

Chapter 7: Memory

- Wechsler adult intelligence scale: Intelligence test for adult
 - Series of small test
 - How many words can you define relative to your age group
 - Sub test on vocabulary is the best indicator of your level of intelligence
 - Read more, know more words, general knowledge is more developed, understand social convention more
 - Digit span test
 - Digit memory test
 - Learn the memories in a row then go to the next and the numbers on the last row that you can remember is your digit span
 - Subtest about memory
 - Cognitive abilities
- Don't purposely damage someone's brain, we use people who already have a damaged brain because of a birth defect or an accident
- Memory involves encoding (input), storage, and retrieval (output) of information. >memory is the ability to store and retrieve information over time
 - When we store memories- we encode them
 - When we get them out of storage- we retrieve them
- Memories are the combination of new and old information that comes through our senses
- Memories are constructed not recorded
- Functions of memory
 - **Encoding**: The process of transforming what we perceive, think, or feel into an enduring memory
 - Memory is influenced by the type of encoding
 - Semantic Encoding
 - The process of relating new information in a meaningful way to knowledge that is already stored in memory
 - Increased activity in lower left part of the frontal lobe & inner part of the left temporal lobe> the more activity in these areas the more likely the person will remember the information
 - Remember 20 event and not 20 numbers since events have meaning
 - Nature of memory depends as much on new memories then it does on old
 - How remember something depends on how we think about it
 - Ex: Bubbles, a professional gambler, remembers numbers really well since they mean a lot to him
 - Semantic judgement: Meaning of word > remembered the words the best
 - Rhyme judgement: The sound of the word
 - Visual judgement: The appearance of the word
 - Long term retention greatly enhanced by semantic encoding
 - Visual imagery encoding
 - Occipital lobe
 - Anything with imagining to remember
 - The process of storing new information by converting it into mental pictures
 - Active occipital lobe> enlist visual system when forming memories
 - Convert information into a visual image and store it at a familiar location

- Can improve memory
- Studied list of words by creating visual images recall twice as much as people who just repeat the words
- Relate incoming information to knowledge already in memory
- Two different mental placeholder for information > visual and verbal one > more ways to remember information
- Organizational encoding
 - The process of categorizing information according to the relationship among a series of items
 - Active upper left frontal lobe
 - Grouping or categorizing information
 - Organizing information in categories effective way to enhance recall of information
 - Organizing words into a hierarchy facilitates memory > organized in conceptual groups and relating them to each other
- Encoding of survival related information
 - In a survival encoding condition people remember more words
 - Draws elements from semantic, visual imagery and organizational encoding
 - Survival encoding > extensive planning > benefits memory
 - Long term planning is critical to our survival
 - Survival encoding enhances later recall
 - Our human ancestors depend on encoding survival-related information
 - Better memory of things related to our survival
- **Storage:** The process of maintaining information in memory over time
 - Three kinds of memory storage > characterized by amount of time which memory is retained
 - Sensory
 - Short term
 - Long term
 - How memories are stored
 - Knowledge of neurological basis for long term memories come from a sea slug (Aplysia)
 - Long term storage involves the growth of new synaptic connections between neurons
 - Act of sending changes the synapse > strengthens connections between two neurons > easier to transmit information next time
 - "Cells that fire together wire together"
 - Synaptic strengthening in the hippocampus
 - Long-term potential (LTP): A process whereby communication across the synapse between neurons strengthens the connection, making further communication easier
- **Retrieval:** the process of bringing to mind information that has been previously encoded and stored
 - Most important of all memory processes
 - Retrieval cues: Encounter an information from outside or inside your head that is somehow connected to the information inside your head
 - Most effective when they are given the same context as when we encoded an experience
 - Information is accessible but momentarily inaccessible > retrieval cues bring inaccessible memories to mind
 - Types of retrieval cues
 - Hints (external retrieval cues)
 - External context (external retrieval cues)

