

# National 5 Psychology

## Individual Behaviour



## Sleep and Dreams

## Assessment Standards

These are the assessments standards that you have to achieve for this unit:

### OUTCOME

Explain topics relating to individual behaviour by:

- 1.1 Describing a topic relevant to individual behaviour
- 1.2 Explaining the behaviour using psychological approaches and theories
- 1.3 Explaining the strengths and weaknesses of the psychological approaches and theories used to explain the behaviour

**For the topic of sleep and dreams candidates must be able to:**

- Explain the topic of sleep and dreams using the biological approach
- Describe the scientific method including sleep study using polysomnography (PSG)
- Explain the restoration theory of sleep (Oswald, 1966)
- Describe the aims, method and results of the Dement and Kleitman's study (1957)
- Explain one strength and one weakness of the biological approach
- Explain the topic of sleep and dreams using the psychoanalytic approach
- Use and explain psychoanalytic terminology including conscious, pre-conscious, unconscious, manifest and latent content of dreams
- Describe the main aims, method/procedure and results of the Little Hans study (Freud, 1909)
- Explain one strength and one weakness of the psychoanalytic approach

## Facts about sleep



- Sleep is characterized by major changes in physical characteristics such as body temperature, hormone secretions, heart rate and respiration (breathing) rate.
- It seems that with training, people can gradually reduce their normal amount of sleep by an hour or two without feeling too tired.
- People sleep less than they used to in the past. This is due in part to electrical lighting, which makes it easy to increase the number of hours of available light.
- When you're asleep it's somewhat as if your brain were closing itself off. In reality your brain is never completely cut off from the rest of the world even during the deepest stages of sleep, a strong enough stimulus from your environment will be perceived by your brain and cause you to wake up.
- The average adult human sleeps 7 to 8 hours per night. But about 10% of the adult population needs much more sleep a night- 9 or even 10 hours. At the other end of the spectrum, some 5% of the population can get along fine with only 5 or 6 hours of sleep. The only criterion for whether you're getting enough sleep is whether you feel in good shape during the day.
- The variations in the amount of sleep that people need are determined both by their genetic make-up and by their lifestyle, especially during adolescence. The same goes for people's tendency to go to bed early and wake up early, or to go to bed late and wake up late.
- Regardless of whether people sleep 6 hours or 10 hours sleep per night, they all get about the same amount of deep non-REM sleep: 100 minutes.
- In today's performance obsessed society, people often cite Napoleon and Churchill as examples of high achievers who supposedly slept only a few hours each night. However, people fail to mention all the other high achievers who, like Einstein, needed 10 and sometimes even 12 hours of sleep per night.
- We all dream every night, even if we don't remember our dreams. Memories of dreams are very unstable and disappear within a few minutes after we wake up. You can remember your morning dreams, either by writing them down as soon as you wake up, or by repeating their content to yourself so that they leave a trace in your long-term memory.
- The worries that we experience during the day are often incorporated into our dreams. Rosalind Cartwright studied a large number of individuals who were going through divorces, and she found that when these people were awakened from REM sleep, most of the dreams that they reported dealt with their marital concerns.
- The longest documented voluntary period of sleeplessness involved a 17 year old male from California, Randy Gardner, who went 264 hours (11 days!) without sleeping. He did so on a bet, and he did not use any stimulants to accomplish this. When he was done, he slept like a rock for 15 hours, and after a few more nights of sound sleep, he was as good as new!
- Dr William Dement, an important sleep researcher, used himself as the subject of a sleeplessness experiment. After 48 hours without sleep, he confirmed that he was experiencing feelings of paranoia and suspiciousness towards his roommates. Very soon, he also experienced problems with his vision, as well as being unusually distracted and clumsy.

**Activity:**

Let's see if you've been paying attention....take the sleep and dreams quick quiz.

1. Sleep is characterized by major changes in physical characteristics such as body \_\_\_\_\_, \_\_\_\_\_ secretions, \_\_\_\_\_ rate and \_\_\_\_\_ rate.
2. If you reduce your sleep gradually, how long can you cut down your sleep by without feeling tired?
3. Why do people sleep less than in the past?
4. What is the average number of hour's sleep that most adults have?
5. What two things tend to determine the amount of sleep that people get?
6. Which famous people slept only a few hours each night?
7. Which famous people needed 10-12 hours sleep?
8. How long does our memory of a dream last?
9. Name two strategies for remembering our morning dreams
10. Who achieved the longest documented voluntary period of sleeplessness? How long did he stay awake for?
11. What are four documented symptoms of sleep deprivation found by Dr William Dement?

## Sleep & Dreams

### Sleep Facts:

- We all need and experience sleep
- We sleep up to a third of our lives
- We devote a third of our houses to sleep
- We all dream even if we don't always remember

**But what is sleep? Come up with a definition.**

### **Consciousness**

The main difference between being awake and being asleep is that in sleep, consciousness does not intervene. When you're asleep it's somewhat as if your brain were closing itself off. In reality your brain is never completely cut off from the rest of the world even during the deepest stages of sleep. A strong enough stimulus from your environment will be perceived by your brain and cause you to wake up e.g. a baby crying. So sleep is a period of brain activity where external stimuli are not thoroughly attended to.

### **Activity:**

Create a mind-map containing everything that you have learned so far.

Add anything you know about **your own experience** of sleep to your spider diagram e.g. how long you sleep for each night, any dreams you've had more than once etc.

# The Biological Approach to Sleep

## Circadian Rhythms

All species have a timing mechanism, or internal body 'clock,' that controls periods of activity and inactivity across a day, a season or a year. These clocks can produce a circadian rhythm that fluctuates on a roughly 24-hour timetable. Sleep is part of a circadian rhythm.

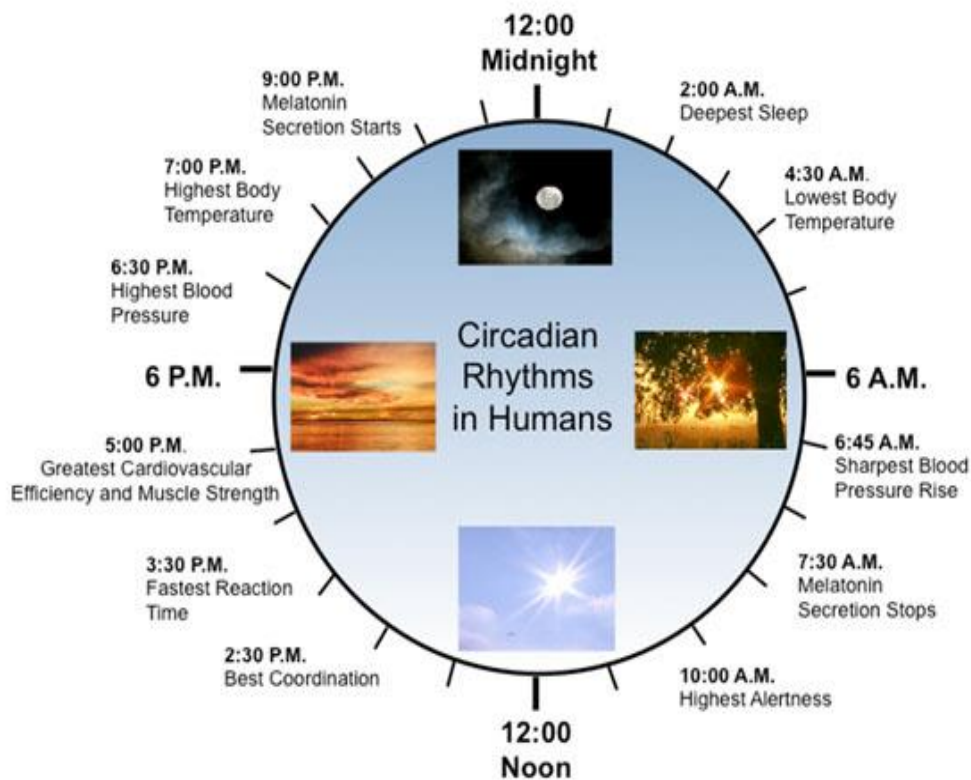
Circa = about

dia = day

circadian = about one day



While many people refer to **circadian rhythms** as a single process, there are actually a number of body clocks that oscillate throughout the day. For example, mental alertness tends to peak twice in a day at 9AM and 9PM, while physical strength tends to crest at 11AM and 7PM.



