

PSYC003: Psychological Influences on Health & Behaviour

Substance Use & Addiction

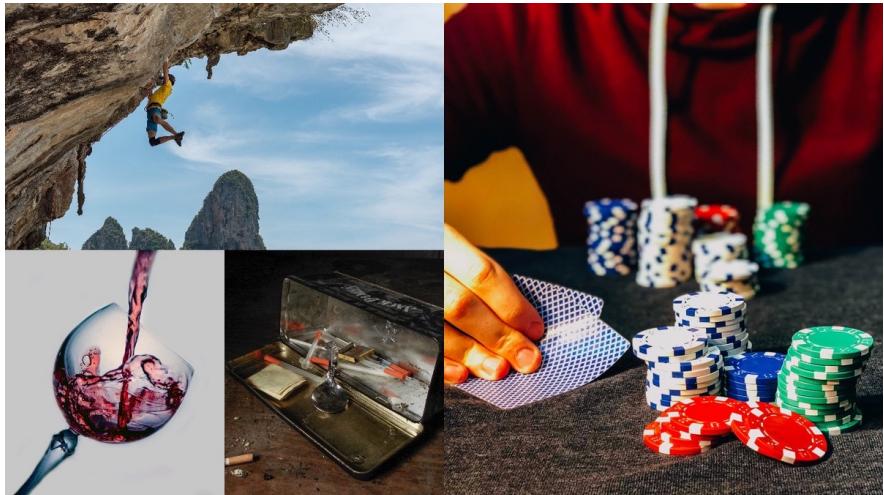
School of Psychology, University of Plymouth

Dr Rob Heirene

May 2023

About me

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Recap quiz: Exercise

Interactive task

2-question MCQ on exercise from our last lecture:

- Login to Menti and add your answers

Please go to the
following site &
enter this number:

TBC



<https://www.menti.com/>

About today's class

Block 1

- Alcohol & Illicit Drugs
 - Common substances
 - Levels & prevalence of use
 - Health effects of alcohol
 - The alcohol-harm paradox
- Activity: Assessing harmful drinking



~10-minute break



Block 2

- Addiction
 - What does it mean to be “addicted”?
 - Theories of addiction
 - Behavioural addictions?
 - Behavioural vs. drug addictions
 - Are we pathologizing normal behaviour?



~5-minute break



Block 1

Alcohol & Illicit Drugs

Alcohol & Illicit Drugs

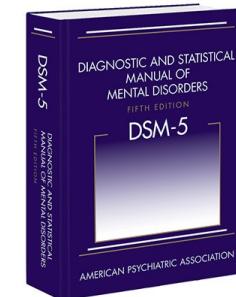
Common substances

What is the most common addiction in the world?

Diagnostic and Statistical Manual of Mental Disorders (DSM-5)

Substance-related and addictive disorders

- **Alcohol**
- **Caffeine**
- Cannabis
- Hallucinogens
- Inhalants
- Opioids
- Sedatives, hypnotics, or anxiolytics
- Stimulants
- **Tobacco**
- Other...



Alcohol & Illicit Drugs

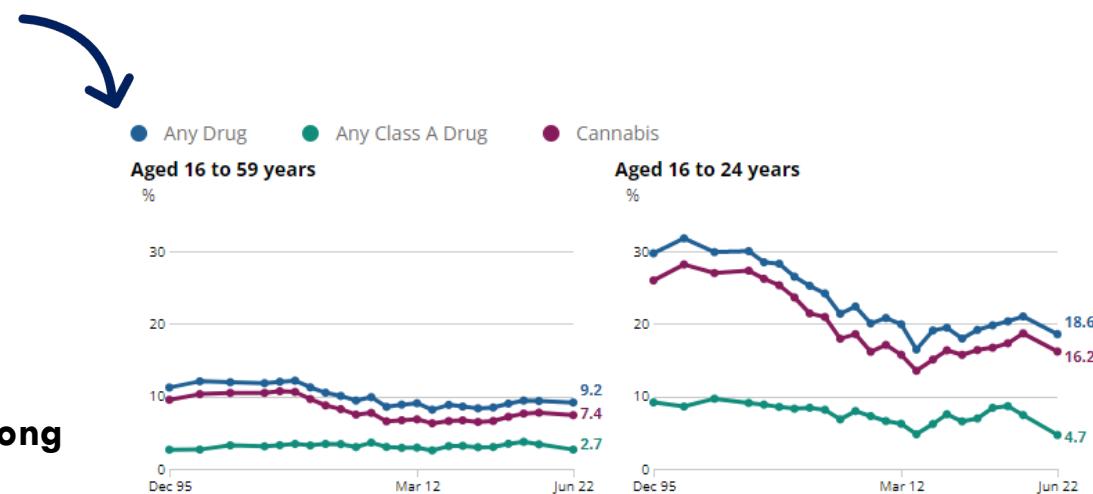
Prevalence of use: Illicit drugs

Drug misuse in England and Wales: Year ending June 2022 ([Report](#)):

- ~1 in 11 adults (16-59), or 9.2% (~3 million people) reported that they used drugs in the last year
- ~1 in 5 adults (16-24), or 18.6% (~1.1 million people) reported that they used drugs in the last year

Smoking, drinking and drug use among young people in England ([2021](#); [Report](#)):

- 10.4% of those aged 11-15 reported past-year drug use



Alcohol & Illicit Drugs

Levels of use: Alcohol

Australia

Each week, **adults** should drink no more than:

- 10 standard drinks a week
- 4 standard drinks on any one day

A standard drink contains 10 g of pure alcohol
(1 week = 100g)



United Kingdom

Each week, **adults** should drink no more than:

- 14 units a week
- 4 standard drinks on any one day

A unit contains 8g of pure alcohol (1 week = 112g)



“no level of regular alcohol consumption improves health”

Alcohol & Illicit Drugs

Levels of use: Alcohol

Alcohol unit reference

One unit of alcohol



Drinks more than a single unit



Department of Health

The number of **units** you are drinking depends on the **size and strength** of your drink

11% ABV wine 14% ABV wine

1.4 units **1.8 units**

125ml glass

1.9 units **2.4 units**

175ml glass

2.8 units **3.5 units**

250ml glass

8.2 units **10.5 units**

750ml bottle

Department of Health

The number of **units** you are drinking depends on the **size and strength** of your drink

3.8% ABV lager 5.2% ABV lager

1.1 units **1.5 units**

284ml half pint

1.7 units **2.3 units**

440ml can

2.2 units **3 units**

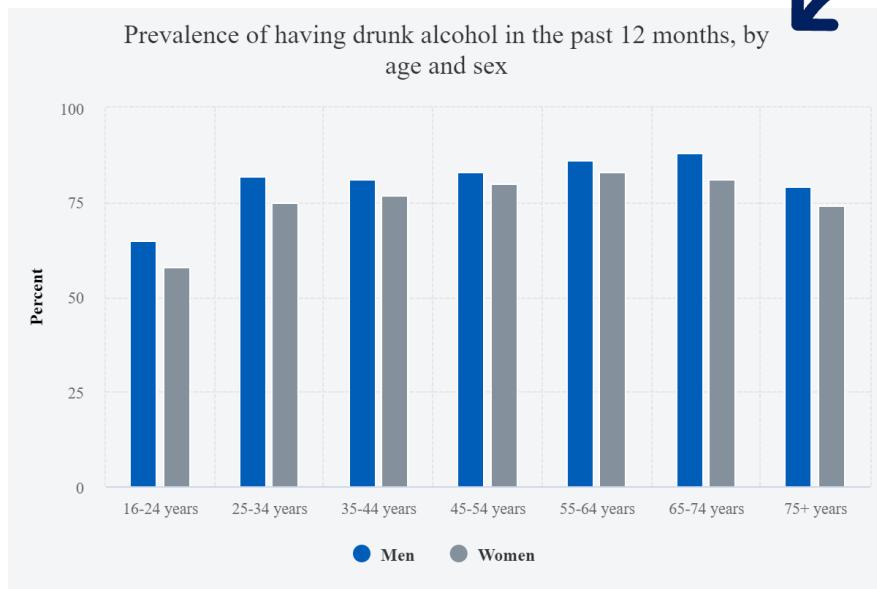
568ml pint

2.5 units **3.4 units**

660ml bottle

Alcohol & Illicit Drugs

Prevalence of use: Alcohol



Health survey for England 2021 ([Report](#)):

