PSYC1230 - Kjernebegreper, modeller, teorier, viktige navn o.l.

En (forsøksvis) komplett liste over begreper/navn/teorier/osv nevnt i core questions, tidligere eksamensoppgaver og sensorveiledninger (2019-22).

Kjernebegreper

- **mental representation** - *"internal representation of external objects/events (or any transformation of it)."*

  (Fra forelesningsslide)

  "a hypothetical internal cognitive symbol that represents external reality … Mental representation is the mental imagery of things that are not actually present to the senses."

  (Wikipedia)

  "a hypothetical entity that is presumed to stand for a perception, thought, memory, or the like during cognitive operations. For example, when doing mental arithmetic, one presumably operates on mental representations that correspond to digits and numerical operators; when one imagines looking at the reverse side of an object, one presumably operates on a mental representation of that object. However, there is no consensus yet as to what mental representations might be."

  (American Psychological Association)

  (Bilde: En person/et hode med et 3D-objekt inni skallen)

- **kognisjon** - *"refers to all processes by which the sensory input is transformed, reduced, elaborated, stored, recovered, and used. It is concerned with these processes even when they operate in the absence of relevant stimulation, ..."*

  (U. Neisser, 1967, Cognitive Psychology - fra forelesningsslide)

  "*Cognition refers to "the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses". It encompasses all aspects of intellectual functions and processes such as: perception, attention, thought, intelligence, the formation of knowledge, memory and working memory, judgment and evaluation, reasoning and computation, problem solving and decision making, comprehension and production of language. Imagination is also a cognitive process, it is considered as such because it involves thinking about possibilities. Cognitive processes use existing knowledge and discover new knowledge. "*

(Wikipedia)

“Kognisjon refererer til de mentale prosessene som gjør det mulig for oss å forstå og interagere med verden rundt oss. Dette inkluderer oppfatning, tenkning, hukommelse, problemløsning, språk og oppmerksomhet. Kognisjon handler om hvordan mennesker tar inn informasjon, bearbeider den og bruker den til å danne tanker, oppfatninger, minner og handlinger. Kognisjon spiller en viktig rolle i vår evne til å lære, tilpasse oss og navigere i våre omgivelser.”

(ChatGPT)

(Bilde: Person med forundret uttrykk som sanser verden rundt seg + former mentale representasjoner)

- **double dissociation** - *forskningsprosess brukt for å avklare virkningen av to separerbare psykologiske eller biologiske systemer, for eksempel å skille mellom ulike typer minne eller funksjonen til hjerneområder. Spesielt viktig i psykologi er tilfeller der pasienter kan bli funnet med motsatte mønstre av svekkelse i to funksjoner. For eksempel kan ett tilfelle ha nedsatt korttidshukommelse, men normal langtidshukommelse, mens en annen kan ha motsatte mønster. Dette forteller oss at langtids- og korttidshukommelsen faktisk er to separate funksjoner og ikke bare aspekter av et felles system. Det klassiske eksempelet er Broca og Wernicke, hvor skader på Brocas område gjør at en pasient kan forstå tale, men sliter med/ikke klarer å si noe selv, mens skader på Wernickes område gjør at pasienten kan produsere tale (dog meningsløs), men ikke forstå.*

  (Egen)

  (Bilde: To speilvendte bilder av hjerne med hjerneskade)

- **behaviourism** - *“Behaviorisme er en psykologisk retning som definerer psykologi som det vitenskapelige studiet av atferd hos dyr og mennesker.*
  Behaviorismen oppstod som en reaksjon mot den dominerende antagelsen på 1800-tallet om at psykologiens tema var sjelelige (mentale) fenomener, særlig bevissthet, som kunne studeres vitenskapelig gjennom introspeksjon (iakttagelse av egen psyke).

  Begrensningene i introspeksjon som psykologisk metode ble etter hvert åpenbare, både fordi metoden i seg selv av mange ble ansett som sviktende, og fordi metoden begrenset hva som kunne studeres. Introspeksjon ekskluderte for eksempel psykologiske studier av barn og dyr, fordi disse ikke kunne rapportere om sin bevissthet. Viktige impulser for behaviorismen var blant annet utviklingslæren og den russiske psykologen Ivan P. Pavlovs (1849–1936) og den amerikanske psykologen Edward L. Thorndikes (1874–1949) studier av læring. Av betydning var også ønsket om å gjøre psykologien

mer praktisk anvendbar i arbeidsliv og undervisning. Intelligenstester, først utviklet rundt 1900, gav for eksempel praktisk anvendbare data om mennesker uten bruk av introspeksjon.

Opphavsmannen til behaviorismen var den amerikanske psykologen John B. Watson (1878–1958), som i 1913 publiserte artikkelen «Psychology as the Behaviorist views it». Her ble psykologien (om)definert til en «rent objektiv del av naturvitenskapen», hvor hensikten var å forutsi og kontrollere atferd. Bare det som kunne observeres av andre kunne ifølge Watson gi grunnlag for slik kunnskap: Introspeksjon som metode ble avvist fordi metoden baserte seg på data om bare én person, den som rapporterer om sin bevissthet, har tilgang til.

I tråd med utviklingslæren så Watson intet viktig skille mellom menneske og dyr, og definerte observerbar atferd, «hva organismen sier eller gjør», som psykologiens forskningstema. Atferd kunne forklares som relasjoner mellom stimuli (S) og responser (R). Læren om betinging ble et viktig forklaringsprinsipp."

(Store Norske Leksikon)

"Behaviorism, also known as behavioral psychology, is a theory of learning that states all behaviors are learned through interaction with the environment through a process called conditioning. Thus, behavior is simply a response to environmental stimuli.
Behaviorism is only concerned with observable stimulus-response behaviors, as they can be studied in a systematic and observable manner.
Behaviorism emphasizes the role of environmental factors in influencing behavior to the near exclusion of innate or inherited factors. This amounts essentially to a focus on learning. Therefore, when born, our mind is "tabula rasa" (a blank slate)."

(Saul McLeod, PhD, University of Manchester)

(Bilde: Forskere med luper som ser ned på en mann som går og en Nike-logo med "Just Do It")

- **cognitive revolution** - *"Moderne kognitiv psykologi ble introdusert i USA rundt 1960 som resultat av et fruktbart møte mellom forskere i psykologi og tilgrensende fagområder: lingvistikk, nevrofysiologi og computervitenskap. Mennesket ble her sett primært som behandler og bruker av informasjon, og psykologiske prosesser ble ofte beskrevet i analogi med datamaskiner. Retningen ble oppfattet som en reaksjon mot den rådende atferdspsykologien (behaviourism), og man snakket gjerne om en «kognitiv revolusjon» i psykologien."*

  (Store Norske Leksikon)

(Revolusjon fordi behavioristene mente man ikke kunne studere indre prosesser, red.anm.)

(Bilde: Klassiske franske revolusjonsbildet, bare med et bilde av et tomt hode i profil med et spørsmålstegn inni i stedet for det franske flagget)

- **change blindness** - *"perceptual phenomenon that occurs when a change in a visual stimulus is introduced and the observer does not notice it."*

  (Wikipedia)

  Feks at et bilde byttes til et nesten makent bilde uten at observatøren legger merke til det/finner forksjellen, kanskje fordi endringen er for marginal, gjelder et element ved bilde som virker uviktig eller finner sted i utkanten av bildet.

  (Bilde: Person som ser på to tilsynelatende like bilder og grubler intenst)

- **inattentional blindness** - *"occurs when an individual fails to perceive an unexpected stimulus in plain sight, purely as a result of a lack of attention."*

  (Wikipedia)

  Kan feks skje når en er oppmerksom på en spesifikk detalj i det som foregår, og ikke fokuserer på noe annet, som i ***gorilla-eksperimentet.***

  (Bilde: Person som fokuserer på bærbar PC, gorilla i bakgrunnen)

- **endogenous control of attention** - *"top down" oppmerksomhetsstyring. Oppmerksomheten rettes dit personen ønsker å rette det.*

  (Bilde: Person med konsentrert ansiktsuttrykk og lyskjegler fra øynene)

- **exogenous control of attention** - *når oppmerksomheten automatisk trekkes mot noe, som feks et høyt smell. "Bottom up".*

  (Bilde: Magnet som trekker til seg blikk.)

- **retrieval** - *the function by which information is recollected as needed*

- **short term memory** - *korttidsminne. The store where information is temporarily held in an accessible way.*

  "Short-term memory (STM) is the capacity for holding a small amount of information in an active, readily available state for a short interval. For example, short-term memory

holds a phone number that has just been recited. The duration of short-term memory is estimated to be on the order of seconds."

(Wikipedia)

(Bilde: Tomt hode i profil med stoppeklokke inni, lite tid på stoppeklokka)

- **long term memory** - *the system where information is held for longer periods, and can be accessed when needed*

- **working memory** - *the system in which information is held and manipulated in order to perform a task.*

  "Working memory has been conceived and defined in three different, slightly discrepant ways: as short-term memory applied to cognitive tasks, as a multi-component system that holds and manipulates information in short-term memory, and as the use of attention to manage short-term memory."

  (Cowan, 2008)

  "There is ongoing debate among cognitive psychologists about whether working memory and short-term memory are two different things or whether they are two names for the same underlying process. Here are some arguments for both sides of the debate:

  Arguments for working memory and short-term memory being different:

  1. Different brain regions are involved: Studies have shown that different brain regions are involved in working memory and short-term memory tasks. For example, working memory tasks activate the prefrontal cortex, while short-term memory tasks activate the parietal cortex.

  2. Different time frames: Working memory is generally thought to have a longer time frame than short-term memory. Working memory involves holding information in mind for a few seconds to a minute, while short-term memory typically only lasts a few seconds.

  3. Different types of information: Working memory tends to involve more complex and abstract information than short-term memory, which tends to involve simpler information like phone numbers or names.

  Arguments for working memory and short-term memory being the same:

  1. Overlap in processes: Some researchers argue that working memory and short-term memory are both part of a broader system for maintaining and manipulating information in the mind, and that they share many of the same underlying processes.

2. Lack of clear distinction: There is no clear distinction between working memory and short-term memory in terms of the types of tasks used to measure them. Many tasks that are thought to measure working memory could also be seen as measuring short-term memory.

3. Developmental continuity: There is evidence to suggest that the capacity for working memory and short-term memory increases together over the course of development, which suggests that they are closely related.

Overall, the debate between whether working memory and short-term memory are different or the same is ongoing and may depend on how researchers choose to define and measure these concepts."