Circadian Rhythms – Key Points:

- Your circadian rhythms are tied to sunlight cues
- Disrupting these patterns can lead to poor or difficult sleep.
- Without light signals, people tend to operate on a 25-hour schedule.
- Circadian rhythms also impact body temperature, pain sensitivity, mental alertness, physical strength, and the senses.

## How Does Your Body "Keep Time?"

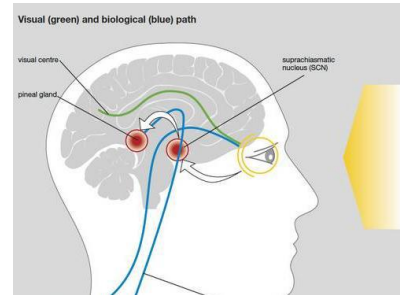
Information from your eyes needs to get to the back of your brain. Part of the optic nerve from each eye crosses over to the other side of the head. This crossing-over point is called a **chiasma**. This happens almost in the centre of your head above the hypothalamus. In the hypothalamus is a cluster (nucleus) of about 20,000 neurons called the **suprachiasmatic nucleus (SCN)**.

Supra = under

Chiasma = crossing point

Nucleus = cluster of brain cells

A tiny cluster of approximately 20,000 neurons in the hypothalamus controls your body's many circadian rhythms. Known as the **suprachiasmatic nucleus (SCN)**, this master control centre is responsible for acting as your body's internal pacemaker. While the exact mechanisms for how this process works are unclear, environmental cues are important. Sunlight is perhaps the most apparent, controlling our daily sleep-wake schedule.



So how does sunlight affect your circadian rhythms? As the sunlight decreases at the close of the day, the visual system sends signals to the suprachiasmatic nucleus. Next, the SCN sends signals to the pineal gland to increase the production of the hormone **melatonin**. This hormone increase helps reduced activity and makes **you feel increasingly sleepy**. As the amount of light begins to increase again (morning), your SCN tells your pineal gland to reduce the amount of melatonin in your body, leaving you feeling awake.

### **\*\*MYTH\*\* - Teenagers love lying in bed**

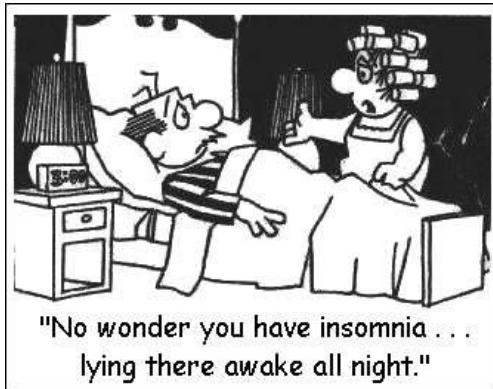
A common assumption is that teenagers are lazy, moody and unmotivated to get out of bed in the morning. Research shows real biological factors explain these types of behaviour. During puberty, a 2-3 hour delay occurs in the circadian rhythms and children of this age, particularly males, gradually shift their activity to 2-3 hours later than their parents (and schools!).



### **Activities:**

1. Write down the key points about circadian rhythms.
2. What does "circadian rhythm" translate as?
3. Explain how a circadian rhythm works using the following key words **light, eyes, SCN, melatonin, alert, tired**.
4. Draw your own circadian rhythm. Annotate your diagram with how you feel at times throughout the day.
5. Explain why teenagers struggle to get out of bed in the mornings and how this is linked to their circadian rhythms.

## What Happens When There is No Sunlight?



There has been a considerable amount of research on what happens to circadian rhythms when natural sunlight patterns are interrupted. Clinical research has shown that individuals who are blind from birth frequently have difficulty with their sleep-wake cycle because of the complete lack of environmental light cues.

Those who perform shift-work or travel frequently are also subject to having their natural circadian rhythms disrupted.

In some major studies of circadian rhythms, participants stayed in underground units for weeks or even months at a time. Deprived of all natural light cues, the circadian rhythms of these participants began to shift toward a 25-hour schedule rather than the standard 24-hour pattern. Additionally, many of the body's previously synchronized circadian rhythms shifted as well.

When exposed to environmental sunlight signals, many of the body's rhythms operate on a very similar schedule. When all natural light cues are removed, these body clocks begin to operate on completely different schedules.

### **Activity:**

***Individuals who are blind from birth frequently have difficulty with their sleep-wake cycle because of the complete lack of environmental light cues.***

Explain why this might be.



## Live in a cave for 6 months? You must be crazy!

So what would happen to our circadian rhythms if we lived in a cave or mine or in a cupboard for a few months? Who would want to do such an experiment? Well, meet Michel Siffre, a 23yr old French scientist and adventurer.

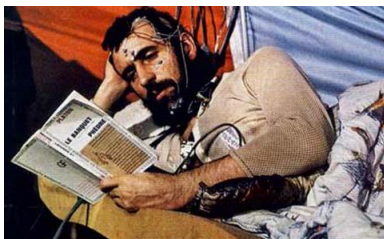
### The experiment

**Aim:** In the 1960s, at the peak of the Space Race, scientists were curious how humans would handle travelling in space and living in fallout shelters. Could people cope with extreme isolation in a confined space? Without the Sun, what would our sleep cycles be like?



Michel Siffre, a 23-year-old French geologist, decided to answer these Cold War questions by conducting an experiment on himself.

**Procedure:** For two months in 1962, Siffre lived in total isolation, buried 375 feet inside a subterranean glacier in the French-Italian Maritime Alps, with no clocks or daylight to mark time. While in the cave, Siffre telephoned his research assistants every time he woke up, ate, and went to sleep. He endured below freezing temperatures and very high humidity, often having to remove large chunks of ice from around his tent. He developed hypothermia.



**Results:** Despite his suffering we now know that humans have a 24-25hr internal ticking clock just like plants. When Siffre emerged on September 14, he thought it was August 20. His mind had lost track of time, but, oddly enough, his body had not - he'd unintentionally kept regular cycles of sleeping and waking. An average day for Siffre lasted a little more than 24 hours. Humans beings, Siffre discovered, have internal clocks.

**Conclusion:** We all have internal clocks, but we are not born with circadian rhythms installed – newborns nap randomly until about 6 months old, then they start to sleep more at night.

**Evaluation:** This was a lab experiment and was therefore highly controlled. However, as such a small sample was used (one man), we cannot generalise findings to a wider population.

### Activity:

#### Choose which activity you would like to do:

1. Write up the aims, methods, results and conclusion of Michel Siffre's experiments in full sentences

OR

2. Draw a cave with a wee man in it and put the aims, procedure, results, conclusion and evaluation around the outside.

### Hours of sleep needed at different ages

We're not all the same when it comes to the amount of sleep we need in order to function optimally the next day.

About 10% of the adult population needs much more sleep a night than the average 7-8 hours.

Around 5% of the population can get along fine with only 5 or 6 hours of sleep.

There is no particular amount of sleep that is ideal in itself. The only criterion for whether you're getting enough sleep is whether you feel in good shape during the day.

Children need more sleep per day in order to develop and function properly; up to 18 hours for new-born babies, with a declining rate as a child ages. A new-born baby spends almost 9 hours a day in REM sleep. By the age of five or so, only slightly over two hours is spent in REM. Studies say that school age children need about 10 to 11 hours of sleep.

<u>Age</u>	<u>Sleep Needs</u>
New-borns (0-2 months)	12-18 hrs.
Infants (3-11 months)	14- 15 hrs.
Toddlers (1-3 yrs.)	12 to 14 hrs.
Pre-schoolers (3-5 yrs.)	11 -13 hrs.
School age children (5-10hrs)	10-11 hrs.
Adolescents (10-17yrs)	8.5 to 9.25 hrs.
Adults, including elderly	7 to 9 hrs.
Pregnant women	8 (+) hrs.

#### **Adolescents**

According to Christian Jarrett, Ph.D. in Brain Myths October 1, 2012:

'Most teenagers stay up late and then lie in through the morning, dead to the world'. It's tempting to think they're just being lazy but in fact the evidence is mounting that the teenage body clock really is set differently from an adult's. A survey published in 2004 of over 25,000 Swiss and German people compared the time of day they slept to when they didn't have any social obligations. This time became progressively later through adolescence, peaking abruptly at the age of 20.

#### **Activities**

1. Draw a picture of a person at each stage of the life cycle and explain what happens to their sleep patterns in each stage.
2. Why do you think newborn babies need so much sleep?
3. Why do you think pregnant women need more sleep?
4. Explain how much sleep an adolescent needs.

