

AT WHAT POINT DOES STRESS BECOME *ABNORMAL*?

Stress to abnormality

- When individuals perceive they do not have the ability to cope with a stressful situation/event, they can experience feelings of stress and distress.
- When stress develops into anxiety, this is where organisational interventions are unlikely to be effective
- Clinical psychologists work to help alleviate symptoms of stress, distress, or of being overwhelmed in some way
- Help people by getting them to understand their thoughts and behaviours

The domain of clinical psychology

- Clinical psychology involves:
 - Understanding how we identify and define mental health
 - Using theoretical frameworks to understand how mental illness is caused
 - How mental illnesses are classified and diagnosed

CLASSIFYING MENTAL HEALTH PROBLEMS



Classifying mental health problems

- Two separate methods of classifying mental health problems
 - The World Health Organisation developed the International Causes of Death (ICD) which is currently in its 10th version (ICD-10)
 - The American Psychological Association developed the Diagnostic and Statistical Manual (DSM) which is currently in its 5th version (DSM-5)

Why do we need these systems?

- Classification systems allow us to separate out different illnesses
- We can then look at the causes of these mental health problems and provide appropriate treatment



CHARACTERISTICS OF ANXIETY BASED PROBLEMS

Anxiety based problems

- Everyone will feel anxious at some point but persistent anxiety can constitute a mental health problem (Lepine, 2002)
- An anxiety disorder is an excessive or aroused state characterised by feelings of apprehension, uncertainty and fear

Anxiety based problems

- Anxiety involves many physical symptoms as well as some significant cognitive characteristics
- Frightening intrusive thoughts, apprehension and obsession with potential threats
- When these problems are persistent and disrupt every day life they represent an anxiety disorder

Anxiety based problems

- The five most common anxiety disorders are:

- Specific phobias
- Panic disorder
 - GAD
 - OCD
 - PTSD

Anxiety based problems

- Around 20-40% of individuals in Western societies will develop an anxiety-based problem at some point (Shepherd et al., 1996)

- The most common disorders are estimated to have the following rates of prevalence:
 - Specific phobias (7.2%-11.3%)
 - Panic Disorder (1.5%-3.5%)
 - GAD (5%)
 - OCD (2.5%)
 - PTSD (3%-8%)

PANIC DISORDER

Panic disorder

- Characterised by repeated panic or anxiety attacks
- These attacks are associated with a variety of symptoms, including heart palpitations, perspiring, dizziness, hyperventilating, nausea and trembling
- In addition, the individual may experience real feelings of terror or severe apprehension and depersonalisation

Panic disorder

- Panic disorder is diagnosed when recurrent, unexpected panic attacks keep occurring, and are followed by at least one month of persistent concerns about having a further attack
- Frequency varies considerably from one attack per week to frequent daily attacks

Panic disorder

Biological Theories

- The effect of Hyperventilation. Ley (1987) suggests that dysfunctional breathing patterns may trigger a series of autonomic reactions that precipitate a full-blown panic attack
- Hyperventilation = shortage of O₂ = symptoms of panic attacks = recognised as anxiety (Zvolensky & Eifert, 2001).

Panic disorder

Supporting Evidence

- Ley and Walker (1973): Panic attacks can be induced by increasing CO₂ levels/encouraging hyperventilation
- Papp, Klein and Gorman (1993): Sensitivity to increases in CO₂ have been suggested as a risk factor for panic disorder. Suffocation alarm theories

Evidence Against

- Roth, Wilhelm and Trabert (1998): Panic disorder patients don't report higher levels of anxiety after holding breath than non-anxious control
- Margraf, Ehlers and Roth (1986): Artificially inducing symptoms of hyperventilation only increases symptoms of anxiety in those with a history of panic disorders

Panic disorder

Psychological Theories: Classical Conditioning

- Goldstein and Chambless (1978): 'Fear of fear'



Internal conditioned stimulus (CS)



Panic Attack

Unconditioned stimulus (UCS)

Panic disorder

- But, unclear as to what is the CS and the UCS??
- Bouton, Mineka and Barlow (2001): anxiety is the learned reaction called a conditioned response, to the detection of cues of a conditioned stimulus (CS)

Panic disorder

Psychological Theories: Catastrophic Misinterpretation of Bodily Sensations

- Clark (1986; 1988): panic disorder is caused by the misinterpretation of bodily sensations as threatening

Panic disorder

Summary

- Evidence suggests important psychological component of panic disorder
- The negative evaluation of bodily sensations as threatening can induce anxiety

GENERALISED ANXIETY DISORDER (GAD)

Generalised anxiety disorder (GAD)

- Twice as likely to affect women
- Characterised by persistent, excessive, and unrealistic worry about everyday things
- GAD is diagnosed when a person worries excessively about a variety of everyday problems for at least 6 months

Generalised anxiety disorder (GAD)

- Risk is highest between childhood and middle age
- Exact cause is unknown – biological factors, family background and life experiences have been implicated
- People with mild GAD can function socially and be gainfully employed

Generalised anxiety disorder (GAD)

- GAD is typified by a constant chronic non-specific worry and anxiety
- Why do those with more stressful lifestyles worry LESS than those with GAD??