(ChatGPT)

(Bilde: Byggmester Bob inni en tomt hode i profil)

- **phonological loop** - *"in the model of working memory proposed in 1974 by British cognitive psychologists Alan D. Baddeley (1934-) and Graham J. Hitch (1946-), a component that holds and manipulates auditory information over short intervals of time. For example, if one tried to remember a telephone number by repeating it over and over in the few moments before dialing, this effort would take place in the phonological loop. It comprises a phonological store or phonological buffer (or acoustic or articulatory store) within which memory traces fade after 2 seconds unless an articulatory control process (or articulatory rehearsal system) refreshes them by subvocal rehearsal. The phonological store thus acts as an "inner ear" by remembering speech sounds in their temporal order, whereas the articulatory control process acts as an "inner voice" by repeating the series of words on a loop to prevent them from decay. Additionally, it has been suggested that the phonological loop is important to reading comprehension and may in fact function primarily as a language learning device, rather than a mechanism for the memorization of familiar words."*

  (American Psychological Association)

  (Bilde: Tomt hode i profil med en munn som sier "blablabla" inni)

- **subvocal rehearsal** - *Subvocal rehearsal er å forsøke å huske noe ved å gjenta det til seg selv med sin indre stemme. I følge Wikipedia ble det i 1899 for første gang dokumenter at subvocalization fører til bevegelser i strupehodet.*

  "Subvocalization, or silent speech, is the internal speech typically made when reading; it provides the sound of the word as it is read."

  (Wikipedia)

(Bilde: Tomt hode/hals i profil med et øre i hodet og en munn i adamseplet (som sier "blablabla") + "loop-tegn" mellom de to)

- **magical number 7** - *""The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information" is one of the most highly cited papers in psychology. It was written by the cognitive psychologist George A. Miller of Harvard University's Department of Psychology and published in 1956 in Psychological Review. It is often interpreted to argue that the number of objects an average human can hold in short-term memory is 7 ± 2. This has occasionally been referred to as Miller's law."*

  (Wikipedia)

  (Bilde: Tomt hode i profil med tallet 7 inni)

- **klassisk betingning** - *"Klassisk betinging er en læringsform der en allerede etablert refleks (for eksempel at en hund sikler når den får mat i munnen) knyttes til en ny stimulus (for eksempel en tone). Her er mat en ubetinget eller ulært stimulus (US), og den ulærte respons (UR) på denne er sikling. Ved å presentere en ny stimulus (tone) like før maten, vil tonen ved gjentatte paringer med maten selv utløse en siklerespons. Den nye stimulus, som kalles betinget stimulus (BS), utløser etter hvert en lært reaksjon; denne kalles betinget respons (BR).*

  Klassisk betinging ble først beskrevet av den russiske fysiologen Ivan P. Pavlov med hunder som forsøksobjekter. Pavlov lot forekomst av mat (US), en stimulus som utløser en ulært spyttavsondring (UR), bli signalisert av en lyd (BS). Etter hvert fant han at lyden alene utløste spyttavsondring (BR)."

  (Store Norske Leksikon)

  (Bilde: Hund som sikler)

- **operant betingning** - *"Instrumentell betinging (også kalt operant betinging) er en form for læring der stimulus inntreffer i situasjonen som en konsekvens av hva forsøksobjektet gjør; forsøksobjektets atferd er «instrumentell» i å frembringe stimulus (konsekvens).*

  Slik læring ble først systematisk studert av den amerikanske psykologen Edward L. Thorndike. Han plasserte en sulten katt i et bur, og en matbit utenfor. Kattens trykk på en hendel kunne åpne døren til buret. Thorndike fant at katten, tilsynelatende gjennom blind prøving og feiling («trial and error») kom til å berøre hendelen og derved få tilgang til maten. Etter gjentatte erfaringer med dette, brukte katten kortere og kortere tid på å slippe ut, noe som representerer læring i denne situasjonen."

  (Store Norske Leksikon)

(Bilde: Katt i bur + mat utenfor)

- **forsterkning** - *"Når en handling etterfølges av ønsket stimulus og dermed øker i sannsynlighet (frekvens), foreligger forsterkning."*

  (Store Norske Leksikon)

  (Bilde: Katt som trykker på knapp = mat = tommel opp)

- **forsterkningsskjemaer (reinforcement schedules)** - *ulike "planer" eller skjemaer for forsterkning. Disse er:*

  Continuous schedule: Dyret som lærer mottar ønsket stimulus etter hver handling. Oppførsel læres fort, men avtar også raskt hvis stimulus forsvinner.

  Partial (intermittent) schedule: Dyret som lærer mottar ønsket stimulus etter en viss mengde handlinger, eller basert på tid. Læring tar lenger tid på denne måten, men oppførselen vedvarer lenger ved fjerning av ønsket stimulus.

  Fixed Ratio (FR) schedule: En form for partial (intermittent) schedule der dyret mottar ønsket stimulus etter en fast mengde handlinger, feks hver 5. Dette kalles i så fall en FR 5-schedule.

  Variable Ratio schedule: En form for partial schedule der dyret mottar ønsket stimuli etter et ujevnt antall ganger, men som ligger rundt et snitt, feks 5 (av og til etter 6 ganger, andre etter 4, osv). Dette kalles i så fall en VR 5-schedule. Veldig motstandsdyktig mot "extincion" (at oppførselen opphører ved fjerning av stimulus).

  Fixed Interval schedule: En form for partial schedule der dyret mottar ønsket stimulus første gang den utviser ønsket atferd etter at en viss mengde tid har gått siden forrige tilfelle av ønsket stimulus. Så hvis feks dyret feks er på en FI 30-schedule, mottar det ønsket stimulus første gang den utviser ønsket atferd og det har gått 30 sekunder eller mer siden forrige tilfelle av at den fikk ønsket stimulus.

  Variable Interval schedule: Som FI, bare med et snitt i stedet for en fast mengde tid (tenk forskjellen på FR og VR).

  (Bilde: En kanin + et "Hver 6. kopp gratis"-kort)

- **emosjoner** - *"Emosjoner er den psykologfaglige betegnelsen på de kroppslige reaksjonene som oppstår i de situasjonene vi sier at vi føler noe."*

  (Psykologspesialist Trine Elverum)

“Emotions are mental states brought on by neurophysiological changes, variously associated with thoughts, feelings, behavioral responses, and a degree of pleasure or displeasure. There is currently no scientific consensus on a definition. Emotions are often intertwined with mood, temperament, personality, disposition, or creativity.”

(Wikipedia)

“Emotions and feelings are often used interchangeably, but they are distinct concepts in the field of psychology. Emotions refer to a complex and often automatic reaction to a particular stimulus or situation, involving physiological changes, such as changes in heart rate or breathing, as well as subjective experiences, such as feelings of happiness, sadness, fear, or anger. Emotions are often considered to be hardwired and universal across cultures.

On the other hand, feelings are more subjective and cognitive in nature, and can be thought of as conscious interpretations or perceptions of emotions. They involve the recognition and labeling of emotions, and may be influenced by cultural and individual differences in experience and expression. While emotions are often automatic and immediate, feelings may involve more deliberate processing and cognitive evaluation.

In summary, emotions are automatic reactions to a stimulus, while feelings are the conscious interpretations or perceptions of those emotions.”

(ChatGPT)

- **appraisal** - *Vurdering av verdi*

  “In psychology, appraisal refers to the process of evaluating and interpreting the meaning of a situation or event, and determining its relevance for an individual. Appraisal involves not only the objective features of a situation, but also the subjective experiences and expectations of the individual, and can be influenced by a range of factors, including cultural and social norms, personal values, and past experiences.

  Appraisal is considered to be a key factor in shaping emotional responses to situations and events. According to the appraisal theory of emotion, proposed by Richard Lazarus and others, emotions are not simply automatic reactions to a stimulus, but are also shaped by cognitive processes such as appraisal. The theory suggests that the cognitive appraisal of a situation determines the emotional response that follows, and that different appraisals can lead to different emotional experiences.

  Appraisal is also important in the context of stress and coping, as individuals may use different appraisals to manage and respond to stressful situations. For example, the perception of a situation as a threat may elicit a different response than the perception of the same situation as a challenge.”

(ChatGPT)

- **memory types** - "*In cognitive psychology, memory refers to the ability to encode, store, and retrieve information. Memory can be divided into several different types based on the duration of retention and the nature of the information being stored. The main types of memory are:*

    1. *Sensory memory: This is the shortest type of memory, lasting only a fraction of a second to a few seconds. Sensory memory is the ability to retain information from our senses, such as sight, sound, touch, taste, and smell, before it is either discarded or transferred to short-term memory.*

    2. *Short-term memory: Also known as working memory, short-term memory is the ability to temporarily hold a small amount of information in mind, typically for a few seconds or minutes. This type of memory is used to maintain information that we are actively processing or using in our immediate cognitive tasks.*

    3. *Long-term memory: This is the type of memory that allows us to store information over an extended period of time, ranging from days to years. Long-term memory can be further divided into two subtypes:*
        - *Episodic memory: This type of memory is used to store personal experiences or events that we have witnessed or been part of.*
        - *Semantic memory: This type of memory is used to store general knowledge and facts about the world, such as names, dates, and concepts."*

    (ChatGPT)

- **memory functions** - *"memory functions refer to the various cognitive processes involved in encoding, storing, and retrieving information in the brain. These functions include:*

    1. *Sensory memory: This is the initial stage of memory processing, where information from the environment is briefly held in sensory registers (e.g., visual, auditory).*

    2. *Short-term memory: Also known as working memory, this is where information is temporarily held for immediate use (e.g., holding a phone number in mind while dialing).*

    3. *Long-term memory: This is where information is stored for a longer period of time, potentially indefinitely.*

4. *Encoding: The process by which information is initially transformed into a format that can be stored in memory.*

5. *Storage: The process of maintaining information in memory over time, often requiring consolidation processes to stabilize and strengthen the memory trace.*

6. *Retrieval: The process of accessing stored information when needed.*

Memory functions also include metacognitive processes, such as monitoring and control of memory processes (e.g., deciding whether or not to engage in rehearsal)."

(Chat GPT)

- **misinformation effect** - *"The misinformation effect is a phenomenon in which exposure to inaccurate or misleading information can alter a person's memory of an event or experience. It is a well-documented finding in cognitive psychology that has been demonstrated in numerous experiments.*

  The misinformation effect occurs when a person is presented with new information after an event or experience, and that information is inconsistent with their original memory of the event. The new information can then alter the person's memory of the original event, causing them to remember it differently than they did before.

  The misinformation effect has important implications for eyewitness testimony in legal settings, as it suggests that eyewitnesses may be susceptible to the influence of misleading information and may provide inaccurate testimony as a result."