**\*MYTH\*\*** - Early to bed, early to rise, makes a man healthy, wealthy and wise!

This is a quote from Benjamin Franklin. Aristotle was also a fan of early morning productivity. Although studies have shown no noticeable difference in mental performance when 'larks' and 'owls' were tested in the morning, larks performed noticeably worse at most tasks compared to their owl counterparts in the evening.



### **Are you a Lark or an Owl? Take the test!**

*Adapted from Richard Wiseman's book 'Night School' (2014).*

"Extreme Larks like to be in bed by 10pm, wake around 6am, rarely need an alarm clock, and don't need to nap during the day.

In contrast extreme owls like to go to sleep around 1am, rise about 9am, often set several alarms, and enjoy daytime naps".

#### **Test 1**

**You will need a piece of paper to record your answers. Discuss your responses with your partner to see if you can agree whether you're a lark or an owl.**

**1. What time would you choose to go to bed if you had no commitments the next day?**

Before 21.00    21.00-22.30                      22.30-00.00                      00.00-01.30    After 01.30

**2. What time would you choose to get up if you were free to plan your day?**

Before 06.30    06.30-08.00                      08.00-09.30                      09.30-11.00                      After 11.00

**3. In general do you find it easy to get up in the morning?**

Definitely yes                      Yes    Uncertain                      No                      Definitely no

**4. If you were free all day and had to do 2 hours physical hard work, when would you choose to do it**

08.00-11.00                      11.00-13.00                      13.00-15.00                      15.00-17.00                      17.00-19.00

#### **Test 2**

Try another test of your circadian rhythms to get an instant print out of your results at BBC Bitsized – Science: Human Body and Mind <http://www.bbc.co.uk/science/humanbody/sleep/crt/>

*The variations in the amount of sleep that people need are determined both by their genetic make-up and by their lifestyle, especially during adolescence. The same goes for people's tendency to go to bed early and wake up early, or vice versa.*

## Larks & Owls: Research

### 1. "Larks & Owls" by Putilov (2014)

In psychology, the terms "owl" and "lark" correspond to two very different patterns of sleep. Someone who rises early and feels at their best during the morning hours is called a "lark", while those who prefer to get up late and go to bed past midnight are referred to as "owls".

Although our understandings of circadian rhythms has led us to believe that most people fall into one of the above categories, researchers have recently found that many do not fit into either category. For example, there are a large number of people who feel tired both in the morning and the evening, despite having no medical issues. Another group of people have reported that they experience the opposite and function at a high level during all hours of the day.

In order to find out whether the "owl"/"lark" categories are accurate, Putilov et al conducted a research study into this area. They invited 54 male and 76 female volunteers to spend the night in a sleep lab and kept them awake for just over 24 hours. During this time participants had no coffee or alcohol. Several times during the 24 hour period they were asked to complete a survey about their current level of wakefulness and a questionnaire about their usual sleeping habits.

The collected data revealed that there are four distinct groups; rather than just "lark" or "owl". 29 volunteers were classified as larks – they had lots of energy during the morning but began feeling more tired as the day went on.

44 of the volunteers showed the opposite pattern and were classified as owls.

But instead of stopping right there, the researchers identified two further groups. There was a "high energetic" group of 25 people who felt more or less the same level of energy both in the morning and in the evening. The "lethargic" group of 32 people reported feeling woozy and tired both in the morning and the evening.

Authors of the study claim that their results show that there are four diurnal types instead of two as previously thought.

*Adapted from an article written by Technology.Org and can be accessed at [www.technology.org/2014/11/06/neither-owl-lark-scientists//](http://www.technology.org/2014/11/06/neither-owl-lark-scientists//)*

### 2. "The Lark Has an Advantage over the Owl at High School" by Preckel et al (2013)

A person's chronotype refers to individuals' preference for morning or evening activities. The aim of Preckel et al's research was to investigate whether your chronotype could have an effect on exam results. Would being either a lark or an owl have a relationship with how well you perform in school?

The researchers used 272 volunteers who were currently enrolled in German secondary schools. They were given a morning and eveningness questionnaire to complete, similar to the Epworth Sleepiness Scale. [Your teacher will complete this questionnaire with you]. Participants self-reported how tired they felt during particular activities at a variety of times of day. Parents of participants were also surveyed on their child's sleepiness levels throughout the day. They then compared the questionnaire responses to results of cognitive tests.

It was found that larks performed better in the cognitive tests, indicating that those who are alert during morning hours can cope better with academic tasks. Those who would identify as "owls" did not perform as well on cognitive tests.

Overall this suggests that those who identify as "owls" are at a serious disadvantage during school activities. Their chronotype prevents them from reaching their academic potential as they are not at their peak level of alertness until the afternoon. Some suggest that based on this evidence, the school day should be altered to reflect the needs of owls.

## The Stages of Sleep

Most people have an idea about different kinds of sleep – for example shallow sleep, when you're just waking up, and deep sleep, when you feel groggy. However most people won't know that there are 4 distinct stages to sleep and just to complicate things, sleep does not progress through these stages in sequence! Sleep begins in stage 1 and progresses into stages 2, 3 and 4. After stage 4 sleep, stage 3 and then stage 2 sleep are repeated before entering rapid eye movement (REM) sleep. Once REM sleep is over, the body usually returns to stage 2 sleep. Sleep cycles through these stages approximately four or five times throughout the night.

On average, we enter the REM stage approximately 90 minutes after falling asleep. The first cycle of REM sleep might last only a short amount of time, but each cycle becomes longer. REM sleep can last up to an hour.



### Stage 1:

Stage 1 is the beginning of the sleep cycle, and is a relatively light stage of sleep. Stage 1 can be considered a transition period between wakefulness and sleep. This period of sleep lasts only a brief time (around 5-10 minutes). If you awaken someone during this stage, they might report that they weren't really asleep. You might also experience the sensation of falling at this stage.

### Stage 2:

Stage 2 is the second stage of sleep and lasts for approximately 20 minutes. The brain begins to produce bursts of rapid, rhythmic brain wave activity known as **sleep spindles**. Body temperature starts to decrease and heart rate begins to slow.

### Stage 3:

Deep, slow brain waves known as **delta waves** begin to emerge during stage 3 sleep. Stage 3 is a transitional period between light sleep and a very deep sleep.



### Stage 4:

Stage 4 is sometimes referred to as **delta sleep** because of the slow brain waves known as **delta waves** that occur during this time. Stage 4 is a deep sleep that lasts for approximately 30 minutes. Bed-wetting and sleepwalking are most likely to occur at the end of stage 4 sleep.

### Stage 5 – REM:

Most dreaming occurs about an hour after we fall asleep during the fifth stage of sleep, known as rapid eye movement (REM) sleep. Dreaming occurs during REM sleep and is characterized by the rapid and random movement of the eyes as well as increased respiration rate and increased brain activity.



We have around three to five REM episodes a night. REM sleep is also referred to as paradoxical sleep because while the brain and other body systems become more active, muscles become more relaxed. Dreaming occurs due because of increased brain activity, but voluntary muscles become paralysed. REM sleep in adult humans typically occupies 20-25% of total sleep, about 90-120 minutes of a night's sleep.

#### Activities

1. What happens after you go through stages 1-4 in the sleep pattern?
2. After REM sleep is over, what usually happens to the body?
3. How long does it usually take before entering the REM stage after falling asleep?
4. How long can REM sleep last?
5. Taking each of the stages of sleep, draw your own diagram to explain the process and stages.
6. What most surprises you about the different stages of sleep?
7. Why are there different stages?
8. After thinking about the different stages of sleep, what effects might sleep deprivation have on someone?