- 79% of adults (16+) report drinking in the last 12 months
- 49% report drinking at least once a week
- >14 units weekly: men (27%) and women (15%)
- >50 units weekly: men (5%) and women (3%)

Smoking, drinking and drug use among young people in England ([2021; Report](#)):

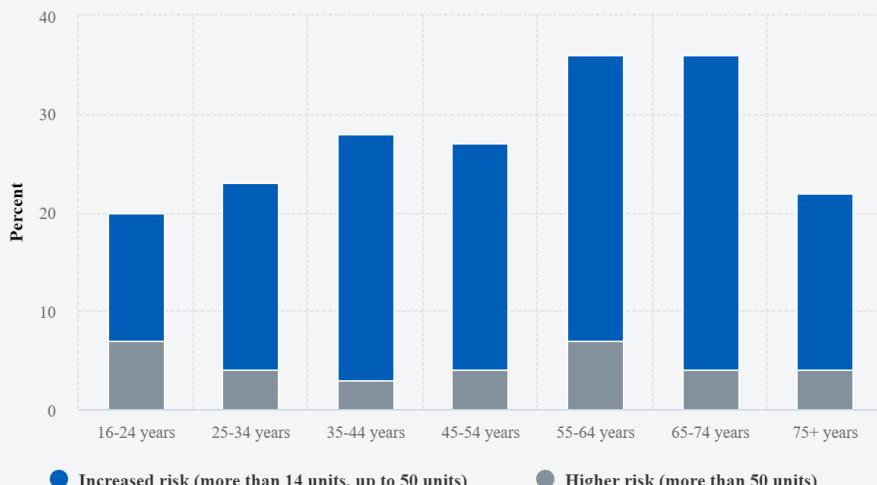
- 10.4% of those aged 11-15 reported past-year drug use

Alcohol & Illicit Drugs

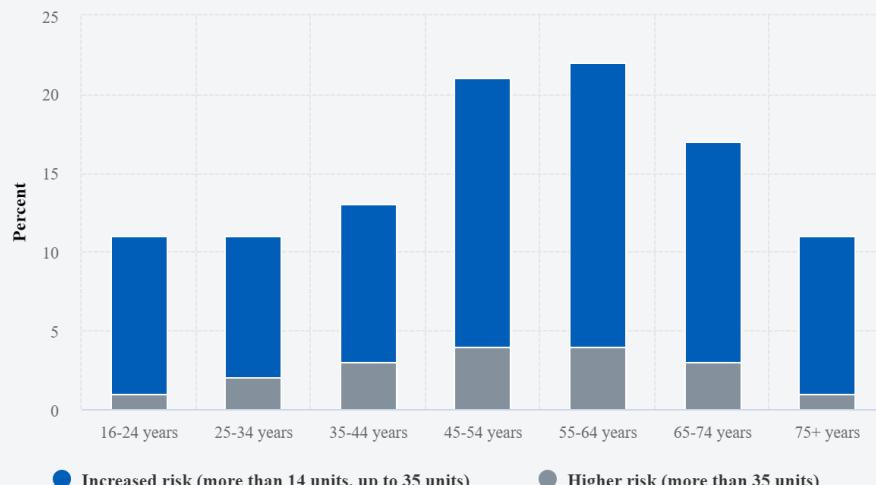
Prevalence of use: Alcohol

Health survey for England 2021 ([Report](#))

Prevalence of drinking over 14 units per week (increased or higher risk of harm) among men by age



Prevalence of drinking over 14 units per week (increased or higher risk of harm) among women by age



● Increased risk (more than 14 units, up to 50 units)

● Higher risk (more than 50 units)

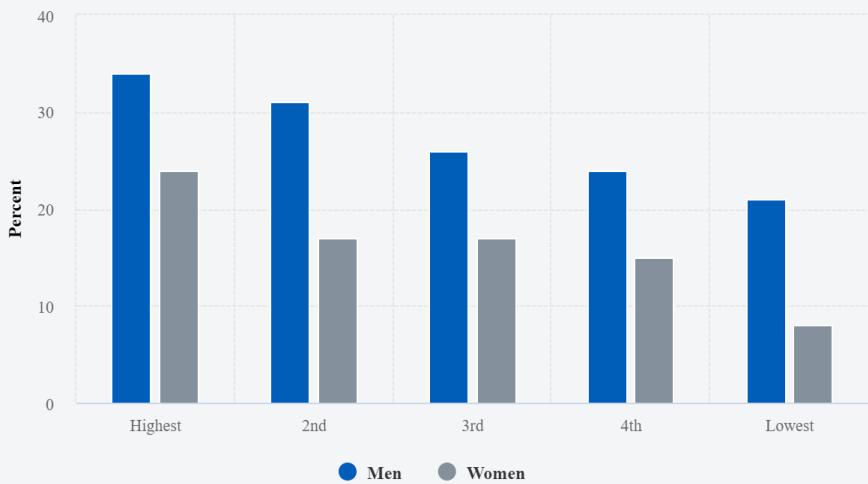
● Increased risk (more than 14 units, up to 35 units)

● Higher risk (more than 35 units)

Alcohol & Illicit Drugs

Prevalence of use: Alcohol

Prevalence of drinking over 14 units a week (at increased or higher risk of harm), by income and sex



Health survey for England 2021 ([Report](#)): Take home messages:

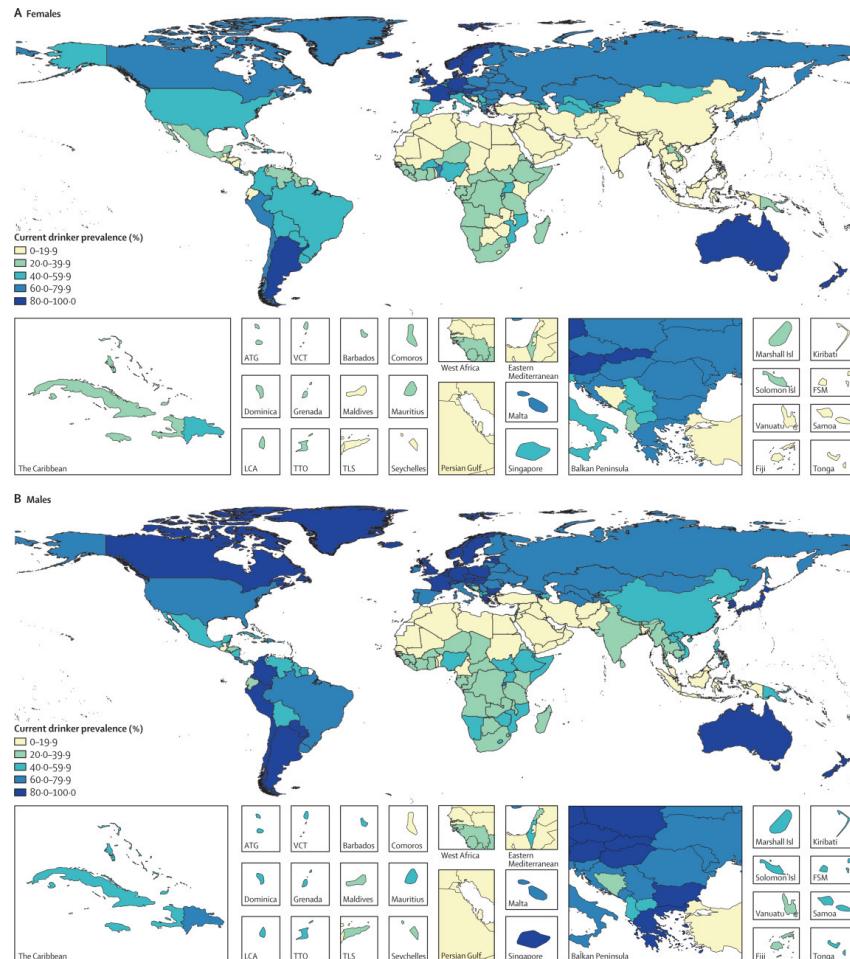
- Far too many adults exceed the recommended alcohol consumption guidelines
- Men appear to drink more than women
- Younger people are drinking less
- Positively, there's been a general decline in alcohol consumption over the last ~15 years

Alcohol & Illicit Drugs

Prevalence of use: Alcohol

Global patterns in use (Griswold et al., 2018):

- 32% (uncertainty range: 30-35.2) of the global population were current drinkers
- Rates higher in men than women
- Rates higher among high SDI countries



Alcohol & Illicit Drugs

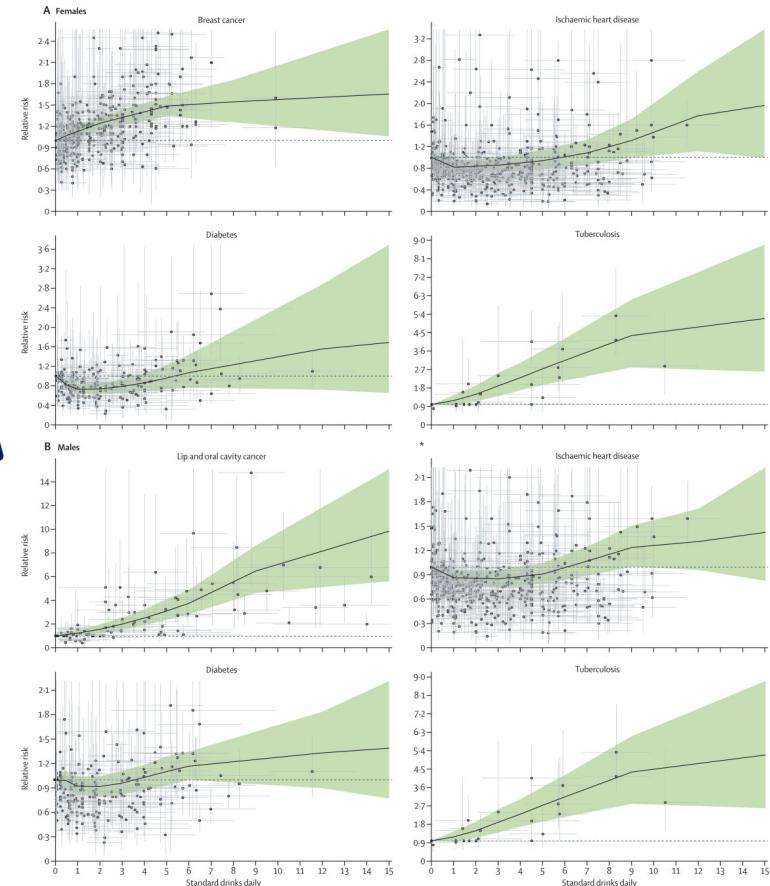
Health effects of alcohol

WHO (2018):

- Harmful use of alcohol is a causal factor in more than 200 disease and injury conditions
- 5.1% of global disease burden attributable to alcohol

Global patterns in alcohol attributable deaths and disease burden in 2016 (Griswold et al., 2018):

- 2.8 million deaths (2.2% of all female deaths and 6.8% for male deaths)
- Accountable for 1.6% of total DALYs for females and 6% among males
- 7th leading risk factor for premature death and disability



Alcohol & Illicit Drugs

The alcohol harm paradox

The alcohol harm paradox

Disadvantaged groups typically report similar or lower levels of alcohol consumption

Disadvantaged groups _____

Boyd et al. (2022): possible explanations for the AHP?

Individual factors?

Greater use of alcohol as a coping strategy

Lifestyle factors?

Drinking patterns and other health behaviours

Contextual factors?

Neighbourhood level of poverty, marital status

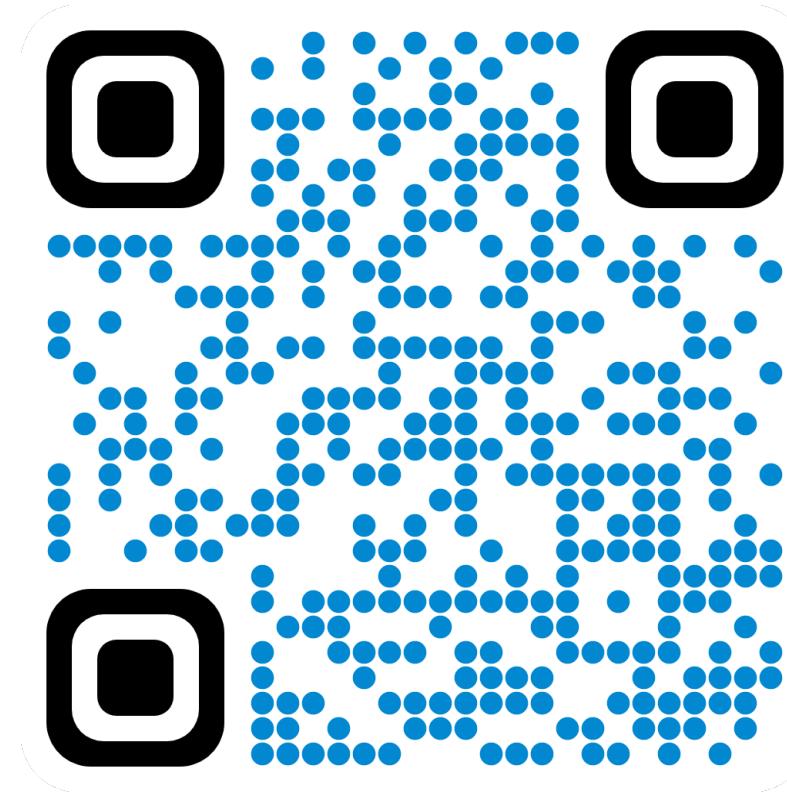
Structural factors?