Generalised anxiety disorder (GAD)

Biological Theories

- Noyes et al, (1992): some evidence for a genetic component to the illness which suggests GAD is inherited
- However, Hettema, Neale and Kendler (2001) suggest that while GAD may run in families, the actual evidence for genetic influence is only modest
- Most likely GAD sufferers are not "born worriers"

Generalised anxiety disorder (GAD)

Psychological Theories: Information Processing Bias

- Individuals with GAD are in a state of constant hypervigilance.
- More likely to allocate more attention to threatening stimuli and information (Mathews & MacLeod, 2002; Mogg & Bradley, 1998)
- GAD sufferers more likely to focus on anxiety provoking stimuli, to actively search for them and interpret other stimuli and threatening

Generalised anxiety disorder (GAD)

Cognitions, beliefs and the function of worrying

- GAD sufferers continue to worry despite the disruption this worrying causes in day to day life
- Does worry also have a particular positive function that may outweigh the negative??

Wells (1999) - GAD sufferers strongly believe that worrying protects them from negative outcomes

Generalised anxiety disorder (GAD)

GAD sufferers have a lot of established psychological features:

Intolerant of uncertainty
(Ladouceur, Talbot & Dugas, 1997)

Poor problem-solving confidence
(Davey, 1994)

High on perfectionism
(Pratt, Tallis & Eysenck, 1997)

Feel responsible for negative outcomes
(Startup & Davey, 2003)

Do these factors make them **more inclined to worry?**

Generalised anxiety disorder (GAD)

Summary

- Evidence suggests that GAD sufferers may have developed a number of cognitive biases which leave the individual more prone to chronic worrying, including:
 - Information processing biases
 - Dysfunctional beliefs
 - Dispositional characteristics

OBSESSIVE COMPULSIVE DISORDER (OCD)

Obsessive Compulsive Disorder (OCD)

Obsessions

- Intrusive and recurring thought that the individual finds disturbing and uncontrollable

Compulsions

- Repetitive or ritualised behaviour that the individual feels they must do to prevent something negative occurring

Contemporary thoughts regarding OCD highlights the involvement of cognitive factors

Obsessive Compulsive Disorder (OCD)

Cognitive Factors: Inflated Responsibility

- Rachman and DeSilva (1978) - everyone experiences uncontrollable intrusive thoughts almost daily, but OCD sufferers are more likely to find these thoughts distressing
- More likely to feel responsible for having "bad thoughts", fear the consequences of these thoughts and have inflated thoughts about their own role in preventing harm.

Obsessive Compulsive Disorder (OCD)

Cognitive Factors: Inflated Responsibility

- Develop dysfunctional thoughts about the consequences of their thoughts
- Shafran and Rachman (2004): OCD sufferers may believe that thinking about something is the same as doing it.
- Rachman (2002): Their belief that they are strongly responsible for preventing harm may be the cause of such characteristic OCD behaviour as compulsive checking

Obsessive Compulsive Disorder (OCD)

Cognitive Factors: Thought Suppression

- Individuals with OCD may try to suppress thoughts they find distressing
- However trying to suppress a thought will actually cause it to occur more frequently (known as the rebound effect)
- This may explain why OCD sufferers have significantly more intrusions than nonclinical populations (Wenzlaff & Wegner, 2000)
- Wenzlaff, Klein and Wegner (1991) also argued that suppressing thoughts induces a negative emotional state, which is then associated with the thought. When the thought reoccurs it's seen as even more negative

Obsessive Compulsive Disorder (OCD)

Summary

- Clear that cognitive factors have a role in the development of an anxiety disorder
- Intrusive thoughts are a natural occurrence for all, but the interpretation of them becomes distorted in OCD sufferers
- The perception of stimuli is key the development of a mental health problem

POST-TRAUMATIC STRESS DISORDER (PTSD)

Post-traumatic stress disorder (PTSD)

- PTSD is a set of persistent symptoms that occur after experiencing or witnessing an extremely traumatic event
- The symptoms of PTSD can be grouped into three main categories:
 - Increased arousal
 - Exaggerated startle response (Shalev et al., 2000), difficulty sleeping
 - Avoidance and numbing of emotions
 - Avoid all situations that could trigger memories of event
 - Re-experiencing
 - Vivid flashbacks of the traumatic event