## How can we study sleep?

- Experiments
- Polysomnography (PSG)
- Electroencephalogram (EEG)
- Questionnaires
- Observations

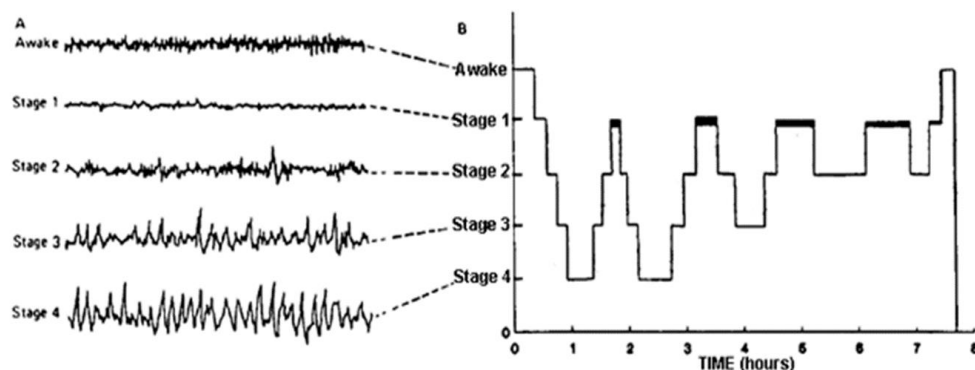


### How is sleep measured?

Stages of sleep do vary from one individual to the other and from one night to the next, but even though the sequence of these stages changes considerably from childhood through to old age, certain general patterns have been identified.

To better visualise these general patterns, researchers use a type of graph called a hypnogram. This is a minute by minute graphic record of a night's sleep, as captured by an EEG. The hypnogram shows not only the sequence in which the various stages of sleep occur, but also the times at which each stage starts and ends.

If we analyse a typical hypnogram such as the one shown below, we see a few minutes after falling asleep, we slip deeper and deeper into non REM sleep, first into light non REM sleep (stages 1 and 2) and then into deep non-REM sleep (stages 3 and 4)



Polysomnography (PSG) is a type of sleep study. It is a group of tests combined as one. It is usually performed at night, when most people sleep, though some labs can accommodate shift workers and people with circadian rhythm sleep disorders, and do the test at other times of day. The PSG monitors many body functions including brain (EEG) eye movements (EOG), muscle activity or skeletal muscle activation (EMG) and heart rhythm (ECG) during sleep.

Polysomnography is used to diagnose, or rule out, many types of sleep disorders including narcolepsy, idiopathic hypersomnia, REM behaviour disorder etc. It is often used for patients with complaints of daytime fatigue or sleepiness that may be caused by interrupted sleep. Although it is not directly useful in diagnosing circadian rhythm sleep disorders, it may be used to rule out other sleep disorders.



### Online learning:

Find websites and clips that explain what it is like to go to a sleep laboratory. Decide which of them are useful enough to share with the rest of the class.



## Animal Sleep Patterns

Humans have fairly predictable sleeping patterns, however animals have all kinds of sleep and dreaming patterns depending on their ecological niche.

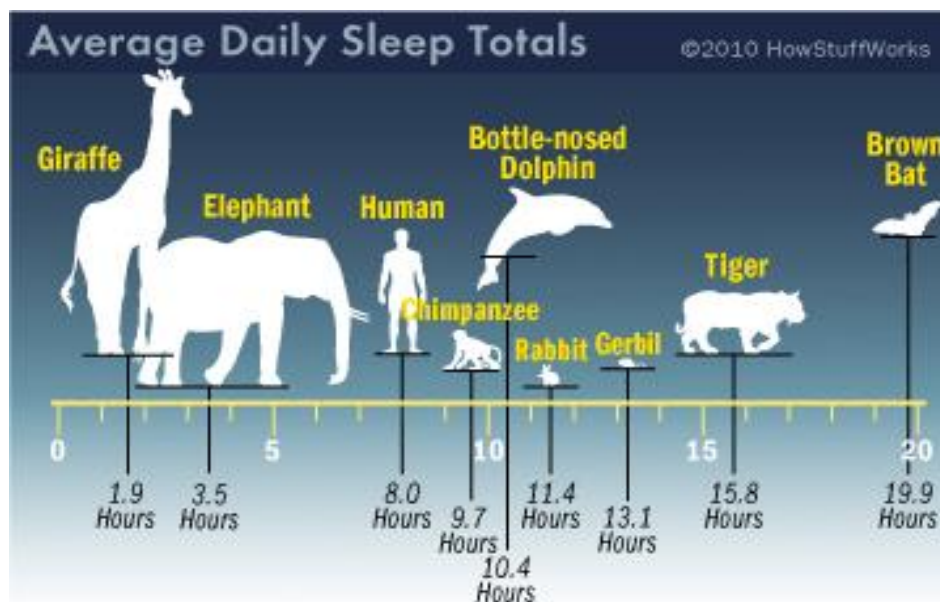


Their sleep may depend on:

- the need to stay alert for predators (e.g. sheep)
- not having predators so they can sleep for long periods (e.g. lions and tigers)
- brain development
- body size (small animals have a higher metabolic rate and sleep more)
- herbivore or carnivore (herbivores spend longer looking for and digesting food)

We have all probably seen a dog dreaming, wagging its tail in its sleep with its legs twitching, seemingly chasing other animals. All mammals in fact dream, except dolphins and spiny anteaters. They also show REM sleep, where their eyes are moving under their eyelids.

Species	Average total hrs. sleep per day
Python	18
Tiger	15.8
Cat	12.1
Chimpanzee	9.7
Sheep	3.8
African Elephant	3.3
Giraffe	1.9



## Theories of Sleep

Our brain is very active when we are asleep and all our vital organs are still ticking away - digesting food, helping us breathe and pumping our blood around our body, so we are not 'shutting down' for the night. Sleep also leaves us very vulnerable to predators, so researchers have found themselves asking - what is the point of being unconscious? There are several theories about why we sleep. Let's look at the main ideas.

1. **Restoration Theory** - Sleep allows us to recharge our bodies and recover from fatigue.
2. **Evolutionary Theory** - The main purpose of sleep is to increase a species' chances of survival

### 1. Repair & Restoration Theory (Adam and Oswald 1983)

In brief this theory states that:

- The body can carry out repairs to cells during sleep
- Sleep restores resources of energy
- Sleep aids the removal of waste chemicals built up during the day
- Gives the brain a rest
- Restores supplies of neurotransmitters
- Restores supplies of brain proteins

And the slightly longer version:

According to the repair and restoration theory of sleep (Oswald, 1966), sleeping is essential for revitalising and restoring the physical processes that keep the body and mind healthy and properly functioning. This theory suggests that NREM sleep is important for restoring physical functions, while REM sleep is essential in restoring mental functions.

#### Evidence:

This is supported by the fact that new-born babies have a high proportion of REM sleep, where it makes up 50 to 60 percent of sleep time, gradually falling to the normal proportion of about 25 percent as the child grows. The month before and after birth are a time of rapid brain growth and development so that, if REM is a time when such processes occur, it is logical that the baby should show increased REM sleep.

Support for this theory is also provided by research that shows periods of REM sleep increase following periods of sleep deprivation and strenuous physical activity. During sleep, the body also increases its rate of cell division and protein synthesis, further suggesting that repair and restoration occurs during sleeping periods.



It has been shown that sleep deprivation affects the immune system. In a study by Zager et al (2007) rats were deprived of sleep for 24 hours. When compared with a control group, the sleep-deprived rats blood tests indicated a 20% decrease in white blood cell count, a significant change in the immune system. It is now possible to state that "sleep loss impairs immune function and immune challenge alters sleep". Rats kept awake indefinitely develop skin lesions, loss of body mass, hypothermia and eventually, fatal sepsis (when the body overreacts to an infection).



### Weaknesses:

However Horne (1978) reviewed 50 studies in which humans had been deprived of sleep. He found that very few of them reported that sleep deprivation had interfered with the participants' ability to perform physical exercise. Neither was there any evidence of a physiological stress response to the sleep deprivation. However, prolonged sleep deprivation in rats appears to cause them to increase their metabolic rate, lose weight, and die within 19 days (Everson et al, 1989). Allowing these animals to sleep within that time prevents their death.

### Activities:

1. Can you spot the difference between description and evaluation? Put the following statements in to the correct columns for restoration theory:

Key Points	Strengths – Evidence for	Weaknesses – Evidence against

- *The body can carry out repairs to cells during sleep*
  - *Horne (1978) reviewed 50 studies in which humans had been deprived of sleep. He found sleep deprivation did not interfere with the participants' ability to perform physical exercise*
  - *Sleep aids the removal of waste chemicals built up during the day*
  - *New-born babies have a high proportion of REM sleep, where it makes up 50 to 60 percent of sleep time, gradually falling to the normal proportion of about 25 percent as the child grows*
  - *REM sleep increase following periods of sleep deprivation and strenuous physical activity*
  - *Restores supplies of neurotransmitters*
  - *In a study by Zager et al (2007) rats were deprived of sleep for 24 hours. When compared with a control group, the sleep-deprived rat's blood tests indicated a 20% decrease in white blood cell count, a significant change in the immune system.*
  - *Sleep restores resources of energy*
2. Create a mind map or grid of the restoration theory of sleep. Use pictures to aid your memory e.g. people, rats, babies, brains.