Economic situation, alcohol policy, employment, power



Alcohol & Illicit Drugs

Assessing harmful drinking



Alcohol & Illicit Drugs

Assessing harmful drinking

AUDIT: Alcohol Use Disorder Identification Test

Most commonly used alcohol screening instrument worldwide

Assesses:

- Alcohol use (how often and how much)
- Harms (e.g., unable to fulfil duties)
- Dependence (e.g., unable to stop drinking)

Table 2. Total AUDIT score subdivisions with associated levels of risk and suggested interventions

Tier	AUDIT score	Risk level	Intervention
1	0–7	Abstinence/non-hazardous use	Alcohol education
2	8–15	Medium risk/hazardous use	Simple advice & education
3	16–19	Harmful use/possible dependence	Simple advice, brief counselling & continued monitoring
4	≥20	Severe alcohol dependence	Specialist referral for diagnostic evaluation & treatment

John, Newstead, Heirene, Hodgson, & Roderique-Davies (2021)

Block 2

Addiction

Part 1: Substance Addictions

Addiction

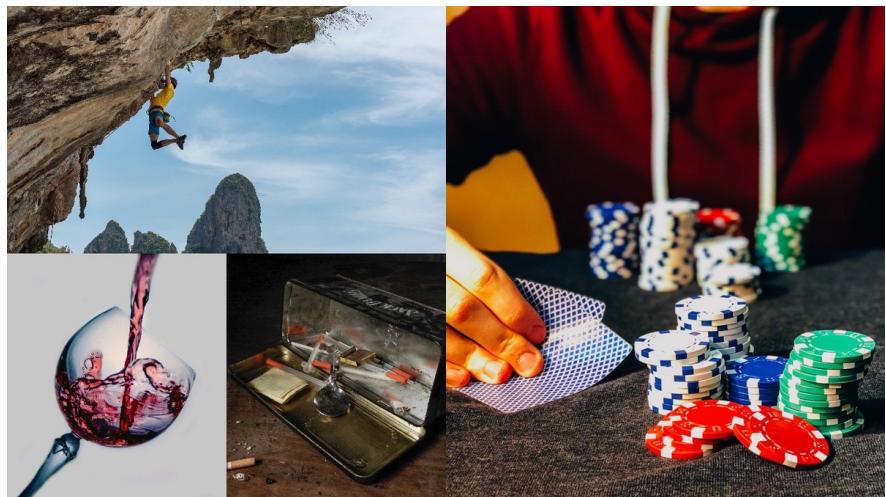
What does it mean to be “addicted”?

“Addiction is a treatable, chronic medical disease involving complex interactions among brain circuits, genetics, the environment, and an individual’s life experiences. People with addiction use substances or engage in behaviors that become compulsive and often continue despite harmful consequences.”

([ASAM, 2020](#))

Discussion point

How would you describe what an addiction is?



Addiction

What does it mean to be “addicted”?

Components model (Griffiths, 2005): A person is only addicted if they meet the following six criteria:

Mood modification

The emotional and subjective experiences associated with engaging with the activity (e.g., a high or euphoria) which can be defined in terms of a change from pre-engagement state (e.g., a reduction in anxiety; “self-medication”).

Withdrawal

The unpleasant physical and psychological states experienced when not engaging with the activity (i.e., during abstinence), including sweating, insomnia, restlessness, anxiety, and irritability.

Conflict

Internal and interpersonal conflict arising from excessive engagement with the behaviour, such as deteriorating relationships, work performance and participation with social activities.

Addiction

What does it mean to be “addicted”?



Sussman & Sussman (2011): All forms of addiction share five common elements:

- (1) Appetitive effects
 - (2) Preoccupation with the behaviour
 - (3) Temporary satiation
 - (4) Loss of control
 - (5) Negative consequences associated with the behaviour.
-
- Compulsivity & cue sensitivity (Incentive sensitisation theory; Berridge et al., 1989, 2011, & 2016; Perales et al., 2020)
 - Opposing affective cycles, increasingly worsening withdrawal, & tolerance (opponent process theory; Solomon & Corbit, 1974)

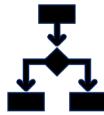
Addiction

Theories of addiction

Traditional distinction between:



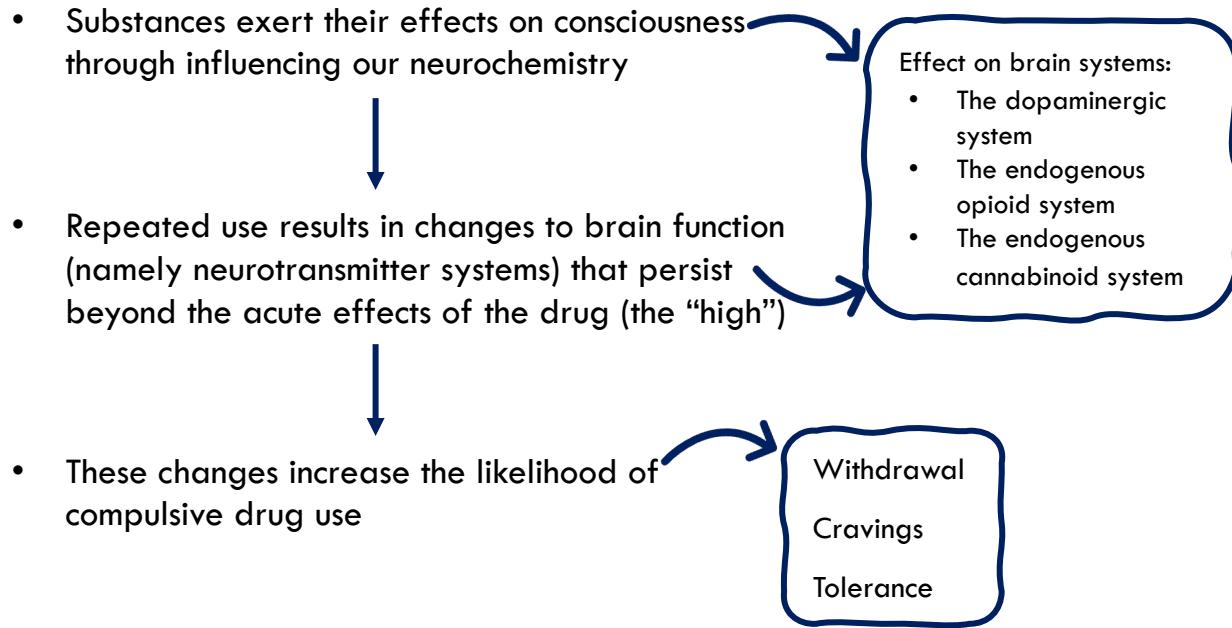
- **Medical/disease model:** Impaired control over urges/ cravings:
 - Clear biological effects of drug use
 - Reduced stigma, blame
 - Importance of treatment/ rehabilitation emphasized
- **Rational choice model:** Characterised by voluntary behaviour under control:
 - Increased personal responsibility
 - Increased sense of control & decision making
 - Many cases cease without treatment



Addiction

Theories of addiction: Biological explanation

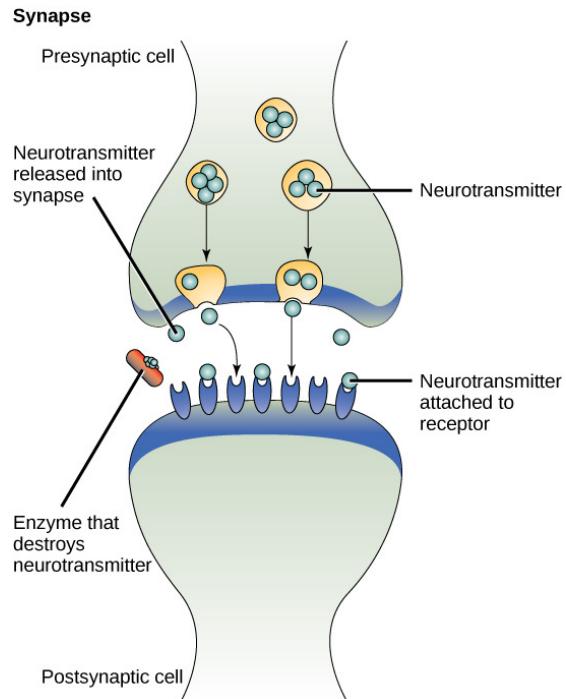
The ‘hijacked’ brain?