- Divers learned words under water and on land and remember the words better in the habit they learned it> environment= retrieval cue
- State dependent retrieval (internal retrieval cues)
 - Tendency for information to be better recalled when the person is in the same state during encoding and retrieval
 - Retrieving a sad or happy memory when you are sad or happy
- Thoughts(internal retrieval clues)
 - One thought leads to another memory
- Encoding specify principle: Retrieval cues can serve as an effective reminder when it helps re-create the specific way in which information was initially encoded
- Transfer-appropriate processing: The idea that memory is likely to transfer from one situation to another when the encoding and retrieval contexts of the situation match
 - Ex, two kids have to learn the word brain, one uses semantic judgement and one uses rhyme judgement, if the question the next day is what was the word you learned yesterday that rhymed with train, the kid with the rhyme judgement would remember the word brain
- Consequences of retrieval
 - Retrieval changes the state of the memory
 - Retrieval can improve subsequent memory
 - Retrieval can strengthen retrieved memory and make it easier to remember for later
 - If you study twice and then get quizzed after 5m retention interval memory retention is higher at final exam
 - If you study and then get tested after 2 days and weeks retention interval memory retention is higher at final exam
 - Retrieval can impair subsequent memory
 - Retrieval induced forgetting
 - Process by which retrieving an item from long term memory impairs subsequent recall of related items
 - If your friend talks about a specific detail of an event, you later have difficulty remembering the omitted details
 - Eye witness> is asked certain questions now and then different later their ability to recall related details is impaired
 - Retrieval can change subsequent memory
 - Change what we remember from an experience
 - When you have a more vivid recollection of an event during the reactivation of memories session you have a bigger tendency to incorporate new things that didn't truly happen in it > reactivating a memory temporarily makes it vulnerable to disruption and changes
- Separating the components of retrieval
 - Trying to recall something and actually recalling something are different processes that activate different parts of the brain
 - Left frontal lobe: Try to recall something
 - Reflect mental effort to retrieve information from the past
 - Hippocampal area: Successfully remembering something
 - Also activates parts of the brain that play a role in the processing of sensory features of an experience
 - Recalling a sound activates auditory cortex
 - Regions in frontal lobe suppress competitor memory (not the memory you are trying to recall)

- When Hippocampus during retrieval recalls an unwanted memory, frontal lobe mechanisms suppress the competitor> when competitor is suppressed, frontal lobe doesn't has to work hard at controlling retrieval > makes it easier to recall target items > successful suppression of unwanted memory reduces activity in the hippocampus
- Successful recall: Hippocampus increased in activity
- Tried but failed to recall: Left frontal lobe increased in activity
- **How can we tell if something has been stored and retrieved**
 - Recognize: The answer is there, you just need to identify it
 - When you look at a multiple choice question- the correct response is one of the available choices
 - You need to "recognize" the correct response
 - Relearning: It is faster to relearn something than initially learn it
 - If you learned something a long time ago and then try to learn it again, it should take less time the second time around
 - This demonstrates that some of the material has been stored and there is memory involved
 - For example, people who have not played piano in years can retrain faster than someone learning to play for the first time.
 - Recall: You have to think about the material and retrieve content from memory stores
 - When you write a test where you read a question and must provide a written answer. you are using "recall"
- Take information through our sense (5 senses)
 - You need to pay attention to it
 - Information can be received through any of the senses (modalities)
- Inattention blindness: When you don't notice what is happening, because you are just paying attention to a certain aspect > not paying attention to the big picture
 - We have to pay attention to a stimuli to have a hope to remember them later
- **Brain and memory**
 - Amygdala: Formation and retrieval of emotional memories
 - Frontal lobes: Short-term memory and working memory tasks
 - Pre-frontal lobe cortex: Parts of temporal lobes> efficient encoding of words and pictures
 - Hippocampus: Formation of long term declarative memories
 - Aids in the retrieval of specific memories
 - May bind together diverse elements of a memory so that it can be retrieved later as a coherent entity
 - Cerebellum: Formation and retention of a simple classical conditioned response (procedural memory)
 - Cerebral Cortex: Storage of long term memories, possibly in areas involved in the original perception of the information
- **Types of memory**
- **Stage theory of memory (Model of memory)>three storage boxes**
 - This assumes we have three stages of memory- each is qualitatively different from the rest
 - Sensory input> Sensory memory(unattended information is lost)> (attention)> Short term memory (Unrehearsed information is lost)[maintenance rehearsal]> (encoding)> Long term memory (Some information may be lost over time)> (Retrieval)> Short term memory
 - **Sensory memory/ Sensory register**
 - Stimuli are received by sight, touch, taste, hearing, or olfaction
 - Stimuli are in sensory memory for fractions of seconds> 1-2s