  (ChatGPT)

- **"remembering is cue-dependent"** - *"The phrase "remembering is cue-dependent" refers to the idea that memory retrieval is more effective when cues or prompts are present to help activate stored information in the brain. In other words, memory is more easily retrieved when specific cues or triggers are present that help to activate the relevant information in memory.*

  Cues can take many forms, such as environmental cues (e.g., the smell of a particular food triggering a memory of a childhood experience), semantic cues (e.g., hearing a related word that prompts a memory), or contextual cues (e.g., being in the same physical location where an event occurred). The effectiveness of a cue depends on the strength of the association between the cue and the target memory, as well as the context in which the memory was originally encoded.

  For example, if someone is trying to remember the name of a person they met at a party, they may be able to recall the name more easily if they are prompted with cues such as

the person's appearance, the conversation they had with them, or other contextual information from the party.

The importance of cues in memory retrieval has been demonstrated in numerous studies, and it is a key concept in cognitive psychology. Understanding the role of cues in memory retrieval can be useful for developing strategies to improve memory performance, such as using mnemonic devices or creating associations between new information and existing knowledge."

(ChatGPT)

Fra sensorveiledning: "A good answer describes the "cue dependency" (ideally term named) of memory retrieval and discusses the interaction of "retrieval cue" the encoded "memory trace" for a successful retrieval."

- **"memory is a reconstructive process"** - *"The phrase "memory is a reconstructive process" refers to the idea that memories are not simply stored and retrieved like files in a computer, but are actively reconstructed in the brain based on a variety of factors, including past experiences, current knowledge, and social and cultural influences.*

  When we recall a memory, we are not simply retrieving an exact replica of the original experience, but are instead reconstructing it based on available information and cues. This means that memories are subject to distortion and errors, and may be influenced by a range of factors, including our current emotional state, expectations, and beliefs.

  This reconstructive process can also be influenced by external factors, such as leading questions or suggestions from others, which can distort or alter our memories. This has been demonstrated in research on the misinformation effect, which shows that exposure to misleading information after an event can lead to false memories or distorted recall of the original event."

  (ChatGPT)

- **permanent vs. temporary forgetting** - *"The difference between permanent and temporary forgetting is related to the duration and nature of memory loss.*

  Permanent forgetting refers to the loss of information from memory that cannot be recovered or retrieved. In this case, the information has been lost or erased from memory, and it cannot be recalled or recognized through any means. For example, memories of events that occurred during early childhood may be permanently forgotten due to a lack of retrieval cues or decay over time.

  Temporary forgetting, on the other hand, refers to the inability to retrieve information from memory at a specific point in time, but the memory trace still exists and can be retrieved under different conditions. For example, if you forget someone's name in the

moment, but are able to recall it later on, this would be an example of temporary forgetting.

Temporary forgetting can occur due to a variety of factors, including interference from other memories, insufficient encoding or retrieval cues, or simply being distracted or preoccupied at the time of retrieval. Temporary forgetting can often be overcome through the use of retrieval cues, repetition, or other mnemonic strategies.

It's important to note that permanent forgetting is relatively rare, and most memory failures are due to temporary forgetting or retrieval difficulties. Additionally, the distinction between permanent and temporary forgetting is not always clear-cut, as memories that were thought to be permanently forgotten may sometimes be retrieved through unexpected cues or context."

(ChatGPT)

- **Retrieval Induced Forgetting (RIF)** - *"Retrieval Induced Forgetting (RIF) is a phenomenon in which the retrieval of a memory can lead to the forgetting of related, but irrelevant information. This occurs because the act of retrieving a memory involves inhibiting or suppressing competing memories or information that are related but not relevant to the target memory. This inhibition process strengthens the target memory, but it can also weaken the competing information, leading to retrieval-induced forgetting of that information.*

  The RIF effect has been demonstrated in many different types of memory tasks, including word lists, stories, and paired associates. In these tasks, participants are first presented with a set of related items, such as a list of words that are related to a common theme. Then, they are asked to recall a subset of the items, either by free recall or cued recall. Researchers have found that recalling some items from the set can lead to the forgetting of related items that were not recalled.

  For example, if you are given a list of fruits and asked to remember only the fruits that are red, you might later find it difficult to recall the names of the non-red fruits. This occurs because the act of recalling the names of the red fruits inhibits the retrieval of the names of the non-red fruits.

  The RIF effect is thought to be a natural and adaptive mechanism that helps us to remember important information while suppressing irrelevant information. However, in some cases, RIF can lead to unwanted forgetting, such as when we need to recall information that was not explicitly targeted for retrieval."

  (ChatGPT)

- **encoding specificity principle** - *at jo mer lik omstendighetene er ved retrieval som encoding, jo større er sjansen for vellykket retrieval. Hvis du lærte noe mens du hadde*

høy puls, var naken og hang opp ned i et rødt rom, er det størst sjanse for å huske det mens du har høy puls, er naken og henger opp ned i et rødt rom.

"The encoding specificity principle is a concept in psychology that suggests that memory is most effective when the conditions present during encoding (learning) are recreated during retrieval. In other words, the principle suggests that memories are encoded in a specific context or setting, and that recreating that context during retrieval can enhance memory recall.

For example, if someone studies for an exam in a quiet room with no distractions, they may be better able to remember the information if they take the exam in a similar setting, rather than in a noisy, busy environment. This is because the context of the original learning experience is more effectively recreated, allowing for better retrieval of the information.

The encoding specificity principle has been supported by research in a variety of domains, including studies on the impact of environmental cues on memory, as well as studies on the role of mood and emotion in memory recall. It is also closely related to the idea of context-dependent memory, which suggests that environmental cues and context can serve as retrieval cues for memories.

(ChatGPT)

- **falske minner** - *"False memories are memories of events or experiences that did not actually happen or that are distorted versions of events that did occur. False memories can be created through a variety of methods, including suggestions from other people, leading questions, and exposure to misleading information. False memories can feel just as real and vivid as genuine memories, making it difficult to distinguish between what actually happened and what did not.*

  False memories can have a significant impact on our lives, leading to mistaken beliefs, false accusations, and even wrongful convictions. False memories can also be created in therapy or counseling sessions, where suggestions or leading questions from the therapist can lead a patient to remember events that did not actually occur. It is important to be aware of the ways in which false memories can be created and to take steps to minimize their impact, such as avoiding leading questions or relying on corroborating evidence to confirm the accuracy of memories.

  (ChatGPT)

- **loss aversion** - *"Loss aversion is a cognitive bias in which people tend to strongly prefer avoiding losses to acquiring gains of equal or greater value. In other words, people tend to be more sensitive to losses than to gains, and the pain of losing something is often more powerful than the pleasure of gaining something.*

The concept of loss aversion has been widely studied in the field of behavioral economics, and has important implications for decision-making and risk-taking behavior. For example, loss aversion can lead people to make irrational decisions, such as holding onto a losing investment for too long in the hopes of avoiding a loss, or avoiding a potential opportunity because of the fear of losing something they already have.

Overall, loss aversion is an important factor to consider when understanding how people make decisions and evaluate risks, and it can be influenced by a variety of factors, including individual differences in personality, culture, and the context in which decisions are made.

(ChatGPT)

- **deduksjon** - *"Deduksjon er en utledning eller logisk slutning fra noe allment til et enkelttilfelle."*

  (Store Norske Leksikon)

  "Deduction is a form of reasoning in which specific conclusions are drawn from general principles or premises. In deductive reasoning, the conclusions follow necessarily from the premises, such that if the premises are true, the conclusions must also be true. Deduction involves starting with a broad principle or idea, and then using logical reasoning to arrive at a specific conclusion."

  "Here is a simple example of deductive reasoning:

  Premise 1: All men are mortal. Premise 2: Socrates is a man. Conclusion: Therefore, Socrates is mortal.

  In this example, the premises provide general principles that are used to arrive at a specific conclusion. Premise 1 establishes a general principle about the mortality of men, while premise 2 provides a specific example of a man. Using deductive reasoning, we can logically conclude that Socrates must also be mortal, since he is a man and all men are mortal according to the general principle established in premise 1."

  (ChatGPT)

- **induksjon** - *"Innan erkjenningsfilosofien er induksjon ein vitskapleg metode, som gjennom logisk ordning av fleire enkelterfaringar prøver å gje uttrykk for allmenne lovmessige samanhengar."*

  (Store Norske Leksikon)

  "Inductive reasoning is a form of reasoning in which specific conclusions are drawn from observations or data. In contrast to deductive reasoning, inductive reasoning involves

moving from specific observations or examples to broader generalizations or hypotheses.

Inductive reasoning is an important component of scientific inquiry, as it allows scientists to generate hypotheses based on observations and data, and then test these hypotheses through further experimentation or observation. However, inductive reasoning is also subject to certain limitations and potential biases, as the conclusions drawn from specific observations may not always be representative of broader patterns or trends.

Example:

Observation: Every crow that I have seen is black.
Conclusion: Therefore, all crows are black.

In this example, the conclusion is drawn from specific observations of individual crows. While the conclusion is not necessarily certain (there could be crows of other colors that have not been observed), it is a reasonable generalization based on the available evidence."

(ChatGPT)

- **abduksjon** - *"Abduction is a form of reasoning in which plausible explanations or hypotheses are generated to explain observations or data. Unlike deductive reasoning, which starts with general principles or premises to arrive at specific conclusions, or inductive reasoning, which starts with specific observations to arrive at broader generalizations, abduction involves starting with incomplete or uncertain information and using logical reasoning to arrive at a plausible explanation or hypothesis."*

  (ChatGPT)

  "Abductive reasoning (also called abduction, abductive inference, or retroduction) is a form of logical inference that seeks the simplest and most likely conclusion from a set of observations. It was formulated and advanced by American philosopher Charles Sanders Peirce beginning in the last third of the 19th century.

  Abductive reasoning, unlike deductive reasoning, yields a plausible conclusion but does not definitively verify it. Abductive conclusions do not eliminate uncertainty or doubt, which is expressed in retreat terms such as "best available" or "most likely".

  Here is a short example of abductive reasoning:

  Imagine you walk into your kitchen and see that the floor is wet. You may use abductive reasoning to generate a hypothesis about why the floor is wet. You might reason that:

1. *If the floor is wet, then there must have been some kind of liquid spilled or leak.*
2. *You don't remember spilling anything or seeing any leak, but you notice that the cat's water dish is empty.*
3. *Therefore, it is possible that the cat spilled the water and that's why the floor is wet.*

This is an example of abductive reasoning because you are using your observations (the wet floor and the empty cat water dish) to generate a plausible explanation for why the floor is wet. You don't have direct evidence that the cat spilled the water, but you are using inference and probability to arrive at a reasonable explanation."