## Sleep Deprivation

We all know how awful we feel when we have been deprived of sleep. Although there may be medical or environmental reasons why we don't get enough sleep, like snoring or noisy neighbours, the main cause of sleep deprivation is most likely self-inflicted - staying up too late!

Researchers in America analysed data from more than one million people in 2002, and found that getting less than 6 hours sleep a night was associated with an early death!

### Studies on rats

Rechtschaffen et al (1989) deprived rats of either REM or both REM and Non REM sleep. After a week of total deprivation they lost weight despite eating more. After 2 weeks they lost considerably more weight. After 4 weeks they died. During these 4 weeks body weight plummeted, despite increased food, and body temperature became more unstable.



### Studies on Humans

However, humans do not seem to experience such marked changes in blood pressure, heart and breathing rates and body temperature, even when deprivation is for up to 200 hours. Webb and Bonnet (1979) limited participants to 2 hours sleep on one night and found they suffered no ill effects. They did however fall asleep more quickly and slept for longer than usual.

Longer periods of sleep deprivation are more serious, yet people do not die like rats. Webb and Bonnet gradually reduced participants' sleep from 8 hours to 4 hours a night over a 2 month period with no serious consequences.

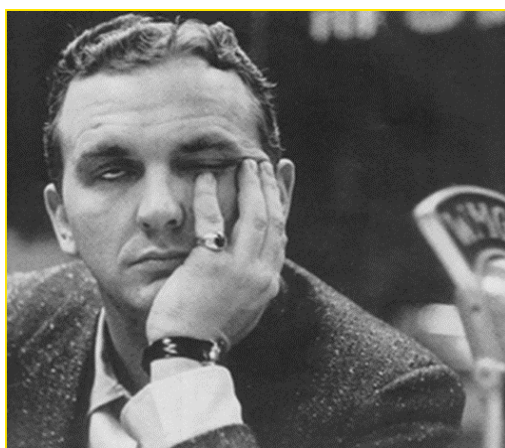
Overall sleep deprivation has been found to have the following effects:

- Memory & attention problems
- A weakening of your immune system
- Increased risk of motor vehicle accidents
- Increase in BMI (increased risk of obesity due to increased appetite)
- Increased risk of diabetes & heart problems
- Increased risk for depression & substance abuse

#### Activities:

1. Make a list of the ways that sleep deprivation affects you in class. You may even be experiencing these symptoms right now!
2. **Ethics alert!** How do you think the researchers kept rats awake for up to 4 weeks? Do you think this experiment is morally justified?
3. What happens to rats who are deprived of sleep after 2 weeks? What happens after 4 weeks?
4. When humans are deprived of sleep gradually what are the consequences?
5. What happens to humans if sleep is abruptly reduced in a shorter period of time?

## Human Case studies of sleep deprivation



### 1. Peter Tripp

Peter Tripp was a Top 40 radio personality from the mid-1950s, whose career peaked with his 1959 record breaking 201 hour *wakeathon* (working on the radio non-stop without sleep to benefit the March of the Dimes). For much of the stunt, he sat in a glass booth in Times Square. After a few days he began to hallucinate, and for the last 66 hours the observing scientists and doctors gave him drugs to help him stay awake.

Tripp suffered psychologically; after the stunt, he began to think he was an imposter of himself, and kept that

thought for some time.

His career soon suffered a massive downturn when he was involved in a scandal of 1960. Like several other disc jockeys he had been playing particular records in return for gifts from record companies. Indicted only weeks after his stunt, it emerged that he had accepted \$36,050 in bribes. Despite his claims of innocence, he was found guilty on a charge of commercial bribery, receiving a \$500 fine and a six-month suspended sentence.

Six years after Tripp's record, it was smashed by high school student Randy Gardner, who lasted 11 days.

After leaving WMGM, Tripp was unable to re-establish himself in the world of radio, drifting from station to station. Returning to L.A., he had more success working in physical fitness, sales, and marketing. He diversified into freelance motivational speaking, writing and stockbroking before settling into a Palm Springs California retirement. Tripp died at the age of 73 following a stroke, leaving two sons and two daughters. His four marriages all ended in divorce.

#### Activities:

1. Watch the documentary about Peter Tripp. Note down all of the *physical* symptoms that you observe Tripp experiencing.
2. How did Tripp change mentally?
3. How does this human case study support restoration theory?
4. Why haven't full research studies been conducted into the effects of sleep deprivation on humans?

## 2. Randy Gardner

**Randy Gardner** is the holder of the record for the scientifically documented longest period sleep deprivation without use of stimulants of any kind. In 1964, Gardner, a 17-year-old high school student in San Diego, California stayed awake for 264.4 hours (11 days 24 minutes). This period of sleeplessness broke the previous record of 260 hours and 17 minutes held by disk jockey Tom Rounds of Honolulu. Gardner's record attempt was monitored by Stanford sleep researcher Dr. William Dement.

### Findings:

Gardner's experiment is often used to **demonstrate that extreme sleep deprivation has little effect**, other than the mood changes associated with tiredness. For example researcher William Dement stated that on the tenth day of the experiment, Gardner had been, among other things, able to beat Dement at pinball. However, doctors who monitored his health, reported serious cognitive and behavioural changes. These included moodiness, problems with concentration and short term memory, paranoia and hallucinations. On the eleventh day, when he was asked to subtract seven repeatedly, starting with 100, he stopped at 65. When asked why he had stopped, he replied that he had forgotten what he was doing.

On his final day, Gardner presided over a press conference where he spoke without slurring or stumbling his words and in general appeared to be in excellent health. "I wanted to prove that bad things didn't happen if you went without sleep," said Gardner. "I thought, 'I can break that record and I don't think it would be a negative experience.'"

### After the experiment

Gardner slept 14 hours and 40 minutes. He awoke naturally around 8:40 p.m., and stayed awake until about 7:30 p.m. the next day, when he slept an additional ten and a half hours. Gardner appeared to fully recover from his loss of sleep, with follow up sleep recordings taken one, six, and ten weeks after the fact showing no significant differences. No long term psychological or physical effects have been observed.

### Activities:

1. Why did Gardner attempt to break the world record?
2. What physical side effects/symptoms did he experience?
3. What mental side effects/symptoms did he experience?
4. Were these permanent changes?
5. Does the case of Randy Gardner provide evidence for or against the restoration theory?  
Explain your answer.

## Sleep Deprivation and Mobile Devices

More and more people are staying up late working or using social media on computers, tablets and smartphones. This is causing an epidemic of poor sleep and creating less productive workers/pupils the following day. Research has now shown that light at the blue end of the spectrum is more likely to keep people awake because it suppresses the production of the sleep-inducing hormone melatonin. Therefore blue light emitted by mobile phones and tablets stops the body knowing that it's time for sleep. Richard Wiseman suggest the following remedies:



- Limit exposure to this light a few hours before bed
- If you must use your smartphone, tablet or computer late in the evening, turn down the brightness
- Ensure that the device is at least 12 inches from your eyes
- Use an app that dims the lighting on your screen at night
- If you really can't control your impulse to surf the net, wear amber tinted glasses that block blue light.

### Activities:

1. Explain why using mobile phones etc. before bed has an impact on sleep. Refer to what you know about circadian rhythms!
2. Make a list of the ways that you use your mobile device in the evening. What time do you tend to switch it off? What is the last thing that you do before you sleep?
3. If someone was to regularly use their mobile device before sleeping, what effect might that have on them the next day?
4. Create a questionnaire to see how other members of the class use their mobile devices in the evening. It should contain at least 5 questions. These can be open questions (with a space left for answers) or closed questions, (meaning tick box or circle answers).
5. Read the article by Richard Wiseman from the Guardian newspaper (14 May 2014). In your **own words** summarise what effects exposure to blue light before bed is having on people.
6. From the article, write down any pieces of advice you could give a friend who uses their phone in the last minutes before sleep.

## 2. The Evolutionary Theory of Sleep

Evolutionary theory, suggests that periods of activity and inactivity evolved as a means of conserving energy and avoiding predators. According to this theory, all species have adapted to sleep during periods of time when wakefulness would be the most hazardous.