TREATING ANXIETY BASED PROBLEMS

Treating anxiety based problems

- Traditionally, therapies are developed around a relatively small number of important theoretical approaches



- 1) Psychodynamic
- 2) Behaviour Therapy
- 3) Cognitive Therapies



1) Psychodynamic approaches to treatment

- *Aim: reveal unconscious conflicts that may be causing symptoms*
- Assumption that unconscious conflicts develop early in life
- Therapy designed to identify any life events that may have caused these unconscious conflicts and bring them into awareness

1) Psychodynamic approaches to treatment

- Types of treatment:

- *Psychoanalysis*

- Free association
- Transference
- Dream analysis



2) Behavioural Therapy

Largely either based upon the principles of classical conditioning or operant conditioning

Therapies based on classical conditioning principles:

- **Flooding:** form of desensitisation for the treatment of phobias and related disorders where the patient is repeatedly exposed to highly distressing stimuli
- Counterconditioning and systematic desensitisation also form part of the same group known as **exposure therapies**

2) Behavioural Therapy

Therapies based on operant conditioning principles:

- Used in three specific ways:
 - To understand what is reinforcing certain behaviours
 - To use reinforcers and rewards to try and establish more adaptive behaviours
 - To use negative consequences to punish maladaptive behaviours

3) Cognitive Therapies

- Cognitive therapies involve tackling dysfunctional 'ways of thinking' - either about the self or the world
- Many anxiety disorders are characterised by a bias towards processing threatening or anxiety-related information (GAD) or interpreting ambiguous information negatively (panic disorder)
- If cognitive factors are maintaining symptoms, then developing treatments that try and address and change these dysfunctional cognitive features is important

3) Cognitive Therapies

Beck's Cognitive Therapy

- A form of therapy that considers depression is maintained by 'negative schema' leading depressed individuals to hold negative views about themselves, their future and the world.
- Beck argues that successful therapy must challenge the biased, irrational and over generalised thoughts.

3) Cognitive Therapies

Cognitive Behaviour Therapy

- An intervention for changing both thoughts and behaviour
- Usually possesses most of the following characteristics:
 - Keeping a diary of events and associated feelings, moods and thoughts
 - Identify and challenge irrational, dysfunctional or biased thoughts or assumptions
 - With the help of the therapist
 - Homework of behavioural experiments
 - Test whether thoughts are accurate and rational
 - Develop new more adaptive ways of thinking
 - Mainly in ways that may evoke their psychopathology

3) Cognitive Therapies

CBT is generally perceived as an evidence-based, cost-effective form of treatment that can be successfully applied to a very broad range of psychopathologies (Butler et al., 2006)

**ADDITIONAL
EVIDENCE**

Evidence for Treatments

- Borkovec, Hazlett-Stevens and Diaz (1999): Beliefs about worry may play a significant role in the maintenance of GAD; interventions should be designed to modify these beliefs. CBT emerged as the most effective therapy for GAD
- Cuijpers et al. (2014): [meta-analysis] CBT is effective in the treatment of GAD and also has considerable effects on depression in GAD

Evidence for Treatments

- Cukor et al. (2009): Technological based treatments have the strongest evidence in the effectiveness for treating sufferers of PTSD. Virtual reality enhanced exposure therapy seems a promising intervention, especially for military populations.
- Ehlers et al. (2010): Recommend further research into the active mechanisms of therapeutic change. Trauma-focused psychological treatments (CBT, desensitization, etc) are first-line treatments for PTSD.

Evidence for Treatments

- Fairfax (2008): If applied properly, mindfulness not only complements traditional CBT interventions for OCD, but could also increase their efficacy and perhaps prevent relapse.
- Tarrier, Liversidge and Gregg (2006): Cognitive therapy and exposure therapies are highly preferred by PTSD sufferers, despite the anticipated discomfort with exposure therapy. Any treatments involving new technologies or psychodynamic psychotherapy were rated the lowest in preference.

Evidence for Treatments

- Zoellner et al. (2003): Women suffering with chronic PTSD are more likely to choose CBT or exposure therapies than pharmacological treatments. More willing to directly confront the trauma memory in therapy and talk through the problem than receive medication with potential side effects to 'hide' the problem, not solve it.



Any questions??

Applied Psychology

Lecture 7: Reward and Addiction

Stacey Coleman



Lecture outline

- Discuss definitions of 'addiction', 'abuse', and 'dependency'
- Introduce psychological and neural bases of reward and addiction
- Explore diagnostic criteria and prevalence rates of substance disorders
- Start to discuss characteristics of certain substances and the impact on addiction and dependency

What do all these people have in common??