- Need to pay attention for something to move to short term memory
- Pay attention to something for you to process it > moves to short term memory
- If you don't pay attention to it, it is like it never happened
- Attention is needed to be able to process anything- for it to be encoded- and have the potential for later retrieval
- Definition: A type of storage that holds sensory information few seconds or less
- When flash 12 letters on screen for 1/20 of a second people remember less than half of the letters they have just seen > Iconic Memory test
 - Forgot the letters faster than they could recall them
 - However they remember them for a very short period of time so after the flashing of the three rows of four letters, they would hear a sound that would indicate a row and the person would be able to correctly say the four letters in that row
 - Iconic memory stores the whole grid but information fades too quickly to recall everything
- Types of sensory memory
 - Iconic memory
 - A fast-decaying store of visual information
 - 1s
 - Echoic memory
 - A fast-decaying store of auditory information
 - When do understand what someone said you replay an echo of the last few words they said in your head
 - 5s
- **Short-Term memory**
 - Definition: Holds non sensory information for more than a few seconds but less than a minute
 - Information is held in short term store for 15-20s
 - Recall declines 80% after 3 seconds, 20% after 20 seconds
 - Limited to how long it can hold information and how much information it can hold
 - Capacity of short term memory 7 pieces of information, plus or minus 2 pieces of information
 - If you add a new piece of information, an old one comes out
 - If can make groups of information or make it meaningful, you can remember more or better
 - Reason why phone numbers are 7 digits
 - Initially there was an exchange (a word to recall where the start of the word corresponded to the first 2 digits of the phone number, followed by 5 digits)> so only 6 pieces of information to be recalled
 - Montreal exchanges
 - University (Near McGill): 86* ****
 - Hunter (NDG) 48* ****
 - Crescent (Plateau Montreal) 27* ****
 - According to Miller's research
 - Keeps things in short term memory for 15-20s
 - More time encodes it to long term memory
 - Getting interrupted makes you forget
 - Strategies to increase capacity and extend of time of short term memory
 - Chunking

- Combining small pieces of information into larger clusters or chunks that are more easily held in short term memory
- Visualize
- Rehearsal
 - The process of keeping information in short-term memory by mentally repeating it
 - Say it over and over to yourself> each time you say it, it reenters short term memory for another 15-20s
- Elaborate/Association
- Strategies used in the movie Desk Set by Bunny Watson
 - She used strategies to keep information in her memory and to be able to retrieve it effectively
 - The unrealistic part was that she was often interrupted and this should have caused interference and forgetting
 - Association
 - Remembered number of people who got out of a station, because of number of letters in the word
 - Only been to white plains 3 times so remembers that 3 people got off at that station
 - Associate numbers in phone numbers to dates
- Working memory
 - Definition: Active maintenance of information in short term storage
 - Includes subsystems that store or manipulates visual or verbal information & central executives that coordinates subsystems
 - Central executive components activate frontal lobe (important for controlling and manipulation information)
 - Ex: playing chess and wanted to remember position of the pieces while planing your move
 - Working memory includes: Visual representation of board and pieces, mental manipulations of possible moves, awareness of the flow of information in and out for a limited amount of time
 - Relatively short term
 - Has a limit to the number of things to which one can attend - however called working because it means one is actively engaged
 - Can be trained> improves performance on specific working memory tasks
 - A more recent term for short memory is “working memory” which is also something relatively short-term, and has a limit to the number of things one can attend> however it is called working because it means one is actively engaged in working on the information
 - Because of this, the time frame can be extended past 15-20s
 - When you write a test- you read the question- then call up information into your working memory- and design your response and draft it
- **Long term memory**
 - Definition: A type of storage that holds information for hours, days, weeks, or years
 - No capacity limit
 - To recall something you need to retrieve it from your long term memory
 - Unlimited capacity and things can stay forever
 - Three types of long term memory
 - Procedural: How to do something (change a tire)
 - Remember the procedure to follow to do something like follow a recipe and bake a cake, or change the tire of a car
 - Semantic: vocabulary, grammar rules