(Wikipedia)

- **bekreftelsesfeilen** - *"Bekreftelsestendens er det at man legger merke til eller søker etter det som bekrefter noe man tror. Dette er en vanlig måte å tenke på i dagliglivet. Slik tenkning gjør oss sårbare for feil fordi vi overser informasjon som tilsier at vi burde endre oppfatning.*

  Psykologen Peter Wason viste i et enkelt eksperiment hvordan bekreftelsesfellen fungerer. Deltakerne i eksperimentet fikk se en tallrekke, eksempelvis «2, 4, 6», og ble så bedt om å tenke seg regelen denne tallrekken var basert på. Ut fra regelen skulle så deltakerne «teste» den ved å formulere en ny tallrekke, som forsøksleder så ga tilbakemelding på. Merk at det her er flere mulige regler som kan passe, for eksempel «øk med 2 hver gang», «øk med et partall», «tre tall under 10», og så videre.

  Den korrekte regelen Wason hadde formulert var helt enkelt «øk», en tallrekkene der «hvert tall er høyere enn det forrige». Wason fant at de fleste deltakerne lagde seg regler som søkte å bekrefte deres hypoteser, snarere enn å falsifisere dem. Eksempelvis kunne noen formulere en regel «økende partall» og teste dette ut ved «8, 10, 12». Andre kunne anta at regelen var «tall som øker med 2» og foreslå «6, 8, 10».

  Få av deltakerne foreslo regler som falsifiserte hypoteser. Hvis man trodde tre partall var viktig, kunne en slik regel enkelt testes med tallrekken «1, 2, 3». Falsifikasjon av denne regelen ville dermed bringe personen et steg nærmere løsningen."

  (Store Norske Leksikon)

- **logisk resonnering** - *"Resonnering er tenkning som innebærer at man trekker slutninger, enten i form av logiske slutninger fra premisser til konklusjon (deduktiv tenkning), eller som generaliseringer fra enkeltobservasjoner til mer generelle prinsipper (induktiv tenkning).*

  Psykologiske studier av resonnering viser at slik tenkning både kan foregå analytisk og overlagt (bevisst) og mer spontant og «intuitivt» på måter som lett kan komme i konflikt med normene for korrekte slutninger."

(Store Norske Leksikon)

"Logical reasoning is a mental activity that aims to arrive at a conclusion in a rigorous manner. It happens in the form of inferences or arguments by starting from a set of premises and reasoning to a conclusion supported by these premises. The premises and the conclusion are propositions, i.e. true or false claims about what is the case. Together, they form an argument. Logical reasoning is norm-governed in the sense that it aims to formulate correct arguments that any rational person would find convincing. The main discipline studying logical reasoning is called logic.

Distinct types of logical reasoning differ from each other concerning the norms they employ and the certainty of the conclusion they arrive at. Deductive reasoning offers the strongest support: the premises ensure the conclusion, meaning that it is impossible for the conclusion to be false if all the premises are true. Such an argument is called a valid argument, for example: (1) all men are mortal; (2) Socrates is a man; (3) therefore, Socrates is mortal. For valid arguments, it is not important whether the premises are actually true but only that, if they were true, the conclusion could not be false. Valid arguments follow a rule of inference, such as modus ponens or modus tollens. Deductive reasoning plays a central role in formal logic and mathematics."

(Wikipedia)

- **morphemes** - *"Morfem er ein tydingsberande del av eit ord. Denne delen kan ikkje delast i mindre tydingsberande delar. Til dømes kan ordet ubrukbar deles i morfema u, bruk og bar og ordet avgjere i morfema av, gjer og e."*

  (Store Norske Leksikon)

- **semantics** - *"Semantikk er læren om språkets innhold, sammenhengen mellom ord, fraser og setninger og deres betydning eller mening."*

  (Store Norske Leksikon)

- **the lexicon** - *ditt indre leksikon. Alle ordene du kan har mentalt lagret, forstår betydningen av.*

  (Egen)

  "the set of words that a person uses regularly (see productive vocabulary) or recognizes when used by others (see receptive vocabulary)."

  (American Psychological Association Dictionary of Psychology)

- **syntax** - *"Syntaks er de reglene som styrer hvordan setninger og fraser kan bygges opp i et språk. Syntaksen bestemmer for eksempel hvilken ordstilling vi har i setninger og*

hvilken form et ord kan ha når det opptrer i relasjon til andre ord."

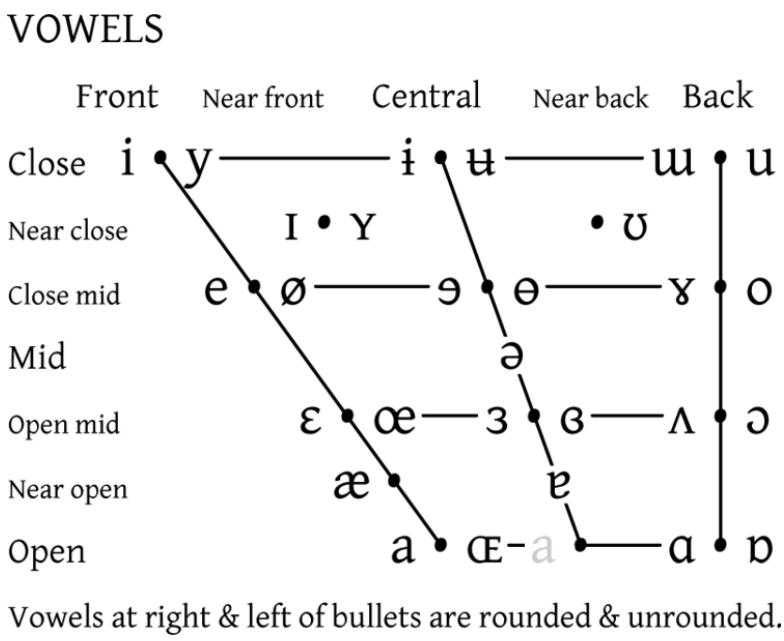
(Store Norske Leksikon)

- **segmentation problem** - *det at det ikke er åpenbart for en lytter som hører et språk hen ikke forstår hvordan det språket er delt opp. Når man hører noen prate er det f.eks. ikke åpenbart hvor et ord/en setning slutter og neste begynner. Hvordan skal hen segmentere (dele opp)?*

  (Egen)

- **vowel space** - *en graf, basert på munnen, som viser hvor i munnen ulike vokallyder uttales på et språk. I noen språk kan en og samme vokal uttales på ganske mange forskjellige måter, mens denne spredningen på et annet språk ville blitt sett på som 3/4 distinkte vokallyder.*

  (Egen)



- **McGurk-effect** - *at samme lyd kan høres ulik ut hvis du leser på leppene til noen mens du hører den. Hvis leppene indikerer "ba", hører du "ba", men hvis de indikerer "fa", hører du "fa".*

  (Egen)

- **sensorisk minne** - *minner av konkrete sanseinntrykk. Hvordan noe føltes, luktes, hørtes ut, smakte, osv. Nesten all minne sensorisk minne forsvinner veldig fort, noe lagres lenge, feks ved traumer (feks "Jeg våknet av røyklukten. Jeg kommer aldri til å glemme*

den lukten.").

(Egen)

- **deklarativt minne** - *"Deklarativt minne er den delen av hukommelsen som omfatter kunnskaper og hendelser vi kan gjøre rede for («Paris er hovedstaden i Frankrike»; «Jeg husker godt første gang jeg var i Paris»)."*

  (Store Norske Leksikon)

- **bilaterale hippocampuslesjoner** - *skader (lesjoner) på begge halvdeler (bilaterale) av hippocampus (hjernedel). Se "Pasient H.M." under Navn.*

  (Egen)

- **context dependent (minne)** - *evnen til å hente frem minner er kontekstavhengig. Feks viste et eksperiment at deltagere som hadde lært seg å huske noe under vann, hadde lettere å huske de samme tingene under vann enn på land. Se encoding specificity principle.*

  (Egen)

- **state dependent (minne)** - *evnen til å hente frem minner er tilstandsavhengig. Lettere å hente frem noe når du er i en tilstand ca. lik den du lærte den i.*

  (Egen)

- **"knute på lommetørklet"** - *triks folk brukte i gamledager for å minne seg selv på at det var noe de trengte å huske. Hvis det var en knute på lommetørklet, var det et cue til dem selv om at det var noe de måtte huske.*

  (Egen)

- **grafem-til-fonem korrespondanse** - *graden av sammenheng mellom hvordan noe skrives og uttales. Kalles "orthographic depth". I språk med "shallow orthographic depth", som feks finsk, vil ord som staves relativt likt, også uttales likt. Dette er ikke tilfellet i språk med "deep orthographic depth" feks engelsk, der ord som på papiret ser ganske like ut, kan uttales radikalt forskjellig.*

  (Egen)

- **auditiv språkpersepsjon** - *evnen til å oppfatte språk i lydform (as opposed to lesing)*

  (Egen)

- **word length effect** - *“The word length effect is a phenomenon in cognitive psychology that refers to the finding that people typically take longer to remember or recite a list of longer words than a list of shorter words, even when the number of words is the same. This effect is thought to occur because longer words require more time and cognitive resources to process, and may overload the limited capacity of working memory.*

  For example, imagine being asked to remember a list of six two-letter words (e.g., "an, as, at, by, do, go") versus a list of six six-letter words (e.g., "belong, escape, manner, notice, obtain, secure"). Most people would find it easier and quicker to recall the two-letter words, despite the fact that the number of words in each list is the same.

  (ChatGPT)

- **heuristics** - *heuristikk aka tommelfingerregel*

  “Heuristikk er en enkel fremgangsmåte eller strategi som en problemløser kan ta i bruk for å øke sjansen til å løse en oppgave. Fremgangsmåten kan ha praktisk verdi uten å kunne begrunnes som prinsipielt gyldig, gjerne i form av en regel som viser seg å gi praktiske resultater uten at man vet om det skyldes tilfeldigheter eller noe annet.

  Beslutninger og bedømmelser i dagliglivet baserer seg for en stor grad på heuristikker, som for eksempel det å velge det kjente fremfor det ukjente.”