What does the word ADDICT mean to you??

What is ADDICTION?

How do we define the phenomenon of 'addiction'?

What are the characteristics of addictions?

Can anyone become addicted to *something*?

How do we define 'addiction'?

• Substance abuse?

• Do addictions only involve chemical substances?



How do we define 'addiction'?

• APA:

—A condition in which the body must have a drug to avoid physical and psychological withdrawal symptoms. Addictions first stage is **dependence**, during which the search for drugs dominates an individual's life. An addict eventually develops **tolerance**, which forces the person to consume larger and larger doses of the drug to get the same effect.

Contemporary addiction

- The term "Addiction" is now used more broadly to refer to a condition in which an individual feels a constant desire to use a specific type of substance, *or engage in a certain activity*, despite potential harmful consequences.

Contemporary addiction

- Oxford dictionary:
– The fact or condition of being addicted to a particular substance or activity
- Medical dictionary:
– Addiction is a persistent compulsive dependence on a behaviour or substance

Why addiction?

- **Addiction:**
– To use compulsively or uncontrollably
- **Abuse:**
– To use wrongly or improperly
- **Habit:**
– A constant, often unconscious, inclination to perform some act, acquired through its frequent repetition



Addiction liability? Addiction potential?

- The tendency to develop/produce an addiction?
- Who has this potential?
- Can anyone develop an addiction?

Addiction...

Drug use to the point where the body's 'normal' state is the drugged state

So the body requires the drug to feel normal

* Addiction is a term that is rarely used nowadays because it implies that drug dependency is primarily a physical one, whereas in reality it is a complex mix of physical and psychological dependency

Substance Abuse and Dependency...

• Substance abuse:

– "a maladaptive pattern of substance use manifested by recurrent and significant adverse consequences related to repeated use of the substance"

• Substance dependency:

– "a cluster of cognitive, behavioural and physiological symptoms indicating that the individual continues use of the substance despite significant substance-related problems"

Dependence

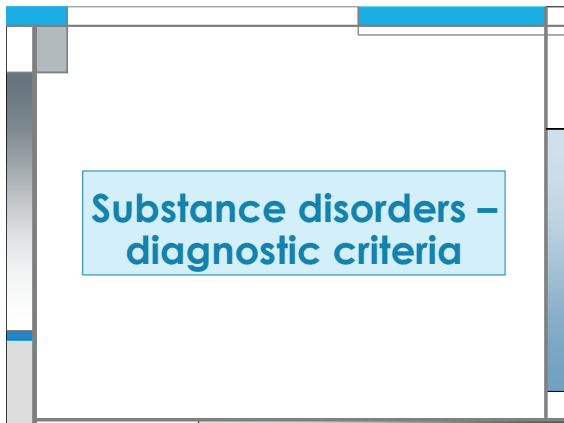
• Addictions cause *Physical* and *Psychological* dependency:

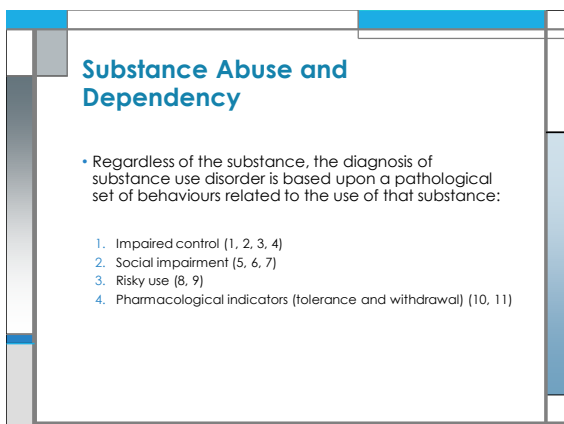
– **Physical dependency** is defined by withdrawal symptoms that become present when substance use/participation in activity is discontinued

– **Psychological dependency** is defined by the mental desire to experience the effects produced by the drug or activity

• Addictions that are dependency-specific may drive compulsive use, and therefore require different treatment strategies







DSM-5

Substance-related and addictive disorders

- Gambling disorder is the only non-substance-related disorder that is included in this category.
- Rationale for including a behavioural addiction in this section is that there is an abundance of scientific research that indicates engaging in gambling activity activates the same pleasure pathways in the brain as are activated by substances.

5.2.1

5.2.1

Messages from this video:

1. Addiction doesn't respect your background
 - Age, gender, SES, rich or poor
2. Addiction serves a purpose to the individual
3. All drugs of abuse share common features
 - One of the most important is that they increase activity in the reward pathway or pleasure centre in the brain

Messages from this video:

4. A hallmark of addiction is that it take precedent over all other needs, and time invested in great
 - Using the drug in itself
 - Experiencing the effects
 - Recovering from the effects
5. Addiction is ultimately characterised by compulsion
 - Feelings of craving or desire that build up when we just try to say 'no'

Characteristics of addictions

Griffiths (2005)

Characteristics of addictions

Is addiction a disease?