Addiction

Theories of addiction: Biological explanation

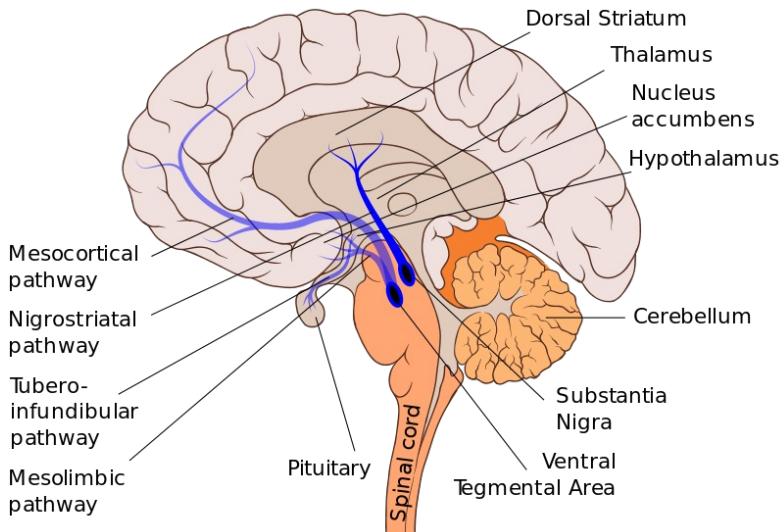
- Consuming alcohol affects:
 - GABA (gamma-aminobutyric acid)
 - Glutamate
 - Dopamine
 - Serotonin
 - Endogenous opioids...
- Defining changes to GABA and glutamate systems
 - GABA ↑
 - + Glutamate ↓



Source: [Wiki Commons](#)

Addiction

Theories of addiction: Biological explanation



Source: [Wiki Commons](#)

Concentrations of dopamine increase following the use of most drugs, including:

**Alcohol, Nicotine, Cannabis,
Opioids, Cocaine, Amphetamines**

“Although the reinforcing value of drugs and the development of addiction involve multiple areas and neurotransmitter systems that differ by drug-of-abuse, the DA system is of central importance to all” (Taber et al., 2012)

Addiction

Theories of addiction: Biological explanation

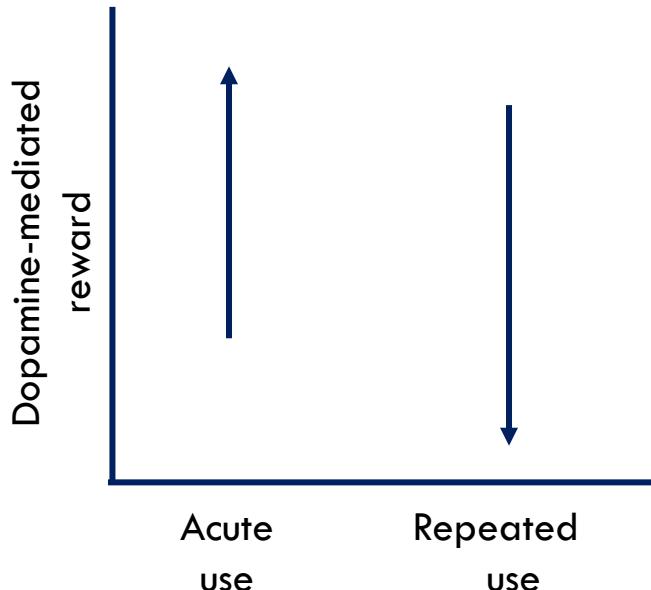
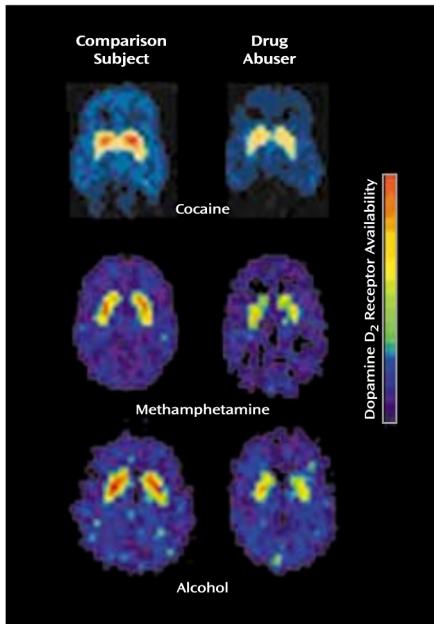
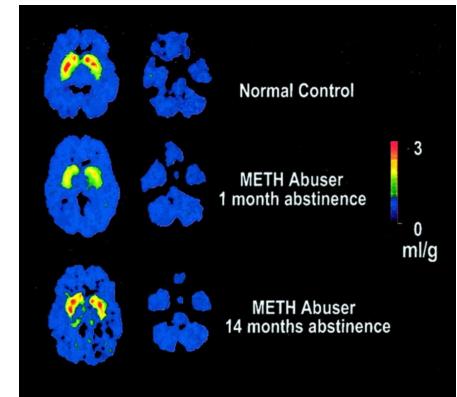


FIGURE 4. Lower Striatal Dopamine D₂ Receptor Binding in Drug Users During Withdrawal From Cocaine, Methamphetamine, and Alcohol Than in Normal Comparison Subjects



Source: Goldstein & Volkow
(2011)



Source: Volkow et al. (2001)

Addiction

Theories of addiction: Is addiction a “brain disease”?

The Brain Disease Model of Addiction

- Evidence of neurobiological adaptations in those with substance use disorders (beyond neurotransmitter systems)
- Helps to remove the stigma of “addicted by choice”?
- Conceptualising as a disease argues against criminalisation for use
- Highlights importance of treatment/intervention to support recovery

Alan I. Leshner, Ph.D.

Addiction Is a Brain Disease, and It Matters

Scientific advances over the past 20 years have shown that drug addiction is a chronic, relapsing disease that results from the prolonged effects of drugs on the brain. As with many other brain diseases, addiction has embedded behavioral and social-context aspects that are important parts of the disorder itself. Therefore, the most effective treatment approaches will include biological, behavioral, and social-context components. Recognizing addiction as a chronic, relapsing brain disorder characterized by compulsive drug seeking and use can impact society's overall health and social policy strategies and help diminish the health and social costs associated with drug abuse and addiction.

Addiction

Theories of addiction: Is addiction a “brain disease”?

Addiction is not a brain disease (and it matters)

Neil Levy *

Florey Institute of Neuroscience and Mental Health, The University of Melbourne, Parkville, VIC, Australia

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The claim that addiction is a brain disease is almost universally accepted among scientists who work on addiction. The claim's attraction rests on two grounds: the fact that addiction seems to be characterized by dysfunction in specific neural pathways and the fact that the claim seems to the compassionate response to people who are suffering. I argue that neural dysfunction is not sufficient for disease: something is a brain disease only when neural dysfunction is sufficient for impairment. I claim that the neural dysfunction that is characteristic of addiction is not sufficient for impairment, because people who suffer from that dysfunction are impaired, sufficiently to count as diseased, only given certain features of their context. Hence addiction is not a brain disease (though it is often a disease, and it may always involve brain dysfunction). I argue that accepting that addiction is not a brain disease does not entail a moralizing attitude toward people who suffer as a result of addiction; if anything, it allows for a more compassionate, and more effective, response to addiction.