- Network of associated facts and concepts that make up our general knowledge of the world
- Memory for the meaning of words, for general knowledge, for the rules of grammar, etc
- Explicit Memory > conscious recall
 - When people consciously or intentionally retrieve past experiences
 - When you say i remember.....
 - Semantic memory: Facts and General knowledge
 - Episodic memory: Personally experienced event
- Implicit memory > without conscious recall
 - When past experiences influence later behaviour and performance, even without an effort to remember those experiences or an awareness of the recollection
 - Procedural memory: Motor and cognitive skills
 - The gradual acquisition of skills as a result of practice, or “knowing how” to do things
 - Musicians rely a lot on this type of memory
 - Priming: Enhanced identification of objects and words
 - Enhanced ability to think a stimulus, such as a word or object, as a result of a recent exposure to the stimulus
 - Seeing a word before makes it easier to do a fill in the blank exercise
 - Even if they didn’t remember the words > implicit memory
 - Priming makes information more accessible
 - Studied pictures of objects and when asked to identify fragments some of those picture, people easily identified the fragments of the images they saw more (but not ones they didn’t see) then the control group who didn’t see the original picture of the images > test was done 17 years after initially studying the pictures > didn’t remember doing the initial experiment
 - Persist over a long period of time
 - Amnesic people show as much priming as healthy people
 - Easier for part of the cortex to identify something after priming > saves processing time after priming > reduced activity in the cortex
 - You can be changed by experiences you forget
 - Behave like they remember, but don’t actually remember
 - Presence of implicit memories implied by our actions
 - Ex: Greg sad about father’s death (but doesn’t remember being told), HM enhanced ability at the tracking game (doesn’t remember playing)
 - Know how to do something, but can’t explicitly say how to do it
 - Hippocampus not needed to learn how to something/implicit memories
 - **Wechsler adult intelligence scale (WAIS)**
 - Was able to do the subtest (vocabulary, arithmetic)
 - Hippocampus not necessary to develop new semantic memories
 - When we don’t immediately know the answer to a question we think searching the internet and we don’t search our minds
 - We know how to find a certain piece of information even if they don’t know the answer
 - After a difficult trivia (that makes people think of things related to computers) people are slower at naming the colour in which the name is printed
 - Episodic memory
 - Medial temporal lobe and the hippocampus
 - Collection of past personal experiences that occurred at a particular time and place

- Events in your life
- Travel back in time
- Have trouble imagining new experiences/ events that happen in their everyday lives
- Increase activity in hippocampus when thinking about the future and the past
- Connects past and present to make a coherent life story
- Hippocampus help us use past memories to think of what might happen in future situation
- Memory for events in one's life- such as your high school graduation, your 12th birthday party, your wedding day
- Doesn't remember which words that he was asked to define 10m ago
- These are not retained from the first couple of years of life
- In general, people tend to remember events/episodes starting at age 4 or 4.5
- Social influences on remembering/ collaborative memory
 - Sharing memories with others strengthen them
 - But also by omitting related details can cause retrieval-induced forgetting
 - Collaborative memory: how people remember in groups
 - Collaborative group remembers more words than individuals
 - When you remember together as a group> remember fewer items than if they each remembered on their own
 - Collaborative inhibition: The same number of individuals working together recall fewer items than they would on their own
 - Retrieval strategies of others may disrupt yours
- Hippocampus
 - Hippocampus critical to put are memories into long term memories
 - Important for memory consolidation > process that makes memories increasingly resistant to disruption over time
 - Hippocampus region is like an index that links together all separate bits and pieces to make them one memory
 - Becomes less important over time for maintaining memories > since need less new memories since you know how to do things
 - Related to the concept of consolidation (The process by which memories become stable in the brain)
 - Become more resistant to disruption
 - Two types of consolidation
 - Happens in a matter of seconds> Memories of events
 - Over a longer period of time> transfer of information from hippocampus to a cortex
 - Recalling memories, sleeping and talking about them consolidate them
 - Recall of recently learned information is easier after sleep
 - Asleep= no interference (nothing interferes with ability to remember)
 - Sleep enhances the consolidation of the memory that reflects the meaning of the experience as well as emotionally important memory > sleep remember whats important and discard whats trivial
 - Reconsolidation: The process that causes memories to become vulnerable to disruption when they are recalled, thus requiring them to become consolidated again
 - Can be caused by a shock or a drug that prevents initial consolidation
 - Each time memories are retrieved they are vulnerable to disruption and to be reconsolidated
 - When a traumatic event was reactivated after administering a drug to reduce anxiety> reduction in traumatic symptoms