Why can't people just say no?

Are addicts simply people that lack moral strength and/or willpower

Is addictive behaviour a choice?

Surely to stop an addiction all one needs to do is decide NOT to use anymore

Core components:

Salience

- The activity/substance has a high level of importance in everyday life

Mood modification

- A change in subjective experiences. People may feel a 'high' or a 'buzz'

Conflicts

- These can be intrapersonal or interpersonal

Core components:

Relapse

- After a period of control the addiction/addictive behaviour can manifest again

Impaired self control

- The inability to suppress urges
- It becomes harder to say 'no' as time goes on and as the addiction develops

Core components:

Tolerance

- Decreased sensitivity to the activity over time

Withdrawal symptoms

- Unpleasant physical/psychological symptoms when the activity is reduced

Put together, these represent the biological components of addiction.

Contribute to physical dependence and physical addiction

Substance disorders – prevalence rates

The prevalence of substance use disorders

- Rates vary significantly across countries depending on legal, moral and religious attitudes to drugs
- Lifetime prevalence rate for substance dependency in the US is 5.1% (Warner et al., 1005)
- In the US, 51% of 15 to 54 year olds reported having used illegal drugs
- Highly comorbid with other psychological disorders

Comorbidity

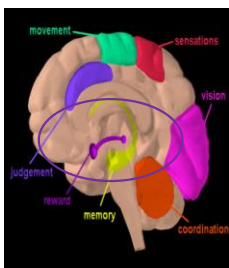
The occurrence of two disorders or illnesses in the same person, either at the same time (*co-occurring comorbid conditions*) or with a time difference between the initial occurrence of one and the initial occurrence of the other (*sequentially comorbid conditions*).

Comorbidity of Substance Use Disorders

Psychiatric Disorder	% of individuals also diagnosed with a substance use disorder (SUD)
Bipolar disorder	60.7%
Major depression	18%
Obsessive-compulsive disorder (OCD)	32.8%
Panic disorder	35.8%
Schizophrenia	47%
Bulimia nervosa	28%
Personality disorders	42%

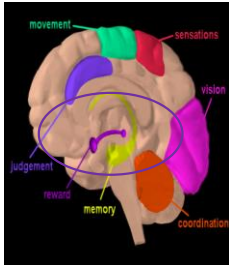
What are the effects on the reward pathway/pleasure centre?

What is the reward pathway?



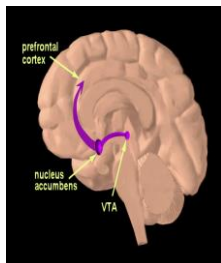
- The reward pathway is located in the limbic system in the brain
- The limbic region specialises in emotion
- The pathway of neurons that pass through the limbic region to the frontal cortex is called the reward pathway
- If/when information passes through the reward pathway, we feel happy and euphoric

What is the reward pathway?



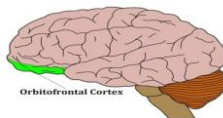
- The reward pathway connects with the part of the brain, therefore, where we process information, make decisions, and where we make new memories.
- These decisions and memories are then given an emotional meaning

What is the reward pathway?



- The reward pathway consists of the **nucleus accumbens**, **ventral tegmental area (VTA)** and the **prefrontal cortex**.
- The neurons of the VTA contain **dopamine** which is released into the nucleus accumbens and prefrontal cortex in response to *natural reward stimuli* or *artificial reward stimuli*

Orbitofrontal cortex



Nucleus accumbens projects to the OC

The OC also receives direct projections from dopamine cells in the VTA

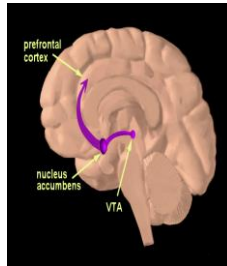
Part of the prefrontal cortex

Involved in some critical human functions, including social awareness, control of mood, drive, responsibility, etc

Clinical studies show that there is an increase in activity in the orbitofrontal cortex when drug addicts are exposed to drug associated stimuli

What is the reward pathway?

- Natural rewarding stimuli:
 - Food, sex, water, nurture, love
- Artificial rewarding stimuli:
 - E.g., drugs
- Both types of rewarding stimuli result in 'pleasure' information (dopamine) travelling from the VTA to the nucleus accumbens and then up to the prefrontal cortex.