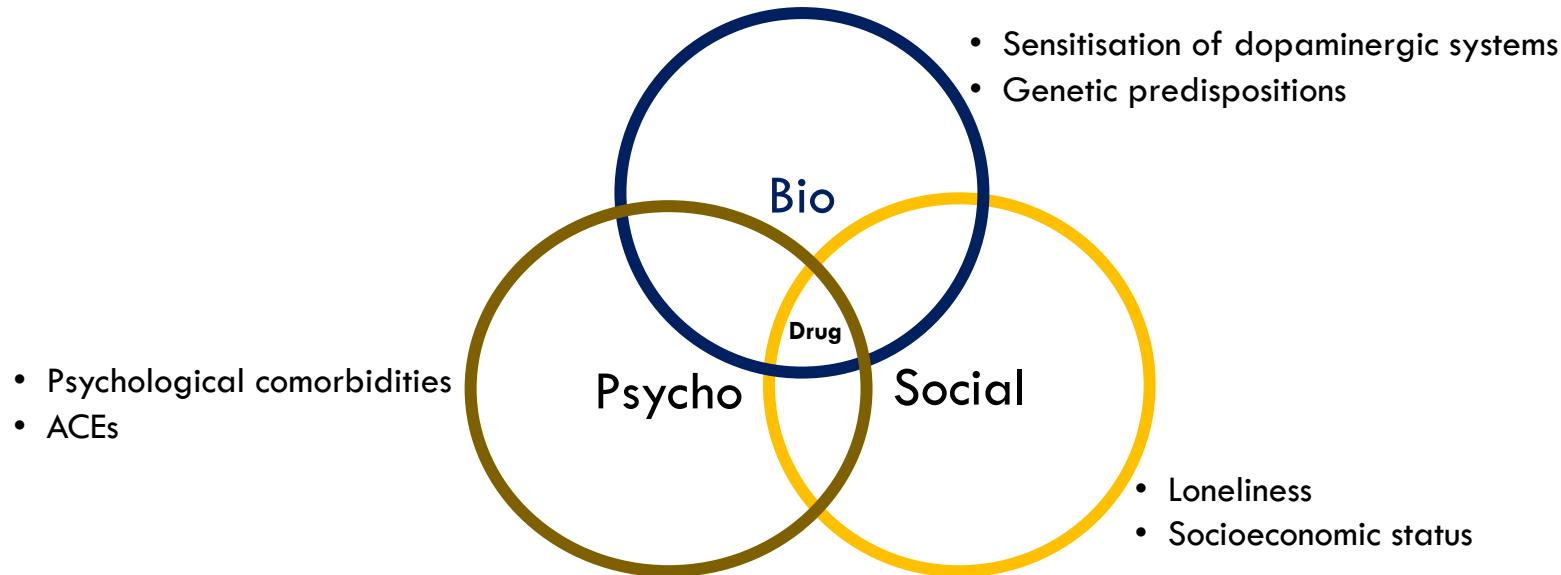
Keywords: addiction, disease, well-being, agency, dysfunction

Concerns with the Brain Disease Model

- Minimizes important social & environmental stresses like loneliness, poverty, violence, & other psychological & environmental factors
- Deflects responsibility over actions: ‘My brain made me do it!’
 - Self-control & free-will central to philosophical debates in addiction
- Promotes a fatalistic outlook
- Unhelpful perspective for therapy?

Addiction

Theories of addiction: Biopsychosocial model



Addiction

Theories of addiction: Biopsychosocial model

Toward a Syndrome Model of Addiction: Multiple Expressions, Common Etiology

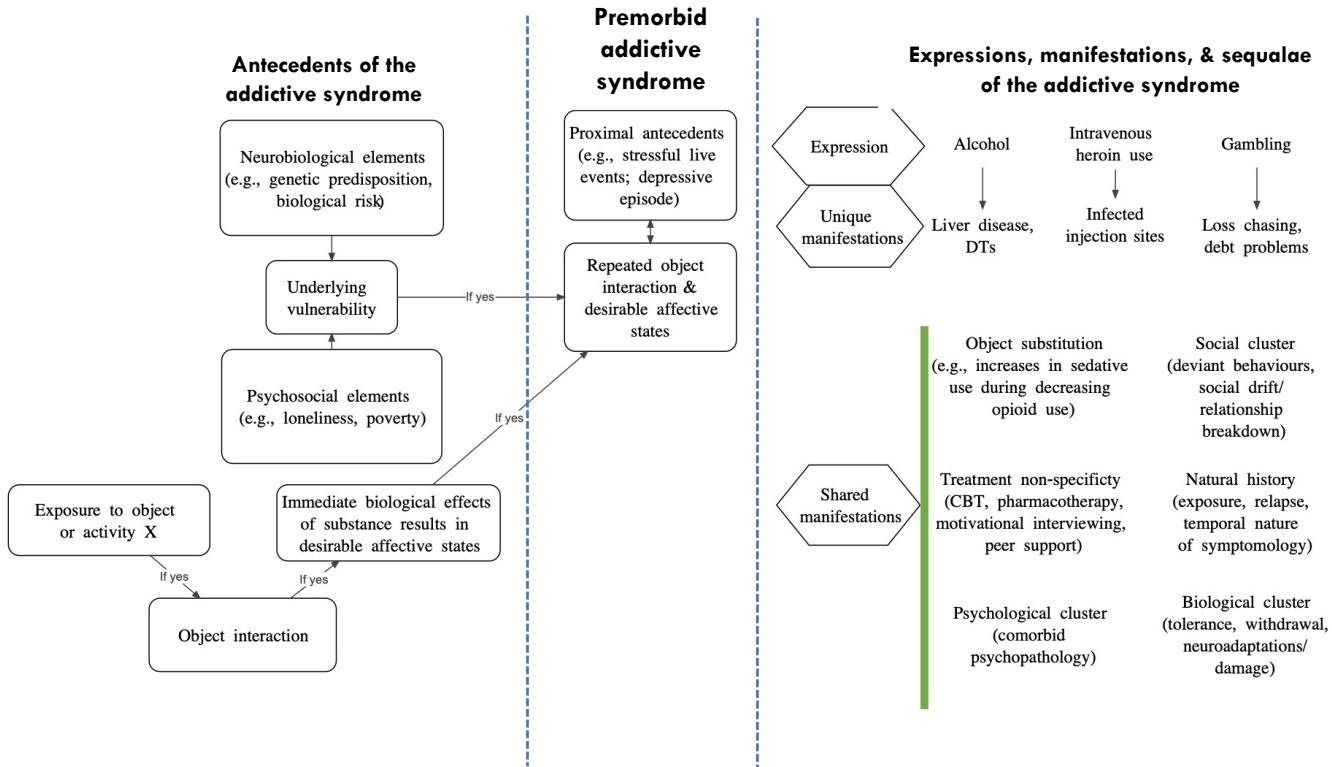
Howard J. Shaffer, PhD, CAS, Debi A. LaPlante, PhD, Richard A. LaBrie, EdD, Rachel C. Kidman, BA,
Anthony N. Donato, MPP, and Michael V. Stanton, BA

Core tenets of the Syndrome Model:

- Each addictive disorder is a distinctive manifestation of the same underlying syndrome
- The Syndrome results from the interaction between common biopsychosocial factors
- The objects or foci of addiction are less important than we have previously assumed
- Not all symptoms are present in every manifestation

Addiction

Theories of addiction: Biopsychosocial model



Adapted from Shaffer et al. (2004)

Part 2: Behavioural Addictions

Addiction

Behavioural addictions: Can we be addicted to anything?