- Disrupting reconsolidating can eliminate conditioned fear memory in amygdala(important for emotional memory)
- The most famous case is H.M. To protect his privacy he was referred to by his initials but since his death his identity has been revealed Henry Molaison
- Like Gazzaniga's patient Joe W, H.M has intractable epilepsy
- Scoville did extensive surgery on HM and removed both temporal lobes and a part of the hippocampus and other regions
 - Scoville was a surgeon in Connecticut, USA. History has shown him to have a big ego and less concern for his patients than Enfield had for his.
 - Result: Extensive memory lost> he couldn't remember anything after his surgery (lost long term memory, but had short term memory[can recite phone numbers]
 - He could use working memory
 - He suffered amnesia- memory loss
 - Anterograde amnesia: Can't move information from short-term to long-term and retrieve it later
 - Retrograde amnesia: Inability to retrieve information from before the date of the surgery or brain injury
 - HM suffered worse anterograde than from retrograde amnesia
 - This told us that the hippocampus was not the site of long term memory
 - We now think the hippocampus is like an index for memory that integrates material stored in different areas of the brain
- Wilder Penfield was a neuro-surgeon at the Montreal Neurological Institute
 - He performed surgery on epilepsy patients
 - He was careful to study them before operating and he removed as little of the brain as possible. He was careful to operate on one temporal lobe or another and not both sides
- Brenda Milner (studied with Penfield) went to study Scoville's case (HM)
 - McGill and Montreal Neurological Institute was made famous by her research with HM
 - Now in her 90s, she is still sharp and giving presentations
 - She is one of the most famous "McGillians"- someone who is associated with McGill and helps encourage public awareness of McGill's achievements.
 - Created clinical neuropsychology
 - She would test patients before and after the removal of one temporal lobe (to relieve seizures)
 - Post surgical memory lost
 - Studied HM> She was doing research with Penfield and was asked by Scoville to come study HM
 - Decades of research with HM made Milner world-renowned
 - Learnt that there was more than one memory types
- Endel Tulving and Case K.C
 - Endel Tulving was a professor at the University of Toronto
 - He too became well-known primarily by his work with a particular amnesia patient> case K.C (Kent Cochrane)
 - This lead Tulving and others to propose that there is not just one type of long term memory and there may not be just one area in the brain responsible for long term memory
 - K.C passed away in 2014

- K.C was in a motorcycle accident (close head injury) he had anterograde amnesia (can't remember new stuff) and a type of retrograde amnesia (episodes> can't remember events)
 - Can remember bday, knows facts, general culture, repeat up to 8 numbers, no problems with semantic memory
 - Trouble remembering the year, can't remember events (like having a flat tire but knows how to repair one), can't remember the three words he learnt 3m ago, has trouble remember coworkers,
 - Had some of his long term memory intact (only lost episodic memory)> difference from HM (had all of his long term memory affected)
 - He was studied from 1981 (after closed head injury)
 - He had anterograde amnesia and a type of retrograde amnesia
 - Kent retained some semantic memory, and some procedural memory, but lost episodic memory
- Forgetting
 - Why do we forget?
 - Freud
 - Repression
 - Motivated forgetting: Don't want to remember and put it away
 - Something may be so traumatic that you protect yourself by pushing it into your unconscious
 - However, many traumatic events (the holocaust or other genocides) are not forgotten> people have difficulty forgetting and moving on
 - Decay
 - Memories fade away with time
 - We cannot explain why some things never fade away
 - Shape of the synapse change> biological decay> damage to neuron
 - Replacement
 - We record new information on top of the old thus erasing or changing the old information
 - Elizabeth Loftus work where you witness an event and then are fed false information> people firmly believe the existence of the false information> it has now become their reality
 - Interference
 - If you were given a phone number by directory assistance and then before you could call your party someone interrupted you and you had a conversation, chances are you would have forgotten that telephone number
 - Remember how Miss Watson in Desk Set was interrupted several times and still managed to retain the material- this is not likely to happen for most people
 - Disturbs the processing of the information
 - Proactive: Difficult to go forward > mixing things together > what you learn last is all blurred together
 - Retroactive: What you learn the latest is fine, but what you learnt first is blurry
 - Sleep: Helps consolidate the memory
 - False memories
 - Brain not fully developed when you were a baby
 - Different storage system was used back then so memories seem unreachable
 - Infantile amnesia/ Childhood amnesia