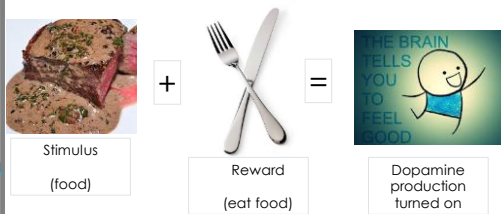


Reward pathway

- Stimulation of the reward pathway produces highly pleasurable sensations, providing positive reinforcement which promotes further drug use
- Dopamine is the neurotransmitter in charge of pleasure
- Dopamine is a monoamine
 - Responsible for changes in mood
- Dopamine is ultimately the fuel for intentional behaviours, and the fuel for desire

Reward pathway

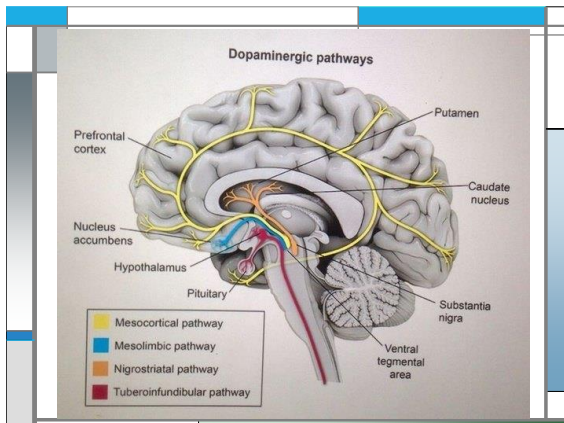
- Dopamine production is turned on when we're cued by a stimulus paired with a reward



Dopamine and the reward centre

• Three main dopamine pathways:

- **Nigrostriatal pathway:**
 - Important in movement and behaviours
 - When this doesn't work properly, we see stereotyped behaviours and movements disorders such as Parkinson's
- **Mesolimbic pathway:**
 - Associated with emotions and control of behaviour
 - The ultimate reward pathway
 - From midbrain to nucleus accumbens
- **Mesocortical pathway:**
 - Associated with higher level thoughts of planning and deciding
 - From midbrain to prefrontal cortex (amongst other parts)



Dopamine and addiction

- The most addictive drugs are plant based, and the chemicals these plants produce so closely mimic dopamine that the brain think it is receiving the equivalent of massive amounts of dopamine, thus increasing pleasure and 'reward'
- Addictive drugs are also biochemically quite different.
 - They can activate different neurotransmitter systems
 - They can produce different psychoactive effects
 - But all either stimulate dopamine release (e.g., heroin, nicotine) or enhance dopamine action (e.g., cocaine) in nucleus accumbens

Substance/chemical addictions

Problems associated with regular substance use

- A drug can be defined as any substance, other than food, that affects either our bodies or our minds in some way – a substance that has a physiological effect when ingested or otherwise introduced into the body



Problems associated with regular substance use

- In Westernised cultures, 'drugs' are almost a normal part of daily life
 - Caffeine in tea/coffee
 - Nicotine in cigarettes
 - Paracetamol to reduce pain
 - Dieting pills
 - Alcohol and sleeping pills

Problems associated with regular substance use

- Many drugs have short-term benefits but long-term negative physical and psychological effects
 - E.g., alcohol
- People can become either psychologically or physically addicted to a drug
 - Develop to other drugs when it no longer has the original benefits
- Regular drug use can blight social, educational and occupational functioning
 - E.g., cocaine, hallucinogens, solvents

Problems associated with regular substance use

- Significant burden to NHS services (e.g., car accident, overdosing, cancer, binge drinking, etc)
- So, why do we still continue to ingest drugs?



Drugs of abuse

Fall roughly across three categories:

1. Stimulants
2. Sedatives
3. Hallucinogens

Characteristics of specific substance abuse disorders

1. STIMULANTS

- Substances that increase central nervous system activity and increase blood pressure and heart rate

- E.g.,
 - Amphetamines
 - Cocaine
 - Caffeine



Stimulant Use Disorders

Cocaine

- Lifetime prevalence rate in developed countries = 1-3%
- Use by young adults in the UK aged 15-34 is around 4%

Amphetamines

- Worldwide, amphetamine-type stimulants (ex. Ecstasy) have an estimated prev. of 0.3-1.2%
- Second most widely used type of drug
- Lifetime prevalence rate of A use disorders is 1.5%

Caffeine

- 85% of the worlds population take caffeine in some form
 - Tea, coffee, chocolate, etc
- Caffeine is a CNS stimulant that increases alertness and combats fatigue
- Can lead to caffeine intoxication and withdrawal
- Caffeine disorder new to DSM-5