  (Store Norske Leksikon)

- **biases** - *“Bias, brukes i kognitiv psykologi, sosialpsykologi, bedømmingspsykologi og andre grener av samfunnsvitenskapen om utsagn, valg og vurderinger som på systematisk måte avviker fra det som stemmer overens med virkeligheten.*

  Noen eksempler:

  - *Ankring – det å legge for stor vekt på et bestemt holdepunkt i bedømmelse, som for eksempel når noe som inntreffer først i en sekvens av informasjon dominerer totalinntrykket. Konkret kan det være at man er villig til å betale mer i en forhandlingssituasjon om den man forhandler med starter på et høyere nivå*
  - *Bekreftelsestendens – det at vi søker informasjon som bekrefter antakelser vi har i utgangspunktet*
  - *«Jeg-visste-det-hele-tiden»-bias – etterpåklokskap, det at man har en overdreven tro på at det som skjedde kunne forventes*
  - *Optimismebias – tendens til ønsketenkning*
  - *Status quo-bias – systematisk tendens til å foretrekke kjente fremfor nye alternativer*

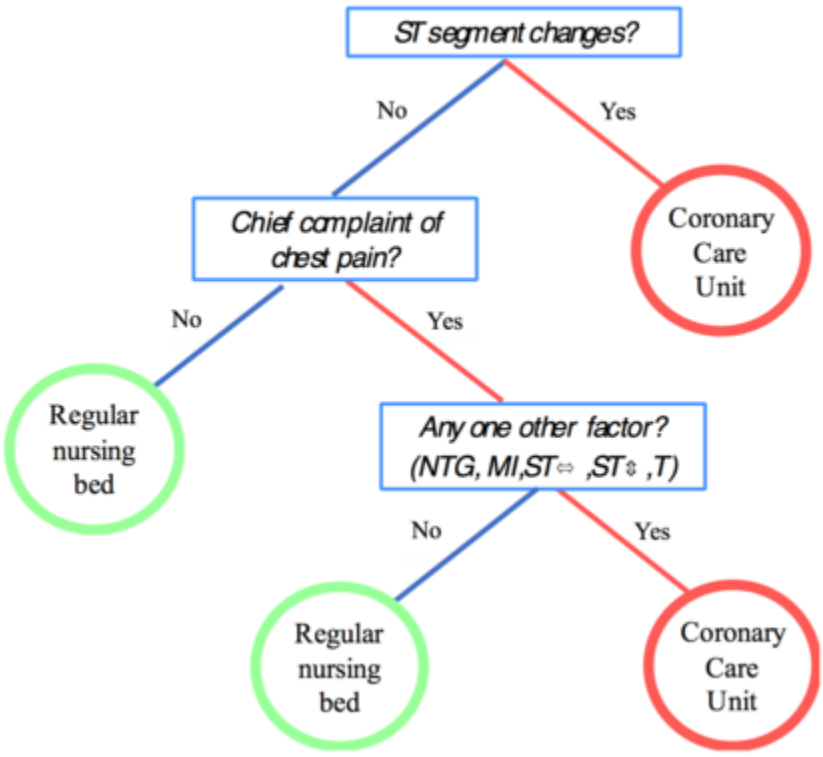
- *Overkonfidens – det at man er sikker, der man burde ha vært mer forsiktig (svar folk gir med «99% sikkerhet» er ganske ofte gale)*
- *Tilgjengelighet – det at man overvurderer noe, fordi dette noe er kjent eller lett tilgjengelig.*

Betydningen av slik bias i dagliglivet, at vi kan tenke og handle litt på tvers av hva som er korrekt, er veldokumentert, ikke minst gjennom Kahneman og Tversky sine arbeider."

(Store Norske Leksikon)

- **fast and frugal** - *fast and frugal-valgtrær er valgtrær hvor hvert spørsmål har to svarmuligheter, ja eller nei. Det ene svaret leder alltid til en handling, det andre svaret til et nytt spørsmål. Formålet med fast and frugal-valgtrær er å drastisk forenkle tidskritiske valgprosesser, men beholde høy treffsikkerhet. I eksempelet under vises et fast and frugal-tre som hjelper leger og sykepleiere avgjøre om en ny pasient skal sendes til vanlig sykeseng eller til akutten (mtp hjerteattak). Valgtreet har samme treffsikkerhetsprosent som en prosess som ville tatt 5 minutter.*

  Les mer: https://en.wikipedia.org/wiki/Fast-and-frugal_trees



- **"early" vs "late" attentional selection** - *"Early and late attentional selection refer to two different stages of information processing during selective attention.*

Early attentional selection occurs at an early stage of processing, typically at the sensory level. It involves filtering out irrelevant information at an early stage, before it is processed further. The theory behind early selection is that the brain has limited processing resources, and filtering out irrelevant information at an early stage can help conserve those resources for more important information. An example of early selection is the cocktail party effect, where you are able to selectively attend to one conversation at a party and ignore others.

Late attentional selection, on the other hand, occurs at a later stage of processing, typically at the level of perceptual analysis. In this stage, all incoming information is processed to some degree before being selected based on its relevance or importance. This stage allows for more flexible and adaptive processing of information, as more detailed analysis can be performed before selection. An example of late selection is the Stroop effect, where attention is selectively directed towards the relevant information while ignoring irrelevant information, but the irrelevant information still gets processed to some degree."

(ChatGPT)

- **recursion** - *"rekursjon" på norsk. I språksammenheng handler det kort fortalt om at man ved hjelp av språkets enkle regler kan bygge uendelig kompleksitet ved å gjenta de samme formlene (syntaks) igjen og igjen.*

  "Rekursjon er i språkvitenskapen et syntaktisk fenomen som innebærer at to elementer kan kombineres til en enhet som igjen kan kombineres med et annet element til en ny enhet, og denne prosessen kan teoretisk sett foregå i det uendelige og skape en svært lang hierarkisk struktur.

  Et eksempel er nominalfraser og relativsetninger. Nominalfrasen «den mannen som hadde et hus» består av to elementer, nominalfrasen «den mannen» og relativsetningen «som hadde et hus». Ettersom «den mannen som hadde et hus» også er en nominalfrase, kan den på nytt kombineres med en relativsetning, slik at det blir «Den mannen som hadde et hus som sto på et jorde». I teorien kan man fortsette å legge til relativsetninger i all evighet, slik at nominalfrasen aldri slutter: «Den mannen som hadde et hus som sto på et jorde som lå i en dal som munnet ut i en landsby som var størst i regionen som inneholdt fire byer som alle hadde hver sin kirke …» Den menneskelige hukommelse og kommunikasjonshensyn setter i praksis en grense for hvor lange slike rekker blir i naturlige språk.

  Innenfor den delen av språkvitenskapen som studerer språk som en spesifikk menneskelig evne, finnes det noen, blant annet den amerikanske lingvisten Noam Chomsky, som mener at rekursjon slik den finnes i syntaks er den eneste kognitive komponenten som er unik for mennesket og derfor for språk. Dette er imidlertid et kontroversielt standpunkt, da andre forskere, for eksempel Steven Pinker, argumenterer med at vår visuelle evne fungerer rekursivt. Dermed er ikke rekursjon nødvendigvis unikt

for språkevnen."

(Store Norske Leksikon)

"Rekursjon refererer til evnen til å bruke et element (for eksempel et ord eller en frase) gjentatte ganger innenfor en setning eller setningens struktur, og dermed danne en uendelig variasjon av meningsfulle setninger. Rekursjon er en viktig egenskap ved menneskelig språk og anses som en av grunnene til at språket er så kraftig og fleksibelt.

En enkel måte å forklare rekursjon på er ved å se på et eksempel på engelsk språk: "The cat that chased the dog that bit the man that drove the car that I saw yesterday." Her ser vi at setningen gjentar den samme strukturen flere ganger, og at setningens mening avhenger av denne repetisjonen.

Rekursjon kan være både direkte og indirekte. En direkte rekursiv setning kan være: "The man that the woman that the child that the teacher hugged kissed laughed." Mens en indirekte rekursiv setning kan være: "The book that the author that the publisher that the distributor sent sold arrived."

Rekursjon anses som en nøkkelkomponent i menneskelig språk, og forskning viser at evnen til å forstå og bruke rekursjon er en del av den universelle grammatikken som er til stede i alle språk. Rekursjon spiller også en viktig rolle i andre kognitive prosesser, inkludert musikk, matematikk og datavitenskap."

(ChatGPT)

- **pre-attentively** - *"In cognitive psychology, "pre-attentively" refers to the processing of sensory information that occurs before conscious attention is directed towards it. Pre-attentive processing involves the automatic detection and analysis of basic features of stimuli, such as color, shape, or pitch, without the need for conscious effort or attention. This processing occurs rapidly and unconsciously and is thought to be an important aspect of how we perceive and make sense of the world around us. For example, when you walk into a room, your brain automatically processes the colors, shapes, and patterns of the objects in the room without conscious effort or attention. This information is then used to guide your subsequent actions and attention in the environment."*

  (ChatGPT)

- **mental context reinstatement** - *"refers to the process by which an individual recreates the context in which an event occurred in order to facilitate memory retrieval. This involves mentally reconstructing the environment, thoughts, and feelings that were present at the time of encoding the memory. By reinstating the mental context, the individual can activate associated memories that may otherwise be difficult to retrieve. This process is believed to be an important factor in long-term memory formation and*

retrieval."

(ChatGPT)

- **mnemonics** - *minneteknikker*

- **Method of loci** - *"The method of loci is a strategy for memory enhancement, which uses visualizations of familiar spatial environments in order to enhance the recall of information. The method of loci is also known as the memory journey, memory palace, journey method, memory spaces, or mind palace technique. The items to be remembered in this mnemonic system are mentally associated with specific physical locations. The method relies on memorized spatial relationships to establish order and recollect memorial content."*

  (Wikipedia)

- **ekstinksjon** - *avlæring av betingede responser. Er ikke glemming, men ny læring - personen/dyret lærer at oppførselen som før førte til at en positiv stimulus ble tilført (positiv forsterkning) eller en negativ stimulus ble fjernet eller ikke inntraff (negativ fosterkning), ikke gjør det lenger (ved operant betinging), eller at betinget stimulus ikke lenger er knyttet til ubetinget stimulus (ved klassisk betinging).*

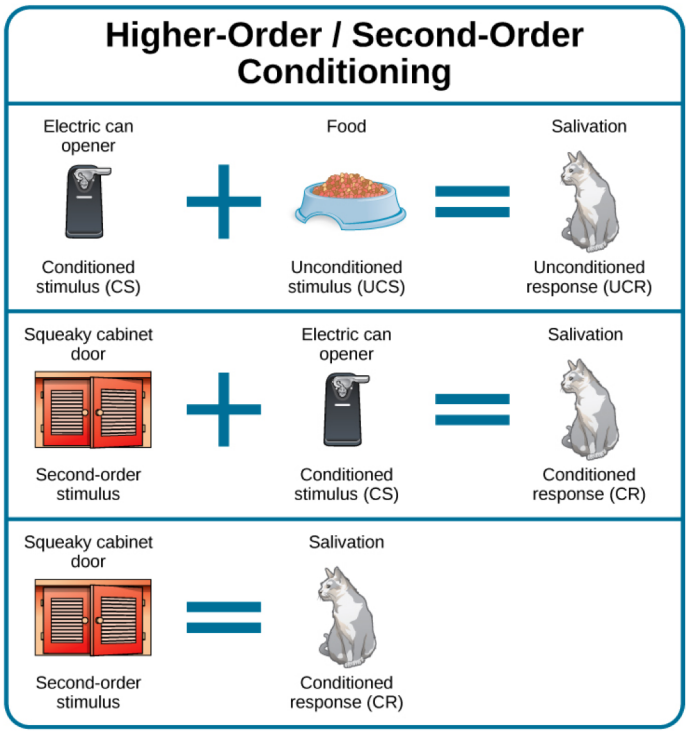
  (Egen)