Support for this theory comes from research of different animal species. Meddis (1975) claims that animals that have few natural predators, such as bears and lions, often sleep between 12 to 15 hours each day. On the other hand, animals that have many natural predators have only short periods of sleep, usually getting no more than 4 or 5 hours of sleep each day. Cattle (which have many natural predators) sleep very little.

### Time spent finding food

Herbivores need more time to find and digest food compared with carnivores. Plants don't give as much energy as meat, so more time is spent eating and less time sleeping.

### Energy conservation

Mammals expend a lot of energy just staying awake at a certain body temperature. We have a limited supply of energy so sleep acts as a way of reducing the amount of energy we use up each day as it is a period of 'enforced inactivity'. Also, this can explain why some animals sleep more than others; smaller animals have a greater need for saving energy as their metabolism is higher, hence why they sleep more. Webb (1982) argues that sleep enables animals to conserve energy when expending it would be hazardous. If it's difficult to find food at night or in winter it makes more sense to sleep. Perhaps this is the reason why humans sleep at night too.

### Predator Avoidance

Predator avoidance' is another way in which we can understand why some animals sleep more than others. If an animal is a predator it doesn't have to worry about being attacked while it sleep, so it can sleep for long periods of time, conversely prey must spend as much time as they can afford to awake in order to avoid predators.

### Body size

In land mammals, total sleep time is also related to body weight. Squirrels and shrews, for instance, sleep for about 14 hours a day, cows and sheep for about four. The smaller the animal is, the faster the body uses up energy resources. So, sleep in smaller mammals may be important for conserving these resources as well as keeping them safe from predators.

However the giant sloth is relatively large and not the most active of animals, and should not need much sleep, yet it sleeps for around 20 hours a day; this goes against the body size idea.

### Evaluation – problems with Evolutionary theory

- Humans no longer need to hide from predators so this function is part of our evolutionary past.
- Empson (1993) criticizes Meddis' theory of predators because sleep deprivation is universal amongst all animals – even predators need sleep and go through sleep stages.

Due to the fact that sleep duration and patterning seems to depend on brain development, body size, life style etc., it is unlikely that any single explanation could account for the function of sleep in all animals.



### Activities:

1. Which researcher claims that the avoidance of predators is the main cause of sleep patterns?
2. Which types of animals have a very high metabolic rate and burn energy quickly?
3. Draw an animal in the centre of a mind map and add all the reasons for sleep around it that have been proposed by the Evolutionary theory.
4. Write 1 paragraph on the key points of evolutionary theory and 1 paragraph on the strengths and weaknesses of it.
5. Which theory do you think is most persuasive in explaining the function of sleep – restoration theory or evolutionary theory? Do you think they are both equally useful?

### Revision Tasks

Choose one of the following methods to revise the two theories of sleep that we have covered so far:

1. Create a presentation (e.g. PowerPoint or Prezi)
2. Make up flash cards, either on card or online.
3. Create a magazine template and write a newspaper article.
4. Imagine you are working for a sleep clinic and you are tasked with designing an information leaflet for visitors to explain the two major biological theories of sleep.



## Sleep Research: Dement and Kleitman (1957)

*"The relation of eye movements during sleep to dream activity: an objective method for the study of dreams"*

### Aim

Dement and Kleitman aimed to study the link between eye movement and dreaming in an objective way (not influenced by personal feelings or judgements).

They had three hypotheses and thought that they would find that:

- Significantly **more dreaming** occurs **during REM sleep** than non REM sleep under controlled conditions.
- There is a **significant connection** between the length of **time** spent **in REM** and the length of the dream that a participant would report.
- There is a link between eye movements and the content of a dream.

### Method

This was a lab experiment which also used observation. It was a highly controlled environment (a sleep clinic). The sample was comprised of 7 males and 2 females (9).

### Procedure

Participants asked to complete a normal day's activity as they usually would, but were asked to avoid alcohol and caffeine that day and for a few days leading up to the experiment. This was to ensure that alcohol/caffeine didn't act as an EV and impact on sleep.

Subjects slept individually in a quiet dark laboratory room. Electrodes were connected near the eyes to register eye movements (EOG) and on the scalp to measure brain waves (EEG) during sleep - these were the objective measures of REM sleep.



Subjects were awoken at various times during the night (fairly evenly distributed across the average sleeping time of the subjects) by a loud doorbell noise. They immediately reported in to a recording device whether they had been dreaming, and the content of the dream. They did this before having any contact with the experimenter (to avoid bias). Subjects were never usually told whether their eyes had been moving before being awoken. Dreaming only counted if a fairly detailed and coherent dream was reported - vague descriptions of dreaming without recall of content were not counted.

Some subjects were awoken either 5 or 15 minutes after REM sleep began and were asked to decide whether the duration of their dream was closer to 5 or 15 minutes. The length of the dream (time spent in REM) was compared to the participant's estimations.

Some subjects were awoken as soon as one of four patterns of eye movement had occurred for 1 minute. This was recorded using an EOG. Participants were asked exactly what they had dreamt about.

## Results

Both Non-REM and REM sleep was recorded for all participants who took part in the study. REM periods occurred at regular intervals specific to each subject (although on average occurring every 92 minutes) and tended to last longer later in the night.

Regardless of how subjects were awoken, significantly more dreams were reported in REM than non REM sleep. When subjects failed to recall dreams from REM sleep, this was usually early in the night.

Subjects were significantly correct in matching the duration of their dream to length of time they had shown to be in REM sleep.

There was a very strong association between the patterns of REM and the content of dream reports. Those who experienced vertical eye movement dreamt of things such as looking up and down at cliff faces, ladders and basketball nets.

During horizontal eye movement a dream of two people throwing tomatoes at each other occurred.

Those who experienced a combination of horizontal and vertical eye movement described dreams about objects that were seen close up.

Those with very little eye movement described dreams of looking at distant objects

## Evaluation

- ✓ There was strong evidence that most dreaming happens in REM, which has been supported by further research.
- ✓ The experiment was highly controlled as it was conducted as a lab experiment. This means that the researchers could control possible extraneous variables e.g. caffeine intake.
- ✓ The researchers tried to design an objective study into dreams – they even tried to limit possible bias by asking participants to record responses instead of talking to the researcher. This meant that the participants could not be influenced in their descriptions of their dreams.
- ✗ The study used a very small sample, mainly consisting of men. This means that it is harder to generalise findings to a larger population.
- ✗ Participants were asked to sleep in an unfamiliar environment and this may have had an impact on findings. Both the setting and the task were artificial.
- ✗ Hard to generalise findings linking dream content to eye movements as each dream was different.
- ✗ The study focussed on adults, and therefore cannot be generalised to children.

## The Biological Approach to Sleep & Dreams

The biological approach believes us to be as a consequence of our genetics and physiology. It is the only approach in psychology that examines thoughts, feelings, and behaviours from a biological and thus physical point of view. Therefore, all that is psychological is first physiological. All thoughts, feeling & behaviour ultimately have a biological cause.

Biological psychologists have identified particular areas of the brain that control circadian rhythms: the **hypothalamus** contains an area called the **suprachiasmatic nucleus (SCN)** that controls our circadian rhythms. The SCN gets information from nerve cells in the eyes about whether it is light or dark, allowing our melatonin levels to be adjusted.

This approach also explains dreams biologically. Rather than look for meaning in dreams, the biological approach thinks that dreams are a result of random brain activity during sleep and are therefore meaningless.

### Key Biological Concepts & Theories:

- Circadian rhythms
- Stages of sleep and physical changes
- Studying sleep from a biological approach – EEGs, PSG
- Restoration Theory
- Evolutionary Theory

### Evaluation



This approach is very scientific. It is concerned with how the body works and what changes are experienced during sleep. Controlled lab experiments are conducted and scientific equipment is used to study sleep from the biological approach. For example, a PSG is a combination of scientific tests which measure physical changes during sleep. Lab experiments are highly controlled and easily replicated.



This approach is “reductionist”, meaning that it is oversimplified. This means we can’t obtain a complete understanding of human behaviour by focusing only on biological factors. For example, various social, cognitive and environmental factors may influence the development of sleep disorders such as depression and anxiety/stress. These factors are ignored within the biological approach, and disorders are explained as a result of physical changes in the body.

### Activities:

1. Write a paragraph explaining the biological approach. You can mention the key concepts and theories that we have explored so far.
2. Give one strength and one weakness of the biological approach.