Stimulant Use Disorders

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Cocaine



Cocaine

- A natural stimulant derived from the coca plant
- Can be injected, snorted or in some forms smoked (crack cocaine)
- Makes users feel excited and energised
- Main effects caused by cocaine blocking the reuptake of dopamine in the brain
 - This facilitates neural activity and results in feelings of pleasure and confidence

Cocaine intoxication

- Cocaine causes tolerance and severe withdrawal symptoms
- High doses can cause cocaine intoxication where the individual becomes anxious, angry and may have psychotic episodes
- Physical effects of intoxication include:
 - Increased blood pressure and heart rate
 - Perspiration
 - Chills
 - Nausea
- Chronic use can cause long-term irritability, paranoid thinking, and disturbances of eating and sleeping

Cocaine use disorder

- Effects last for only 30 minutes, so there is a need for frequent use to maintain the 'rush'
- **Dependency** occurs when user finds it difficult to resist whenever it is available
 - This leads to neglect of important responsibilities (work, family, relationships)
- **Tolerance** occurs with repeated use making larger doses necessary
- Erratic behaviour, social isolation, and sexual dysfunction are regular characteristics of long-term dependency

The costs of cocaine dependency

- Adversely effects cognitive functioning and health
- Can cause development deficits in the offspring of pregnant cocaine users
- Can cause cardiac problems because of its effects on blood pressure and heart rate

Characteristics of specific substance abuse disorders

2. SEDATIVES

- Central nervous system depressants which slow the activity of the body, reduce its responsiveness, and reduce pain, tension and anxiety
- E.g.,
 - Alcohol
 - Heroin
 - Barbiturates



Opiates

The Most Commonly Abused Opiates

HEROIN MORPHINE CODEINE FENTANYL OXYCODONE OXYCODONE

Heroin

Codeine

Oxymorphone

Oxycodone

Morphine

Hydrocodone

Fentanyl

Prevalence of opiate use

- Opiates consist of opium – taken from the sap of the opium poppy – and its derivatives
- Increases the production of endorphins
- 13-21 million people worldwide take opiates (WHO, 2010)
- In 2009-2010, there was an estimated 306,000 adult opiate or crack cocaine users in England (National Treatment Agency for Substance Misuse, 2011)
- Heroin is currently the most widely used of the opiates

Opiate use disorder

- **Tolerance** builds up rapidly and users begin to experience severe withdrawal effects very soon
- **Withdrawal symptoms** include:
 - Anxiety
 - Restlessness
 - Muscle aches
 - Increased sensitivity to pain
 - Renewed cravings for the drug

Opiate use disorder

- Opiate dependency is indicated by compulsive, prolonged administration
- However, some users can control use and have been labelled *controlled drug users* or *unobtrusive heroin users*. (Shewan & Delgarno, 2005)

The costs of opiate dependency

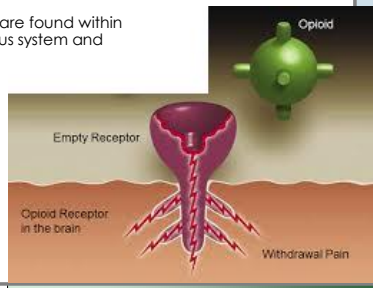
- Opiate dependency is associated with:
 - The risk of accidental overdose
 - Using street heroin that contains lethal additives
 - The risk of contracting HIV or hepatitis from needle sharing
- In a long term study of US heroin addicts, 28% had died before the age of 40 years (Hser et al., 1993)

Heroin use

- The most widely used form of the opiate drug
- Profound feelings of warmth, relaxation and euphoria
 - 4-6 hours before individual experiences 'come down' symptoms
- Once dependent on heroin, withdrawal usually begins about 8 hours after an injection
 - Muscle pain, sweats and uncontrollable yawning
 - After 36 hours, symptoms worsen and can include uncontrollable muscle twitching, cramps and a rise in heart rate

Heroin use

- Opioid receptors are found within the central nervous system and peripheral tissues
- Most of the most common opioids are agonists
 - Bind to receptors of cells and trigger response by that cell



Heroin addiction

- Three receptors:
 - Mu
 - Delta
 - Kappa
- All three produce analgesia when an opiate binds to them, however activation of the KAPPA receptors does not produce as much physical dependence as activation of the MU receptors

Characteristics of specific substance abuse disorders

3. HALLUCINOGENS

- Psychoactive drugs which affects the user's perceptions. They may either sharpen the individuals sensory abilities or create sensory illusions of hallucinations
- E.g.,
 - LSD
 - Ketamine
 - Magic mushrooms



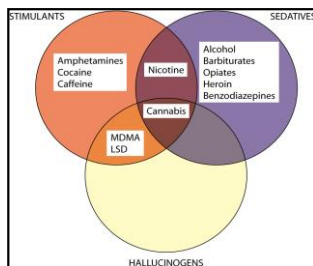
Lysergic Acid Diethylamide (LSD)