  Les mer: Store Norske Leksikon

- **generalisering** - *når stimuli som ligner på en betinget stimuli, også begynner å fremkalle betinget respons.*

  Les mer: Store Norske Leksikon

- **annen ordens betinging** - *når en nøytral stimulus knyttes til en betinget stimulus (ikke direkte med en ubetinget) nok ganger, slik at den før nøytrale stimulusen nå er en ny betinget stimulus takket være dens assosiasjon med den allerede betingede stimulusen. Se bilde:*



- **shaping** - *å belønne oppførsel som ligner på oppførselen, helt til du har ønsket oppførsel. Hvis du f.eks. vil at en rotte skal trykke på en spak, begynner du med å belønne den hver gang den nærmer seg. Så bare når den tar på spaken. Til slutt belønner du bare den ønskede oppførselen: at rotta trykker på spaken.*

  "A gradual, behavior modification technique in which successive approximations to the desired behavior is rewarded."

  Kilde/les mer

- **sekundære/betingende forsterkere** - *engelsk: secondary reinforcers*

  Når noe som i seg selv er en nøytral stimulus blir en forsterker gjennom å bli assosiert med en biologisk betinget forsterker. Feks: Du lærer hunden din triks. Når den får til trikset, gir du den en godbit og knipser. Etterhvert blir knipselyden en belønning i seg selv, men det var den ikke i utgangspunktet.

  Kilde: APA Dictionary of Psychology

- **selektiv oppmerksomhet** - *"concentration on certain stimuli in the environment and not on others, enabling important stimuli to be distinguished from peripheral or incidental ones. Selective attention is typically measured by instructing participants to attend to some sources of information but to ignore others at the same time and then determining their effectiveness in doing this. Also called controlled attention; directed attention;*

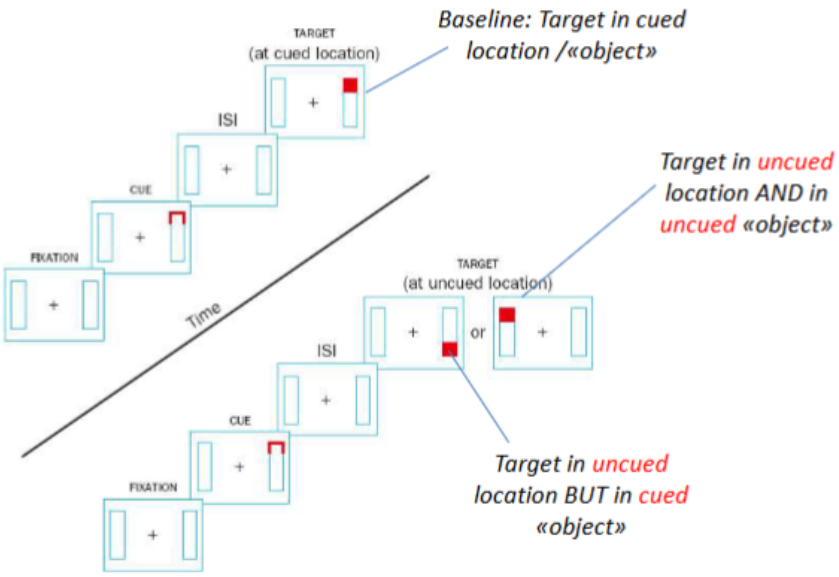
executive attention."

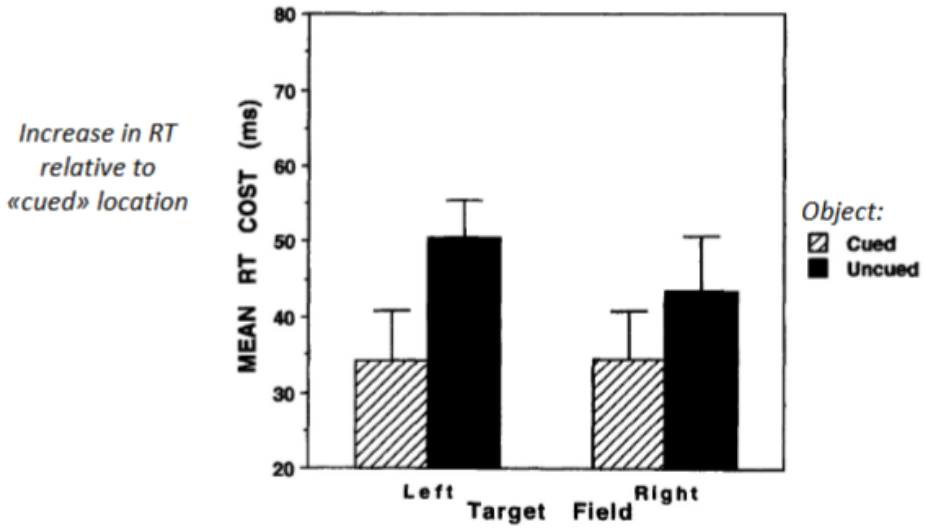
(APA Dictionary of Psychology)

- **objektbasert oppmerksomhet** - *oppmerksomhet kan allokeres enten til områder i synsfeltet, eller til et bestemt objekt (objektbasert oppmerksomhet). Oppmerksomheten er dermed fokusert på dette objektet.*

  Det mest berømte eksperimentet her er Egly et. al (1994), som viser at vi raskere oppdager visuelle endringer som finner sted innenfor et objekt vi har fått et cue om å fokusere på enn endringer som finner sted utenfor dette objektet, selv om både endringen utenfor og endringen innenfor finner sted like langt unna cue-punktet.

  Kilde, med forklaring av eksperiment: https://youtu.be/CUhOo1ftQmo





>> slower reaction time to target in uncued compared to cued object (although target at same location; on average across trials)

- **priming** - *"the effect in which recent experience of a stimulus facilitates or inhibits later processing of the same or a similar stimulus. In repetition priming, presentation of a particular sensory stimulus increases the likelihood that participants will identify the same or a similar stimulus later in the test. In semantic priming, presentation of a word or sign influences the way in which participants interpret a subsequent word or sign."*

  (APA Dictionary of Psychology)

  "innebærer at selv stimuli som er for kortvarige eller inkomplette til å registreres bevisst, kan etterlate seg spor i hukommelsen."

  (Store Norske Leksikon)

  "Priming is the idea that exposure to one stimulus may influence a response to a subsequent stimulus, without conscious guidance or intention. The priming effect refers to the positive or negative effect of a rapidly presented stimulus (priming stimulus) on the processing of a second stimulus (target stimulus) that appears shortly after. Generally speaking, the generation of priming effect depends on the existence of some positive or negative relationship between priming and target stimuli. For example, the word nurse might be recognized more quickly following the word doctor than following the word bread. Priming can be perceptual, associative, repetitive, positive, negative, affective, semantic, or conceptual. Priming effects involve word recognition, semantic processing, attention, unconscious processing, and many other issues, and are related to differences in various writing systems. Research, however, has yet to firmly establish the duration of priming effects, yet their onset can be almost instantaneous."

(Wikipedia)

Teorier/modeller/metoder/syndromer

- **amnesic syndrome** - *en hukommelsestapstilstand med 5 symptomer:*

    1) Short term memory, as measured by digit span, is intact (e.g., CW answers question) (Working memory)

    2) Memory for language, and concepts, is largely intact (e.g., CW knows what a marriage is) (Sematic memory)

    3) There is a severe and lasting anterograde amnesia (e.g., CW forgets information his wife just gave him) (Episodic memory)

    4) There will be a retrograde amnesia, (but not complete) – temporally graded loss of memory for events prior to event (see patient H.M.) (Episodic memory)

    5) Skill learning, conditioning, and priming will be unaffected (see H.M.). (Non-declarative memory.)

    (Fra forelesningsslide)

    CW og H.M. = Kjente pasienter

    CW = Clive Wearing (https://www.youtube.com/watch?v=Vwigmktix2Y)
    H.M. = Henry Molaison (https://en.wikipedia.org/wiki/Henry_Molaison)

- **Baddeley working memory model** - *"Baddeley's working memory model is a theoretical framework proposed by British psychologist Alan Baddeley to explain how information is temporarily stored and manipulated in the mind during complex cognitive tasks. According to this model, working memory consists of several independent subsystems that work together to maintain and manipulate information:*

    1. *The phonological loop, which is responsible for the temporary storage of verbal information and is divided into two components: the phonological store (or "inner ear"), which holds speech-based information for a few seconds, and the articulatory rehearsal process (or "inner voice"), which helps to refresh and maintain this information in memory.*

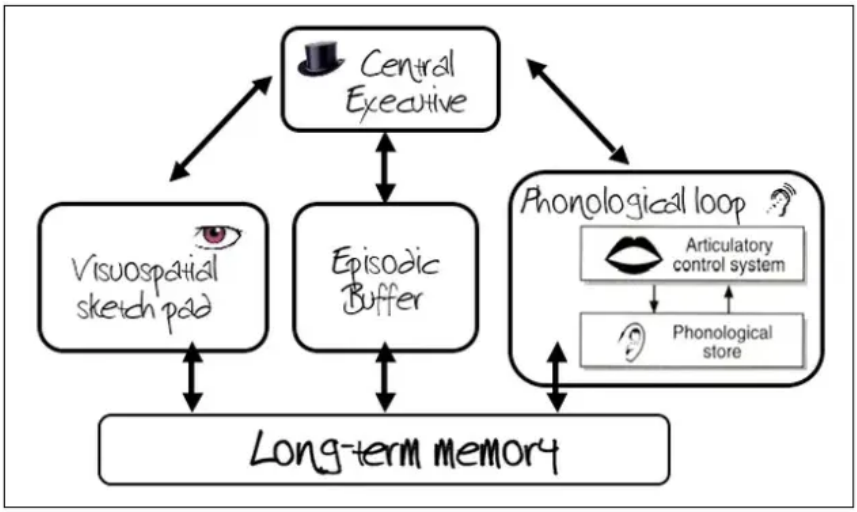
    2. *The visuospatial sketchpad, which is responsible for the temporary storage and manipulation of visual and spatial information, such as mental imagery or spatial*

relationships between objects.

