria, Evidence, and Treatment. Ed. Kenneth Paul Rosenberg
- The Cambridge Handbook of Substance and Behavioral Addictions,2020. Ed. Steve Sussmann
- Pharmacotherapy for Behavioral Addictions. Jon E. Grant & Samuel R. Chamberlain. Curr Behav Neurosci Rep (2016) 3:67–72 DOI 10.1007/s40473-016-0065-6
- How can we conceptualize behavioral addiction without pathologizing common behaviors? Daniel Kardefelt-Winther et al. Addiction. 2017 October ; 112(10): 1709–1715. doi:10.1111/add.13763
- Introduction to Behavioral Addictions: Jon E. Grant et al. Am J Drug Alcohol Abuse. 2010 September ; 36(5): 233–241. doi:10.3109/00952990.2010.491884

Thank You