- Arguably the first of the widely used psychedelic drugs
- Taken as tablets or capsules, starts to take effect after 30-90 minutes
- Produces sharpened perceptions, but can cause hallucinations, including distorted perceptions of space and time
- Can also exaggerate negative emotions causing 'bad trips'
- Has its effects by influencing neurons in the brain that normally control visual information and emotion

LSD abuse and dependency

- Most hallucinogens have an extended duration of action causing individuals with hallucinogen dependency to spend many days recovering from a single dose
- Some hallucinogens such as MDMA are associated with 'hangover' symptoms
- Hangover symptoms include insomnia, fatigue, drowsiness, headaches, and sore jaw muscles from teeth clenching
- Dependency associated with psychiatric disorders

Substance overlap between categories



Can anyone develop an addiction?

Aetiology of substance abuse and dependency

- Aetiology of substance dependency has to be viewed in developmental terms
- Most individuals who become substance dependent go through three developmental stages:

Experimentation Regular use Abuse and dependency

Experimentation

Experimentation

• Based on:

- Availability
- Familial factors
- Peer group influences
- Media influences

Availability of drug/substance will influence time of first use

Inverse relationship between first use and cost (Stead and Lancaster, 2005)

Experimentation

• Based on:

- Availability
- Familial factors
- Peer group influences
- Media influences

Early substance use determined by 2 factors:

1. Whether substance is regularly used by other family members
2. Where the family environment is problematic

Neglectful parenting increased early use of alcohol, cigarettes and cannabis

Experimentation

• Based on:

- Availability
- Familial factors
- Peer group influences
- Media influences

Adolescents will start using drugs to self-categorise themselves as a member of a particular group

Once an individual becomes a regular user, this will also influence the social groups they will mix with

Experimentation

• Based on:

- Availability
- Familial factors
- Peer group influences
- Media influences

Substance abuse in young adolescents is significantly affected by advertising and exposure to the product in media contexts

Banning advertising of a product (e.g., cigarettes) has been shown to significantly decrease adolescent use

Regular Use

Regular use

Mood-alteration effects

- Impact on reward pathways
- One main reason for using drugs is that they have important mood-altering effects
- Most drugs of abuse either relieve negative mood or create euphoria and feelings of well-being
- However, these mood-altering effects are more complicated than they may appear to the user (e.g., alcohol myopia)

Regular use

Self-medication

- When individuals are suffering more severe adjustment and coping problems, substance use can act as a means of self-medication
- Supported by the fact that substance abuse and dependency are highly comorbid with other psychiatric disorders
- Anxiety disorders and depression tend to pre-date SUD's
- Substance abusers frequently cite self-medication as a reason for using drugs

Regular use

Long-term expectations and beliefs

- Many substance users develop expectations that the substance will have positive effects
- Many substance users also develop erroneous beliefs that the substance they use is harmless

Regular use

Cultural context

- Cultural differences in frequency of drug use may mediate the transition from first use to regular use (e.g., alcohol consumption in wine-drinking societies)
- There are also cultural differences in beliefs about the effects of drugs

Abuse and dependence

Abuse and dependence

Genetic Predisposition

- A number of genetic factors may make individuals prone to substance abuse and dependency
- Twin studies suggest inherited factors in cannabis abuse, nicotine dependency, and drug abuse generally



Abuse and dependence

Genetic Predisposition

- Genetic factors may interact with environmental factors to cause dependency (e.g., alcohol dependency)
- Inheritance of specific genes may influence substance dependency by influencing the physiological experience of the drug (e.g., Wall et al., 2001)



Abuse and dependence

Long-term substance-induced cognitive deficits

- Regular use of some drugs may cause long-term cognitive and behavioural deficits (Iversen, 2005)
- Long-term deficits may adversely affect judgement resulting in continued long-term substance abuse
- Some neuropsychological evidence that drugs such as cocaine can cause long-term damage to the brains of regular users (Little et al., 2003)



Abuse and dependence

Concurrent psychiatric diagnoses

- Treatment outcomes for substance abuse and dependency are significantly worse in those with concurrent psychiatric disorders
- Those with psychiatric disorders:
 - May face more stressors than those without (so causing more substance abuse)
 - Are less likely to consider drugs problematic or may lack the motivation to abstain (Ramo et al., 2005)



Abuse and dependence

Poverty

- Socioeconomic factors are important in determining whether someone will use drugs
- Conditions such as unemployment, no other forms of recreation, little hope of education fulfilment, and environments that revere drug dealing as a high-status profession are all likely to influence continued substance use