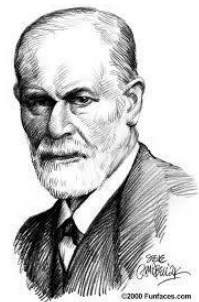
## Dreams

First, let's start by answering a basic question – What is a dream? A dream can include any of the images, thoughts and emotions that are experienced during sleep. Dreams can be extraordinarily vivid or very vague; filled with joyful emotions or frightening imagery; focused and understandable or unclear and confusing.

Dreams have fascinated philosophers for thousands of years, but only recently have dreams been subjected to empirical research and concentrated scientific study. Chances are that you've often found yourself puzzling over the mysterious content of a dream, or perhaps you've wondered why you dream at all.

Dreaming mostly occurs during the REM phase of sleep. Dreams can also be suppressed or encouraged; taking anti-depressants or alcohol can suppress dreams, whereas melatonin has the ability to encourage dreams.

People have proposed many hypotheses about the functions of dreaming. Sigmund Freud said that dreams are the symbolic expression of frustrated desires that had been relegated to the unconscious mind, and he used dream interpretation in the form of psychoanalysis to uncover these desires. Freud's work concerns the psychological role of dreams, which does not exclude any physiological role they may have.



### **Why do we dream?**

While many theories have been proposed, no single consensus has emerged. Considering the enormous amount of time we spend in a dreaming state, the fact that researchers do not yet understand the purpose of dreams may seem baffling. However, it is important to consider that science is still unravelling the exact purpose and function of sleep itself.

Some researchers suggest that dreams serve no real purpose, while others believe that a possible (though certainly not proven) function of a dream is the weaving new material into the memory system. This helps us cope with further trauma or stressful events.

### **Activities:**

1. What is a dream?
2. When does most dreaming happen?
3. What can prevent/suppress dreams?
4. What can encourage dreams?
5. What can you say about how much is known about the purpose of dreaming?
6. What are the most common dreams that we have? Discuss dreams that you have had with those around you. Write down any dreams that you have had in common e.g. flying.

## Why do we dream?

Why do *you* think we dream? Is it just random neurons firing in your brain that produce bizarre images? Or do you think we use dreams to get rid of unwanted memories or solve problems? Perhaps dreams are wishes that we would like to fulfil in our waking life?

Different theories have attempted to explain why we dream and these tend to come from the 5 approaches in psychology: Biological, Behaviourist, Psychodynamic, Cognitive and Humanistic. We're going to focus on the Biological and Psychodynamic approaches.

### Discussion Activities:

1. Why do you think we dream every night?
2. Do you think there is meaning in our dreams? Explain your answer.
3. Do you think dreams are a reflection of your real life? If so, in what way?

## The Biological Approach to Dreaming

### 1. Activation-Synthesis Theory

**Hobson & McCarley (1988)** claim that random electrical activity during REM sleep is experienced as a dream. During REM sleep the brain stem inhibits muscles (sleep paralysis) and excites activity in the forebrain. Dreams are random internally generated signals from the brainstem. Our brain takes past experiences and memories and integrates them in creative ways. Bizarre dreams occur when there is a lack of information so the brain does its best to interpret and give them meaning.

If the neurons fire in the part of the brain that deals with balance – we have falling dreams. If neurons fire in the part of the brain that deals with running – we have running dreams.

### Evidence for this theory

1. Pet scans support Activation Synthesis theory - the brain stem and frontal lobe is active, and the prefrontal cortex is not active
2. It explains why dreams are without 'smell' as that part of brain is inactive during dreaming.
3. Hobson found acetylcholine is the 'firing' agent in the brain stem, and causes us to dream. When acetylcholine is injected in to volunteers, their REM sleep and dreaming increase.

### Conclusion

According to this theory dreams may be personal, but they're completely meaningless.



## The Psychodynamic Approach to Dreaming

The founder of psychodynamic approach was Sigmund Freud. While his theories were considered shocking at the time and continue to create debate and controversy, his work had a profound influence on a number of disciplines, including psychology, literature, and art.



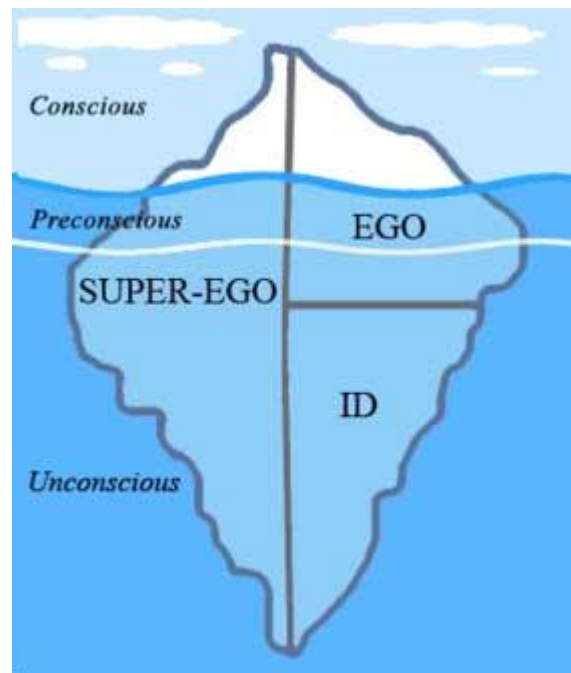
Before we can understand Freud's theory of dreaming, we must first understand his view of how the mind is organized. According to Freud, the mind can be divided into two main parts:

1. [The conscious mind](#) includes everything that we are aware of. This is the aspect of our mental processing that we can think and talk about rationally. A part of this includes our memory, which is not always part of consciousness but can be retrieved easily at any time and brought into our awareness. Freud called this ordinary memory the [preconscious](#).
2. [The unconscious mind](#) is a reservoir of feelings, thoughts, urges, and memories that outside of our conscious awareness. Most of the contents of the unconscious are unacceptable or unpleasant, such as feelings of pain, anxiety, or conflict. According to Freud, the unconscious continues to influence our behaviour and experience, even when we are not aware of it doing so.

Freud compared the human mind to an iceberg where the conscious mind is the tip of the iceberg, and the bit beneath the surface is the unconscious mind.

### Activities:

1. Draw your own version of Freud's iceberg.
2. Add an explanation of the *conscious*, *pre-conscious* and *unconscious* to your diagram.
3. Add examples of what things can be going on in each part of the mind.



## Studying the Unconscious Mind

Freud believed that you could access a person's unconscious mind in a variety of different ways -

### **Freudian Slips (parapraxis)**

Many of us have experienced what is commonly referred to as a Freudian slip. These misstatements are believed to reveal underlying, unconscious thoughts or feelings. Consider this example:

*James has just started a new relationship with a girl he met at school. While talking to her one afternoon, he accidentally calls her by his ex-girlfriend's name.*

If you were in this situation, how would you explain this mistake? Many of us might blame the slip on distraction or describe it as a simple accident. However, a psychoanalytic theorist might tell you that this is much more than a random accident. The psychoanalytic view holds that there are inner forces outside of your awareness that are directing your behaviour. For example, a psychoanalyst might say that James misspoke due to unresolved feelings for his ex or perhaps because of misgivings about his new relationship.

### **Psychoanalysis**

The term psychoanalysis is used to refer to many aspects of Freud's work and research, including Freudian therapy and the research methodology he used to develop his theories. Freud relied heavily upon his observations and case studies of his patients. Freud preferred to sit behind the patient as they lay on his couch so he would not distract them. Early in his career he experimented with hypnosis to relax patients and allow them to access unconscious thoughts, but he began to worry that he might be suggesting thoughts to the patient and therefore dropped it as a technique.

Psychoanalysis typically involves:

- Free association
- Dream analysis
- Projective tests e.g. Rorschach ink blots

#### Activities:

1. What do you see in the inkblots?
2. Try a free association exercise by making a list of 20 words and getting your partner to say what they associate with these words.

They should answer as fast as they can to access unconscious thoughts. If they hesitate for too long they are using their conscious mind to filter a response. Write their answers down but note that these answers are confidential and should be destroyed at the end of the class.

Swap over and get your partner to read out a new list of words to you.



## Manifest and latent content of dreams

According to Freud, there are three functions of dreams:

1. To allow the expression of primitive urges e.g. sex and aggression
2. To use disguised images (symbols) to protect the sleeper from becoming aware of their latent thoughts.
3. Wish fulfilment – the dreamer gets the opportunity to play out wishes and desires of the unconscious in a safe way.