6 Signs You're Addicted To Investing

By James Kerin | Updated March 30, 2017 — 4:49 PM EDT

Stock trading has long been reserved for those Type A personalities who are strong, driven and smart. For many, it's a win-at-all-cost game which means logging long hours in front of a computer screen, researching and trading stocks. But while a strong work ethic should be applauded, there's a fine line between working hard and being addicted to trading. And that line can mean the difference between making sound investment decisions and gambling away money. Although it may be hard to identify someone who is [addicted to trading](#)—after all they aren't falling down drunk or calling in sick all the time—some telltale signs can clue you in.

MODERN MEDICINE

Internet addiction is sweeping America, affecting millions

- Like alcohol and drugs, the internet provides a high, resulting in problematic overuse.
- For the first time, a study on internet addiction — focusing specifically on online gaming — is being funded by The National Institutes of Health to determine the best form of treatment. It kicks off this week.

News > Real Life Stories > IVF

'I'm an addict and IVF is my drug': Meet the couple whose obsession is costing them everything

Jo and Chris Logsdon have been through six draining rounds of IVF at a cost of £35,000 - but they have no intention of giving up just yet

[SHARE](#)
By Gemma Aldridge
21/12/2014 | UPDATED 09/12/2014

NEWS



Desperate: Jo and Chris Logsdon are in debt after spending £35,000 on IVF

ADDITION Published July 6



Addicted to tanning: When it's about more than achieving 'a healthy glow'

By Cathy Casiata | [Healthline.com](#)

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More from Fox News



Denzel Washington left Katie Couric...

Jon Biden supporter Alyssa...

Fox News Entertainment

Addiction

Behavioural addictions: Can we be addicted to anything?

MEDIA ANALYSIS DONALD TRUMP MAINSTREAM MEDIA

The Media Have a Trump Addiction

Who's covering that story?

By Tom Engelhardt

MARCH 27, 2018



Donald Trump speaks with reporters on December 22, 2017. (AP Photo/Evan Vucci)



"A very serious disease is affecting our nation's cable news anchors: an addiction to reporting non-stop on Donald Trump. Sure, it's fun to report on Trump every now and again. Everything's good in moderation! But for some people, normal coverage just isn't enough. It's gotten so bad that -- even in the face of issues like gun control and income inequality -- news anchors are pushing important topics to the back burner, just so they can report wall-to-wall on Trump's blowhard gimmicks".

[Source](#)

Addiction

Behavioural addictions: Can we be addicted to anything?

news | review

New addictions for a different crowd

Adam Lucius

You know times are changing at Manly Croquet Club when players start rocking up on electric scooters.

Grace McNatty, 33, and Cam Currie, 35, are leading a push for young people to take up the sport, described as snooker meets chess on grass. After parking their scooters outside the 115-year-old croquet club - a picturesque oasis tucked away just off the Harris Farm roundabout at Manly - the recently-arrived northern beaches couple explain why this 19th century game has them addicted. "We were going for a walk around the neighbourhood and saw the

club and wanted to know more and wanted to get involved in the community, so we came to one of the social days and immediately got addicted," Dr McNatty, a clinical psychologist, said. "It's a lot like mini golf. You have to use strategy to get around the course and use

your brain. What's not to like? You're outside in such nice surroundings and can also enjoy a social drink with friends."

Mr Currie, who works in IT and is helping the club get up to speed with its social media, is equally enamoured with the game and its environment. He said: "Bowls had the same 'old person' image until they dropped some of the restrictions and embraced young players, who then found out how much fun it was. The same thing is starting to happen here. I actually think croquet is better than bowls because there is more strategy involved. We were hooked from day one. And look at where we get to play."

Manly Croquet Club's publicity officer Steve Curtis doesn't shy away from the fact new players are required to keep the organisation afloat. It costs around \$50,000 annually to maintain the three lawns and quaint clubhouse. "We have 81 members paying an annual membership fee but would like to increase this number," Mr Curtis said. "It would be great to see more members join us, especially younger players. It would not only build our numbers but younger players bring fresh enthusiasm. We think it's a great game, it's a nice place to play and it's a very sociable club."

Members can choose between association croquet (the traditional game) and golf croquet (ideal for new players). For information and membership, contact Steve Curtis on 0408 684 675.

NEWCOMERS: Grace McNatty and Cam Currie at the Manly Croquet Club. Picture: Geoff Jones



180 YEARS | Australian Unity Real Wellbeing

Addiction

Behavioural addictions: Can we be addicted to anything?

FULL-LENGTH REPORT

Journal of Behavioral Addictions 7(1), pp. 158–170 (2018)

DOI: 10.1556/2006.7.2018.15

First published online February 19, 2018

Instagram addiction and the Big Five of personality: The mediating role of self-liking

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²International Gaming Research Unit, Psychology Department, Nottingham Trent University, Nottingham, UK

Study

FREE

April 2010

Addiction to Indoor Tanning

Relation to Anxiety, Depression, and Substance Use

Catherine E. Mosher, PhD; Sharon Danoff-Burg, PhD

» Author Affiliations | Article Information

Arch Dermatol. 2010;146(4):412-417. doi:10.1001/archdermatol.2009.385

Abstract

Objective To assess the prevalence of addiction to indoor tanning among college students and its association with substance use and symptoms of anxiety and depression.



Computers in Human Behavior

Volume 61, August 2016, Pages 478-487



Full length article

The Social Media Disorder Scale

Regina J.J.M. van den Eijnden ^a✉, Jeroen S. Lemmens ^b✉, Patti M. Valkenburg ^c✉

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<https://doi.org/10.1016/j.chb.2016.03.038>

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Current Psychiatry Reviews, 2012, 8, 292-298

Internet Addiction: A Brief Summary of Research and Practice

Hilarie Cash^{a,*}, Cosette D. Rae^a, Ann H. Steel^b and Alexander Winkler^b

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Abstract: Problematic computer use is a growing social issue which is being debated worldwide. Internet Addiction Disorder (IAD) ruins lives by causing neurological complications, psychological disturbances, and social problems. Surveys in the United States and Europe have indicated alarming prevalence rates between 1.5 and 8.2% [1]. There are several reviews addressing the definition, classification, assessment, epidemiology, and co-morbidity of IAD [2-5], and some reviews [6-8] addressing the treatment of IAD. The aim of this paper is to give a preferably brief overview of research on IAD and theoretical considerations from a practical perspective based on years of daily work with clients suffering from Internet addiction. Furthermore, with this paper we intend to bring in practical experience in the debate about the eventual inclusion of IAD in the next version of the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*.

Keywords: Addiction, Computer, Internet, reSTART, Treatment.

Addiction

Behavioural addictions



Behavioural addiction, nonchemical addiction, non-drug addiction, non-substance addiction...

Definitions:

- Repetitive persistent behaviours resulting in significant harm or distress that causes functional impairment (Marks, 1990)
- “*A repeated behaviour leading to significant harm or distress. The behaviour is **not reduced by the person and persists over a significant period of time**. The harm or distress is of a functional nature*” (Kardefelt-Winther et al., 2017)

Entire new (sub)field:

- Addictive Behaviors, Psychology of Addictive Behaviors
- 2012: JBA established achieving a high impact factor of now ~5!