3. *The central executive, which acts as a supervisory system that coordinates and controls attention, switching between tasks, and manipulating information from both the phonological loop and the visuospatial sketchpad.*

In addition, the working memory model also includes a fourth component called the episodic buffer, which acts as a temporary store for information from the other subsystems and allows for the integration of information from long-term memory into working memory."

(ChatGPT)



"Baddeley's model of working memory is a model of human memory proposed by Alan Baddeley and Graham Hitch in 1974, in an attempt to present a more accurate model of primary memory (often referred to as short-term memory). Working memory splits primary memory into multiple components, rather than considering it to be a single, unified construct.

Baddeley & Hitch proposed their three-part working memory model as an alternative to the short-term store in Atkinson & Shiffrin's 'multi-store' memory model (1968). This model is later expanded upon by Baddeley and other co-workers to add a fourth component, and has become the dominant view in the field of working memory. However, alternative models are developing, providing a different perspective on the working memory system.

The original model of Baddeley & Hitch was composed of three main components: the central executive which acts as a supervisory system and controls the flow of information from and to its slave systems: the phonological loop and the visuo-spatial sketchpad.

The phonological loop stores verbal content, whereas the visuo-spatial sketchpad caters to visuo-spatial data. Both the slave systems only function as short-term storage centers.

Baddeley & Hitch's argument for the distinction of two domain-specific slave systems in the older model was derived from experimental findings with dual-task paradigms. Performance of two simultaneous tasks requiring the use of two separate perceptual domains (i.e. a visual and a verbal task) is nearly as efficient as performance of the tasks individually. In contrast, when a person tries to carry out two tasks simultaneously that use the same perceptual domain, performance is less efficient than when performing the tasks individually.

A fourth component of Baddeley's model was added 25 years later to complement the central executive system. The third slave system was designated as episodic buffer. It is considered a limited-capacity system that provides temporary storage of information by conjoining information from the subsidiary systems, and long-term memory, into a single episodic representation."

(Wikipedia)

- **Brocas aphasia** - *"Expressive aphasia, also known as Broca's aphasia, is a type of aphasia characterized by partial loss of the ability to produce language (spoken, manual, or written), although comprehension generally remains intact."*

  (Wikipedia)

- **cohort model (of word recognition)** - *"according to the Cohort Model, a word is recognized via a successive reduction in the number of possible word candidates as each new phoneme is perceived. When only one candidate remains in the cohort of possible words, the word is recognized."*

  (University of New South Wales)

- **Dual Route Reading model** - *"The Dual Route Reading Model is a theoretical framework that explains how people read and comprehend written language. According to the model, there are two main routes involved in reading: the direct access route and the indirect access route.*

  The direct access route, also known as the lexical route, involves recognizing whole words by accessing the mental lexicon, a mental dictionary of words and their meanings that is stored in long-term memory. This route is fast and efficient, and is typically used for familiar words that have been encountered frequently in the past.

  The indirect access route, also known as the phonological route, involves decoding words by converting written symbols into their corresponding sounds. This route is

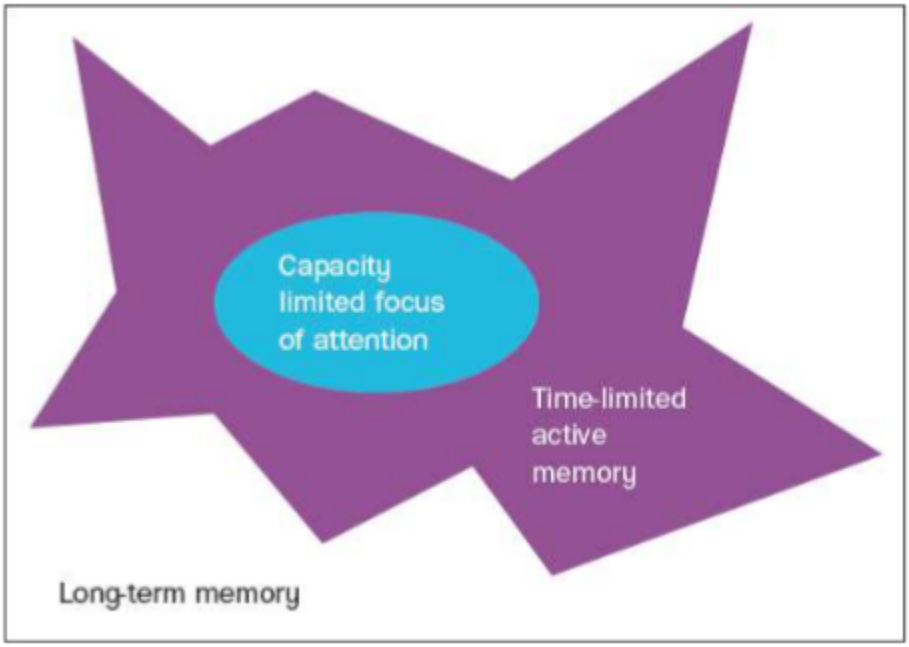
slower and more effortful, and is typically used for unfamiliar words or words that are difficult to recognize through direct access.

The Dual Route Reading Model suggests that both routes are involved in reading, and that they can interact and influence each other. For example, if a person encounters an unfamiliar word, they may initially use the indirect access route to sound out the word, but then store the word and its meaning in the mental lexicon for future use."

(ChatGPT)

- **Embedded processes working memory model** - *Cowan (modellens far) mener at vi ikke har et separat arbeidsminnesystem, men at representasjoner i arbeidsminnet aktiverer langtidsminnet. Altså at vi ikke putter informasjon fra langtidsminnet inn i et annet lagringssted, men i stedet aktiverer langstidsminnet.*

  Denne aktiveringen kan være at nevroner fyrer i et visst området i hjernen og dette representerer for eksempel en bestemt person eller noe annet relevant. Denne aktiveringen har lignende karakteristika til det vi ser i arbeidsminnet, altså at hvis man ikke vier noe oppmerksomhet, vil det falme (fade) og aktiveringen blir borte fra arbeidsminnet, men hvis man øver kan man opprettholde det i arbeidsminnet. Han mener altså at arbeidsminnet ikke er et separat system, men heller en aktivering av langtidsminnet i et område som er relevant for den aktuelle oppgaven.



Forklaring av figur:

- Focus of attention (blå sirkel): Arbeidsminnet har kapasitet til å gjøre én ting av

gangen.

- Time limited active memory (lilla område): Informasjon som vil falme dersom man ikke retter oppmerksomhet mot den.

- Langtidsminnet (hvitt område): Delen av langtidsminnet som ikke er aktivert på nåværende tidspunkt

(Studentlaget)

- **evidensbaserte metoder for bedre minneytelse** - *evidensbaserte metoder for bedre minneytelse vi lærer om er:*

  - Level of processing theory: The more deeply we process information during encoding, the better we will remember it.

  - Elaboration (interaction with previous knowledge): Å knytte det man lærer til noe man kan godt fra før.

  - Dual-coding effect: Å knytte noe visuelt til det språklige. Hvis du feks skal lære en liste med ord, se for deg hvert objekt for ditt indre øye i tillegg til å pugge listen.

  - Spacing effect: Øv kort og ofte, heller enn sjeldent og lenge.

  - Testing effect: Øving er mer effektivt hvis du også tester deg selv.

  - Generation effect: "The generation effect is a phenomenon where information is better remembered if it is generated from one's own mind rather than simply read. Researchers have struggled to account for why the generated information is better recalled than read information, but no single explanation has been sufficient." (Wikipedia)

  - Method of loci/Memory Palace

  (Fra forelesningsslide/egen/Wikipedia)

- **Expected Utility** - *""Expected utility" refers to a theoretical framework used to understand how people make decisions under conditions of uncertainty. It is a concept that combines two key factors: the probabilities of different outcomes and the subjective value that individuals place on those outcomes.*
  According to the expected utility framework, when faced with a decision, individuals consider the probability of each potential outcome and the value (or utility) associated with that outcome. They then multiply the probability of each outcome by its

corresponding utility value and sum these products across all possible outcomes to arrive at an expected utility for each option.

For example, imagine a person is deciding whether to invest in a new stock. They may consider the probability of the stock increasing or decreasing in value and the value they place on making a profit versus losing money. By multiplying the probability of each outcome by its corresponding utility value (in this case, the profit or loss associated with each outcome) and summing across all possible outcomes, the person can arrive at an expected utility value for the investment option.

Expected utility theory has been influential in both psychology and economics, and has been used to explain a wide range of phenomena related to decision-making, including risk-taking behavior, preference reversals, and the impact of emotions on decision-making. However, it has also been subject to critique and debate, with some researchers arguing that it may not accurately reflect the complexity and context-dependence of real-world decision-making."

(ChatGPT)

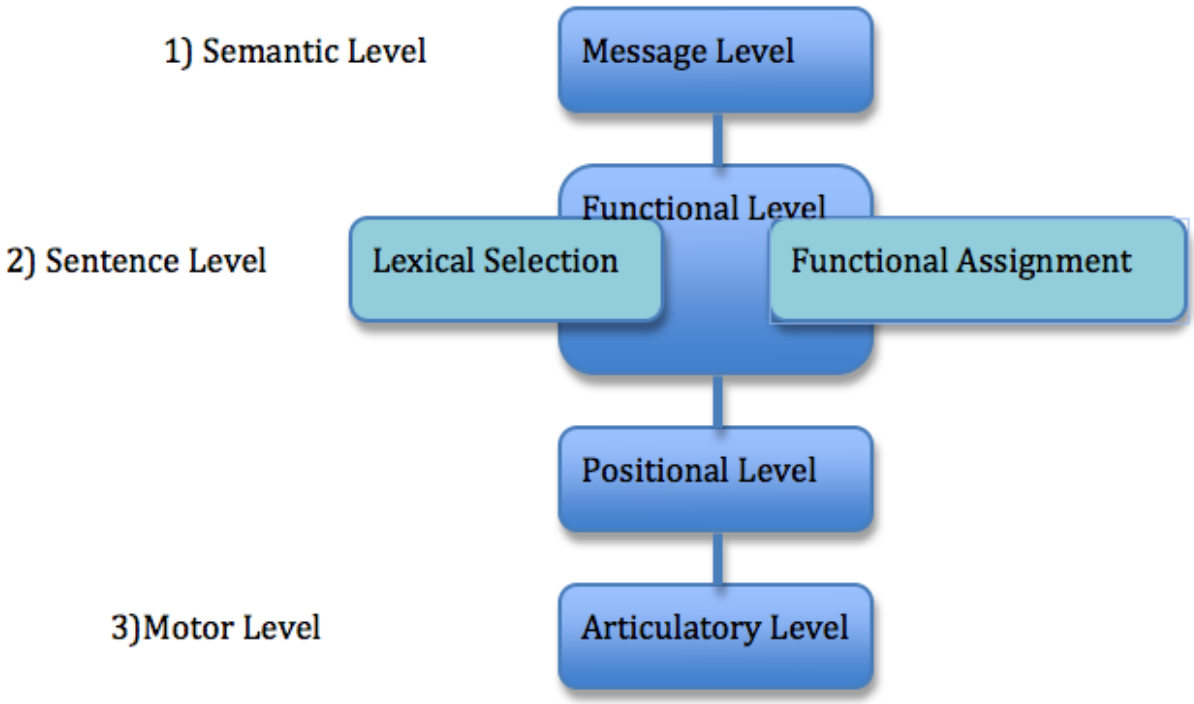
- **Feature Integration Theory** - *utviklet i 1980 av Anne Treisman og Garry Gelade. Sier at trekk (features) ved objekter som farge, form, bevegelse osv. først behandles separat (pre-attentive stage). Så, i neste steg (focused attention stage) brukes oppmerksomheten til å sy disse sammen til et objekt som skiller seg fra omgivelsene.*