Freud believed that the content of dreams is related to **wish fulfilment** and suggested that dreams have two types of content: **manifest content and latent content**. The manifest content is the actual literal subject matter of the dream, while the latent content is the underlying meaning of these symbols. The latent content of a dream is the hidden psychological meaning of the dream.

Manifest Content	Latent Content
School	Learning or being judged
A storm	Emotional turmoil
Teeth falling out	Worries or lack of control
Pregnancy	New aspects of the self

The latent content has to be disguised in symbols as it would be threatening to our sense of self and potentially drive us to madness.

We need symbols in our dreams because the true content is distasteful and needs to be censored. Dreams can contain unacceptable things that are disguised as harmless symbols.

Understanding a dream involves a process of interpretation of the manifest content in order to understand the latent content, and therefore, the true meaning.

Freud was particularly preoccupied with sexual content in dreams and believed that sex is the root cause of what occurs in your dreams. He believed that certain dream symbols were universal and created a series of dream symbols.

For example he claimed that dreams of flying were related to sexual intercourse. According to Freud, every long slender or elongated object (i.e. knife, cigar, gun, etc.) represents the phallus (penis), while any cavity or receptacle (bowl, cave, tunnel, etc.) denotes the female genitalia.

'Dream dictionaries' are still popular now, but were a source of irritation to Freud as he believed symbols are usually personal to the dreamer.

According to Freud, an object or activity becomes a stand-in for another object or activity due to laws of association, particularly the law of resemblance.

### Problems with Freud's Dream Theory

There are several problems with Freud's dream theory:

1. Freud's theory of symbols-as-disguises is difficult to prove when one night a person has a symbolic dream and the next night they may have an explicit sexual dream. Why are wishes sometimes concealed and sometimes not? Freud has no answer to this.
2. Many people have a real talent for dream interpretation although they may have little or no information about Freudian symbolism. Why would we bother to deceive ourselves by dreaming in symbols when dreams can be translated so readily by the dreamer themselves? Again Freud has no plausible answer.
3. It does not deal adequately with the question of why there should be multiple symbols for the same object.
4. It assumes that the mind during sleep is capable of performing exceedingly complex operations.

#### Activities:

1. According to Freud, what are the purposes of dreams?
2. Explain the difference between manifest and latent content.
3. Give one more example of manifest and latent content in dreams.
4. Why, according to Freud, do we dream using symbolism?
5. In your own words, explain the problems connected with this dream theory.

#### Revision – Test yourself!

Using a full page in your jotter, create a mind-map of the Psychoanalytic approach to dreaming. Try and complete this using your memory, and only use your notes if you really need to. Make your mind-map colourful and include relevant pictures.

## Psycho-Sexual Stages of Development

Freud developed a controversial theory of how people's minds develop through childhood. He thought that just as adults get physical pleasure from sex, children get pleasure from their bodies too, but from different body parts. He thought that a baby gets pleasure from its mouth (being fed) and called the associated stage of development the **oral stage**. He also thought that toddlers get pleasure from controlling their bladder and bowel movements when going to the toilet/potty. He called this the **anal stage**.



This theory was not just about explaining behaviour during breast-feeding or toilet training – Freud thought that these stages had an important on your later personality. He explained that some people develop a **fixation** in these stages, leading to effects on their personality later in life. Fixation might result from getting too little stimulation during these stages, or from being harshly punished, such as a child being strictly told off for having an accident during toilet training. The idea of people having an 'anal personality' derives from this idea – an *anally retentive* personality is fussy and strict, with an obsession with neatness. Someone with 'oral personality' may habitually bite their nails, smoke or overeat.



Perhaps more important still was Freud's view of what happened next. Inspired by a dream he had about his own mother, Freud stated that boys at around the age of five move into the **phallic stage**, and develop the **Oedipus complex**, where they become romantically attached to their mother as an idealised role model of the opposite sex. The boy then feels guilt and fears being punished by his father. Freud's case study of Little Hans is a key example of this stage from his research. Hans was seen as an example of the Oedipus complex.

According to Freud, the experiences we have during our childhood shapes our personalities. The experiences that we endure throughout the stages of development will have a direct impact upon the adult that you become.

The Oedipus complex was very important for one of Freud's patients – Little Hans. He was having nightmares and dreams featuring his family. The boy's father was concerned with the dreams his son was having and the behaviour he was displaying and decided to write to Freud describing the situation...

## Psychoanalytic Research into Dreams Freud's Case Study of Little Hans (1909)



### Aim

Freud wanted to provide evidence for his controversial Oedipus complex. When he was approached by a friend, whose son suffered from a severe phobia of horses, Freud decided to see if the boy's behaviour fitted his theory.

### Method

Freud's study was a case study, although it was unusual compared to modern case studies in that he did not study the patient, "Little Hans", directly, but instead exchanged letters with Herr Graf, discussing the boy's behaviour and dreams, and in particular, his phobia of horses.

### Findings

Hans had been frightened by seeing a horse collapsing in the street, and had developed a strong phobia of horses (horses were common on the streets of Vienna at this time). The father and child had often played at horses together. During the game the father would take the role of horse, the son that of the rider. Hans feared horses with blinkers on and Freud noted that the father wore spectacles which he took to resemble blinkers to the child. Hans particularly feared horses with black around the mouth. Hans' father had a moustache. Freud linked Hans' fear of horses to a true fear of his father. The horse was just a symbol.

Freud was very interested to hear about Hans's dreams and fantasies, because he thought that these were evidence of unconscious processes. **Hans had three key dreams:**

In one, he dreamed that he was married to his mother and they had their own family. This was interpreted by Freud as showing Hans's romantic desire for his mother.

In another dream, a crumpled giraffe was being squashed by a large giraffe – Freud thought giraffes represented Hans' parents, and that this dream showed Hans's fear and hostility towards his father.

In a third, a plumber came to the house and removed Hans's penis, replacing it with a larger one. Freud said that this showed Hans's desire to be a grown up man and marry his mother, as well as linking to the penis obsession of the phallic stage of development.

He also had certain fantasies and dreams about urinating. He was caught playing with his penis and his mother threatened to have the doctor cut it off! This provoked some anxiety.

Freud interpreted these dreams and identified the manifest and latent content. He concluded that Hans' dreams were truly about his unconscious desires for his mother, and the fear he had of his father. These issues were hidden from Hans through symbolism in order to protect him from his unconscious thoughts which were potentially harmful.

### Evaluation

Freud saw the issues as being evidence for his Oedipus complex, but it is possible that he and Hans's father distorted the evidence to fit the theory. It is hard to generalise from one patient in a case study – in this case, Hans's issues do not prove that all boys fear their fathers.

There are difficulties with Freud's evidence. Hans' father, who provided Freud with most of his data, was already familiar with the Oedipus complex and interpreted the case in the light of this. It is therefore possible that he supplied Hans with clues that led to his fantasies of marriage etc.

A limitation of the case study method is that it cannot be generalised as it only applies to one person/small group of people. Freud often based his research on a very limited sample.

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### **Activities:**

1. Outline the aims, method, procedure, results, conclusions and evaluation of the Little Hans case study in one of the following ways:
  - Scientific write-up
  - Cartoon strip with captions
  - Newspaper article reporting on the research
  - Mind-map with illustrations
2. What, according to Freud, did Hans' dreams show? What was the latent content?
3. Explain the Oedipus complex theory.
4. Why did Freud think that the study of Little Hans provided support for his Oedipus complex?

### **Evaluation of the Psychoanalytic Approach**

#### **Strengths**

- The theory suggests a link between dreaming and desire and has generated lots of further research. A study of patients suffering from strokes reveals that they lose their ability to dream if there is damage to areas of the brain that controls desire (Solms, 1999). This supports the claim that there may be a link between dreaming and desire.

#### **Weaknesses**

- It is based on the interpretation of dreams and it is not possible to gather scientific evidence to support the theory.
- The content of dreams may mirror events during a person's waking hours and may not be symbolic in any way.
- Poor research evidence/unscientific.
- Biased sample - Freud used mainly middle class women from Vienna for his research. This means that his findings cannot be generalised to a wider group.
- Case study method cannot be generalised to the wider population.
- Too much emphasis on sex – not all of our dreams represent sexual wishes and desires.
- If our dreams are simply symbolic representations for sex, then why do our dreams often contain sexual manifest content? Surely this would be hidden from the conscious and disguised?