- Why childhood amnesia?
 - Brain Development
 - The brain, especially the pre-frontal cortex, is still developing after birth
 - Areas associated with language and memory are not yet full developed
 - Cognitive development
 - The self-concept does not develop before age 2
 - Our vocabulary is not yet developed so the categories we use to sort things and how we understand, encode, and retrieve, cannot use the same tools
 - Social development
 - Infants do not understand social convention
 - They cannot take someone else's perspective
 - They view and interpret the event in simple and often self-centred ways
- Don't remember before the age of 3 or 4
- Memories are sometimes tainted by what others have told us about the event
- When people claim to remember from age 1 or 2, they are usually confabulated event
- There are rare instances of a very salient event remembered at age 2
- Childhood memories
 - Procedural
 - We have learned to walk and we do not unlearn that
 - We know how to drink from a cup or use a spoon
- We can be influenced by the power of suggestion
- When it comes to childhood memories and we see photographs or film of an event, we believe we remember the actual experience
- Elizabeth Loftus
 - Studying forgetting
 - Work in eye-witness testimony
 - Memory is faulty especially for a traumatic episode
 - She cautioned that people can be made to think they were abused
 - Psychotherapy techniques (imagination, dream interpretation, hypnosis, exposure to false information) made people believe they were abused
 - People implant memories into you and you believe it's true
 - Contagion of memory that didn't really occur > critical to figure out if someone is guilty or not
 - She implanted memories into people > used suggestion
 - Hard to memorize something that has emotions involved
 - Like a traumatic/torturous interrogation
 - When fed them suggestive information > many identify the wrong man
 - When you feed people misinformation, you can distort their memories
 - Remembered memories are different from what they really were
 - Memory are constructed and reconstructed
 - Remember things that were different then the way they really were
 - Like a wikipedia page, you can change your memories so can other people
 - When you feed people bad information about a bad memory, they contaminate the memory and change the truth
 - Temporarily discomfort felt by the patients is worth it > risk/benefit ratio > accepted by the board
 - False memory influences your decision > repercussion that affects your behaviour
 - If someone says something with confidence, emotion, detail doesn't mean it's true
 - Steve Titus case

- Accused for rape because he looked the closest
- Got set free when he got a reporter to find the real rapist
- Died of a stress related heart attack
- Out of three hundred cases of false accused convicted criminals > 3/4 due to faulty eye witness testimony
 - Many believe memory is a recording device
- The way we ask the questions influences our memory
 - Speed when cars hit each other
 - Speed when cars smash each other > more likely to say they saw broken glass when there was none
- Repercussion of false memories
 - Changes behaviours
 - Don't eat food that you were told you got sick on
- Memories created by the media > tries to give us evidence > don't know what's true and what is false
- **Memory failures**
 - Transience
 - Forgetting what occurs with the passage of time
 - Decline of memory > followed by gradual forgetting
 - I. Lewis "Scooter" Libby blame bad memory for any misstatement he made
 - Occurs during storage phase > after it got encoded and before it got retrieved
 - Memory doesn't fade at a constant rate > There is a big drop and then it stays pretty constant
 - Curve of forgetting > Ebbinghaus
 - Retention at various intervals of retention
 - Most forgetting happens soon after the event
 - Less forgetting as more time passes
 - Memories can be distorted by interference of other memories
 - Retroactive interference: Situation in which later learning impairs memory for information acquired earlier
 - Do the same thing every day so all days blend together and can't remember precisely what you did on an earlier day
 - Proactive interference: The situation in which earlier learning impairs memory for information acquired later
 - Had the same desk every day and then you change place so you have a moment of being confused
 - Absentmindedness
 - A lapse in attention that results in memory failure > information didn't disappear
 - Result of failures of attention, shallow encoding, influence of automatic behaviours
 - Causes
 - Lack of attention > critical to encode memories into long term memory
 - Remember less when attention is divided > less activity in the lower left frontal region (more activity better memory)
 - Less hippocampal involvement in encoding > important to episodic memory
 - Prospective memory: Remembering to do things in the future
 - Ex: texting and driving
 - Blocking
 - A failure to retrieve information that is available in memory even though you are trying to produce it