Addiction

Behavioural addictions

Gambling disorder

History & classification

DSM-III (1980) to - IV-R (2000): Pathological Gambling

Impulse control disorder: Not Elsewhere Classified, along with:

- Kleptomania (*compulsive shoplifting*)
- Pyromania (*compulsive fire-setting*)
- Trichotillomania (*compulsive hair-pulling*)

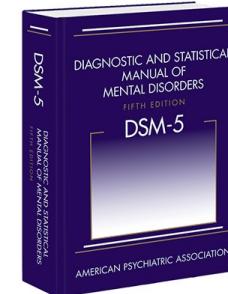
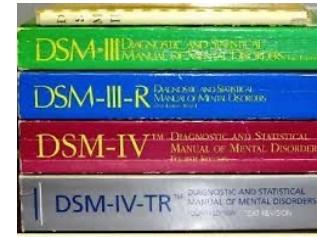


DSM-5 (2013): Gambling disorder

Introduced a new category:

- Substance-related and addictive behaviours
- Non-substance-related disorder

Reclassified pathological gambling as gambling disorder



Addiction

Behavioural addictions

(Internet) Gaming disorder

History & classification

Earlier versions of DSM and ICD: No mention

2008: Internet gaming recognised by Chinese government as a disorder with policies & treatment services provided in later years

2013, DSM-5: Internet Gaming Disorder included in Section III
(Conditions for Further Study)

2018, ICD-11: Officially recognised as a **disorder** (*Gaming disorder*) prompted by a large evidence base of (questionable?) research demonstrating gaming addiction & related harms



Addiction

Behavioural addictions

Kardefelt-Winther et al. (2017): What is **not** an addiction?

A behavioural addiction is:

- “A repeated behaviour leading to significant harm or distress. The behaviour is **not reduced by the person and persists over a significant period of time**. The harm or distress is of a functional nature”



It **isn't** a behavioural addiction if:

1. The behaviour is better explained by an underlying disorder (e.g., a depressive disorder or impulse control disorder). X
2. The functional impairment results from an activity that, although potentially harmful, is the consequence of a wilful choice (e.g., high level sports). X
3. The behaviour can be characterised as a period of prolonged intensive involvement that detracts time and focus from other aspects of life, but does not lead to significant functional impairment or distress for the individual.
4. The behaviour is the result of a coping strategy. X

Addiction

Behavioural addictions

Are we pathologizing everyday behaviours?

- Rapid escalation of behaviours becoming labelled as ‘addictions’ (Billieux et al., 2015)
- Medicalization/pathologizing of reward seeking behaviours by attaching medical names, diagnostic instruments, & suggested treatments
- Many “behavioural addictions” simply maladaptive coping or emotional dysregulation? (Perales et al., 2020)
- Are behavioural addictions & drug addictions the same?
 - How can we tell if someone has an addiction?

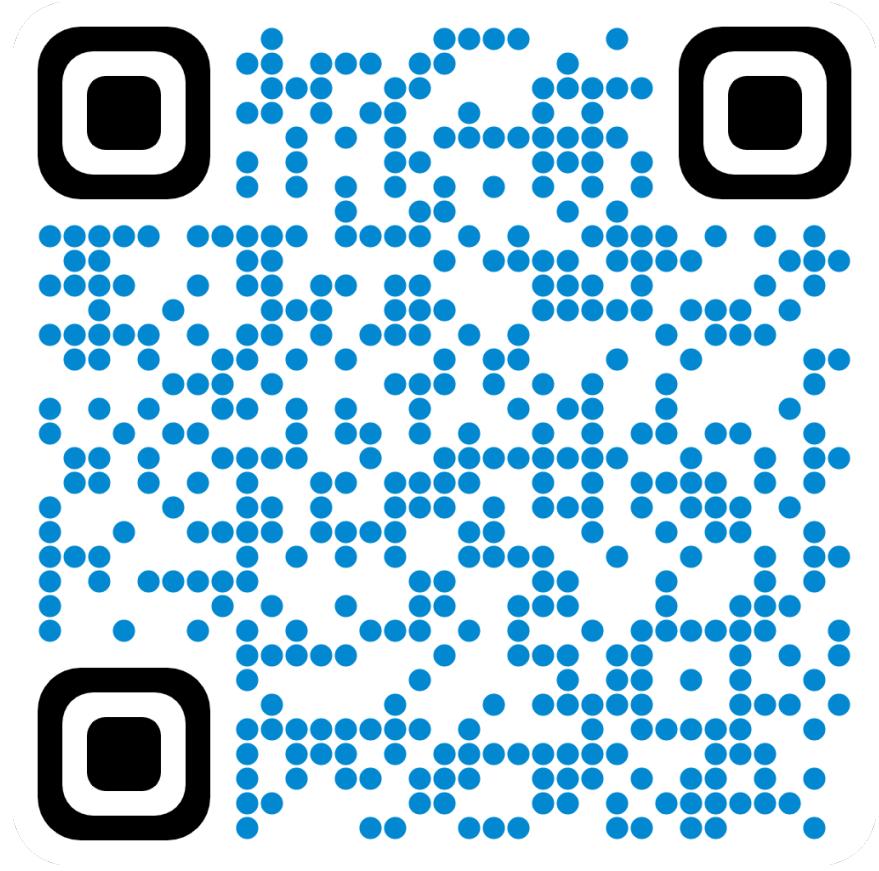
“considerable resources are being diverted to conduct research on excessive behaviours that lack indications of functional impairment, psychological distress or a clear separation from normative behaviour in context... [and] if this expansion does not end, both the relevance and credibility of this field might be questioned.”

Kardefelt-Winther et al. (2017)

Addiction

Behavioural vs. drug addictions

Are behavioural and drug addictions characterised by/
diagnosed according to similar symptoms?



[Link](#)

Addiction

Behavioural vs. drug addictions



Similarities

- Similar (although not identical) symptomology (Griffiths, 2017)
- Similar neurobiological effects & risk factors (D2 receptors, frontal matter structure and perfusion, Leeman & Potenza, 2013)
- Evidence of heritability (Leeman & Potenza, 2013)
- Phenomenology
- Treatment options



Differences

- Absence of exogenous substance with psychoactive effects
- Absence of damaging biological effects (cognitive dysfunction, biological/physiological sequelae)
- No severe withdrawal syndrome
- Withdrawal & tolerance less relevant (Kardefelt-Winther et al., 2017)

Addiction

Behavioural addictions

Pros & cons of labelling disordered behavioural patterns as “behavioural addictions”



Pros

- Medicalisation prompts development of treatments
- Greater research focus(?)
- Recognition/ validation of true conditions that people suffer from



Cons

- Diluting the significance of the term “addiction”
- Category becomes too internally heterogeneous (*is addiction still the right term?*)
- Pathologizes normal behaviour?
- Wasted time + resources?

Addiction

Behavioural addictions: Some of the more bizarre ones so far...

Binge flying (Cohen et al., 2011) — coined by the popular media & studied academically



Selfies (Nagalingam et al., 2015)



Salsa/ballroom dancing (Maraz et al., 2015)



Fortune-telling (Grall-Bronnec et al., 2015)

Credits & Sources

If an image in this slideshow does not have a link to the source posted below it, then I have either taken the picture myself or taken it from the site www.unsplash.com and clicking the image will take you to the original source on unsplash.

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