- Tip of the tongue experience
- Memory is not faded, but retrieval failure
- Happens often for names of people and places
 - Link to related concept is weak> name doesn't mean much in context to that person
 - Block less on descriptive names like Snow white then arbitrary names like Mary Poppins
- Damage left temporal lobe on the surface of the cortex
- Memory Misattribution
 - Assigning a recollection or an idea to the wrong source
 - Source memory: Recall of when, where, and how information was acquired
 - Correctly recall a fact, but misattribute the source of this knowledge
 - Causes
 - Déjà Vu experiences
 - Feel like you've been in this situation before without being to properly recall the details
 - Present experience similar to past experience> trigger sense of familiarity that is associated to having been in the exact same situation
 - Damage to the frontal lobe> plays a role in effortful retrieval process which are required to bring up the correct source of a memory
 - Fake recognition: Mistake feeling of familiarity to a word or a situation
 - Many of the same brain region are activated during fake and real recollection (hippocampus)
 - Can be reduced if shown the object they saw and a similar object, they almost always chose the right object
 - Eyewitness misidentification
- Suggestibility
 - Tendency to incorporate misleading information from external sources into personal recollection
 - 55% of university student affirmed seeing the footage of when the plane crashed in an Amsterdam building when asked by psychologists> footage didn't exist
 - Researches asked a suggestive question that made it seem like such footage exists
 - Students misattributed information from different sources into something that doesn't exist
 - Of a large study of 24 people, a quarter was successfully implanted a false memory of getting lost at a mall
 - We do not store all the details of our experiences in our memory so we are vulnerable to suggestibility
 - Visual imagery plays an important role
 - Asking someone to imagine an event makes it more like that they develop a false memory of it
 - Psychotherapy tricks to pull childhood memories are highly suggestive> imagining past event and hypnosis can help create false memories
 - These memories are never supported by others
- Bias
 - The distorting influences of present knowledge, beliefs and feelings on recollection of previous experiences
 - Looking back at the election their recollection of their happiness was at odds with their recorded actual happiness
 - Gore fans underestimated their happiness
 - Bush fans overestimated their happiness

- What people remember of their past illustrates sometimes more about what they think, believe and feel now than about what actually happened
- Current mood can bias our recall of past experiences
- We sometimes exaggerate the difference of what we feel now compared to the past
 - Couple say they love each other more now than in the past, but their rating were the same
 - We remember the past as we want it to be and not how it is
- Persistence
 - The intrusive recollection of events that we wish we could forget
 - Occurs after disturbing or traumatic events
 - Intrusive memories are consequences of emotional experiences (more vivid and enduring recollection than non emotional experiences)
 - Flashbulb memories: Detailed recollections of when and where we heard about shocking events
 - Remember where they were when they heard about 9/11
 - Not perfectly accurate but better than mundane memories
 - Enhance retention is caused by emotional arousal and that we tend to talk about it a lot (semantic encoding > talk a lot > elaborate > increase memorability)
 - Amygdala (plays a role in brain's response to emotional events) > influences hormonal systems
 - Stress related hormones enhances memory for the experience
 - Better memory of emotional events than neutral events
 - Damaged amygdala makes the memorizing of emotional and neutral events the same
- Pros of memory failures
 - Transience > declutter memory > only remember important things
 - Mad at memory since we know the bad at forgetting but can't think of the hidden blessing of being able to forget useless things
 - Absentmindedness and blocking > memory successful attempt to sort through incoming information and preserve information important to recall and discarding those who are not
 - Memory misattribution and suggestibility > failure to remember when and where we learned a fact
 - Only remember it when we think it might be useful later
 - Memory is flexible to combine things of the past to think about the future
 - This can sometimes cause problems when elements of the past are miscombined
 - Bias > skew our memory to remember ourselves in a favourable light
 - Contributes to our sense of contentment which helps our psychological well being
 - Persistence > evolutionary perspective of remembering threats
- Early memories

Implants memories childhood associated with a product and people will buy the product without realizing that the memory is completely created

Gullible

Note to self when I become a marketing maven: Find a way to create memories into kids > people don't pay enough attention