  Skal man skjule et objekt for noen er det derfor lurt at dets features (trekk) er så like med omgivelsene som mulig. En tennisball vil feks stå ut mot en grønn bakgrunn dersom den er i bevegelse, men ligger den stille, vil den være langt vanskeligere å få øye på.

  (Egen)

- **Garrett's Model of Speech Production** - *en "serial" modell for taleproduksjon, foreslått av Merrill Garrett*

  "Like Fromkin's model, Garrett's model also proposes serial processing of speech production, from semantic to phonological, while stressing that content words are selected prior to and independent of the function words. In his model, Garrett proposes three levels of representation: the Message Level, where the intended message is generated, the Sentence Level, where the sentence is formed, and the Articulatory Level, where motor commands instruct speech organs to produce the appropriate audible output. This model is often referred to as Garrett's Two-stage model, because the Sentence level is further subdivided into two separate levels or stages: the Functional level, wherein the speaker selects the appropriate words to convey the intended message (Lexicalization) as well as the word order and grammatical rules that govern those words (Syntactic planning); and the Positional level, which is concerned with the sound of the output string and is very pronunciation-oriented.



Garrett justified the two separate stages by, once again, consulting speech errors. More specifically, he notes that meaning-related errors (word switches of content words with the same grammatical function) occur during the functional stage, and form-related or functional errors (morpheme switches and errors of grammatical sound) occur during the positional stage of processing. He also justified the positional stage as being independent of the functional stage because of phonological accommodation. This can be seen in the following example:

1. *"A giraffe stepped on an alligator"*

2. *"An alligator stepped on a giraffe"*

In this case, the message (1) was inappropriately articulated, and the word giraffe was replaced with alligator at the functional stage of the model. The fact that the morpheme "a" was replaced with "an" to correctly follow the phonological rules associated with words beginning with vowels can be taken as evidence that morpheme selection occurs after the word and phrase structure have already been selected. This model also accounts for word exchanges that take place across large distances (first/last content-word switches), because the positioning is established after the words are retrieved, while sound exchanges can only occur over short distances because their positioning is established prior to the sounds being specified.

Serial models like the Fromkin and the Garrett model fail to account for phrase blends, whereby at least two semantically related phrases are retrieved simultaneously (Example 1 below). Neither model accounts for speech errors where a wrong word is selected that is phonologically similar to the target word in regards to the initial phoneme (Example 2 below). Finally, both models fail to account for cognitive intrusions like those seen in Freudian slips (Example 3 below).

1. *" I Love you more than anything/love you very much" becomes "I love you more much"*

2. *"Thank you for all of your kind remarks, your feedback is very valuable becomes"Thank you for you king regards..."*

3. *"What time is this class over?"becomes"What time is this lunch over?"*

The third example is spoken by a student wanting to know when the class before lunch was over. In this case, the student's thoughts about lunch invaded his/her sentence production; they really wanted to know what time the class and not the lunch was over. To account for the types of errors in the above three examples, a model would need to show how two alternative messages can be processed in parallel, not serially.

- **interactive models of speech production** - *“Interactive models of speech production are theoretical frameworks within cognitive psychology that seek to explain how we plan and execute speech. These models propose that speech production is not a linear or sequential process, but rather a dynamic and interactive one, where multiple cognitive processes occur simultaneously and continuously interact with each other.*

  According to interactive models, speech production involves a series of feedback loops, where each stage of the process influences and is influenced by the preceding and succeeding stages. These models propose that speech production is composed of three main stages:

  1. *Conceptualization: In this stage, the speaker selects the appropriate message to convey and forms a representation of it in their mind.*
  2. *Formulation: In this stage, the speaker generates the linguistic code that will express the message, including selecting the appropriate words, grammatical structures, and phonetic sounds.*
  3. *Articulation: In this stage, the speaker produces the motor movements necessary to physically articulate the words and sounds of the speech.*

  Interactive models propose that each stage of speech production is influenced by feedback from the previous and succeeding stages, as well as by external feedback from the environment. For example, feedback about the sound of one's own speech can influence the selection of words in the formulation stage.

Some of the most well-known interactive models of speech production include the Levelt model, the Dell model, and the WEAVER++ model."

(ChatGPT)

- **Kognitiv adferdsterapi** - *terapiform som går ut på å få folk til å stille spørsmål ved validiteten av egne tanker. Er det feks sant at "alle hater meg"?*

  (Egen)

  "Kognitiv atferdsterapi er en form for psykologisk samtalebehandling som forsøker å hjelpe mennesker til å endre tankemønstre og uhensiktsmessig atferd. Denne formen for terapi benyttes for en rekke psykiske vansker som depresjon, angstlidelser, avhengighet, kroniske smerteplager, spiseforstyrrelser og alvorlige psykiske lidelser som schizofreni og bipolar lidelse.

  Ordet kognitiv betyr informasjonsbearbeiding. Innen kognitive terapiformer er man opptatt av måten man forstår og fortolker seg selv, andre mennesker, og omgivelsene rundt. Utgangspunktet for kognitiv atferdsterapi er at tanker, atferd, følelser, og kroppslige fornemmelser gjensidig påvirker hverandre.

  Prinsippene innen kognitiv atferdsterapi er basert på at psykiske vansker, enten delvis eller helt, er knyttet til uhensiktsmessig eller feilaktig tenking, og at vanskene opprettholdes gjennom såkalte automatiske tanker og lærte atferdsmønstre. I kognitiv atferdsterapi søker man derfor å endre tankemønstre og uhensiktsmessig atferd. Grunntanken innen denne behandlingsformen er at mennesker som lider av psykiske vansker kan lære bedre måter å selv håndtere vanskene, og slik redusere symptomene.

  Målet er at pasienten skal bli selvhjulpen ved å bruke tankemåtene man lærer i behandlingen for å endre egen tenkning, atferd, og følelsesmessige reaksjoner. Dette gjøres ofte ved at pasienten mellom timene hos behandleren blir bedt om å gjennomføre øvelser i egen hverdag.

  Det er gjort mange vitenskapelige studier på effekten av kognitiv atferdsterapi. Generelt viser psykoterapiforskningen at denne behandlingsformen har god effekt på en rekke psykiske lidelser, både som eneste behandling og i kombinasjon med andre behandlingsmetoder som medikamentell behandling."

  (Store Norske Leksikon)

- **Load theory** - *Lavies Load Theory (2005). Sier at jo mer krevende en oppmerksomhetsoppgave er (større load), jo mer fokuserer vi på oppgaven og ignorerer alt annet. Når oppgaven er lite krevende (lavere load) er det mer ressurser ledig til fokus på perifere ting.*

(Egen)

- **Prospect Theory** - *"Prospect theory is a behavioral economic theory developed by psychologists Daniel Kahneman and Amos Tversky that describes how people make decisions under risk or uncertainty. The theory suggests that people do not always make rational decisions that maximize their expected utility, but instead are influenced by cognitive biases and subjective evaluations of outcomes.*

  According to prospect theory, people evaluate gains and losses relative to a reference point, which is typically the current state of affairs or a previous reference point. People are typically risk-averse when it comes to gains, meaning that they prefer a sure gain over a gamble with the same expected value. In contrast, people are typically risk-seeking when it comes to losses, meaning that they are more willing to take a gamble to avoid a loss than to accept a sure loss with the same expected value.

  Prospect theory also suggests that people are more sensitive to losses than to gains, meaning that a loss of a certain amount is more aversive than a gain of the same amount is pleasurable. This can lead to risk-seeking behavior when people are facing large losses, such as in gambling or investing."

  (ChatGPT)

- **serial models of speech production** - *"A serial model of language production divides the process into several stages. For example, there may be one stage for determining pronunciation and a stage for determining lexical content. The serial model does not allow overlap of these stages, so they may only be completed one at a time."*

  (Wikipedia)

  "Serial models of speech production present the process as a series of sequential stages or modules, with earlier stages comprising of the large units (i.e. sentences and phrases), and later stage comprising of their smaller unit constituents (i.e. distinct features like voicing, phonemes, morphemes, syllables). Tacit in these models is that the stages are independent of one another and that there is a unidirectional flow of information. This means that in these models there is no possibility of feedback for the system."

  (Wikiversity)

- **TRACE model (of speech perception and word recognition)** - *TRACE-modellen er en tilkoblingsbasert modell for taleoppfatning og ordgjenkjenning, utviklet av James McClelland og Jeffrey Elman i 1986. Modellen er basert på ideen om at taleoppfatning er en kontinuerlig prosess der flere nivåer av bearbeiding samhandler med hverandre.*

TRACE-modellen består av et nettverk av tilkoblede noder som representerer ulike nivåer av bearbeiding i taleoppfatning. Nodene er organisert i tre lag: egenskapslaget, fonemlaget og ordlaget.

På egenskapslaget representerer nodene taleegenskapene, som frekvens og varighet. Disse egenskapene kombineres for å danne fonemer, som representeres på fonemlaget. På ordlaget representerer nodene hele ord.

Når et tale-signal blir presentert for modellen, aktiverer egenskapene til signalet de tilsvarende nodene på egenskapslaget. Aktiveringen sprer seg fra egenskapslaget til fonemlaget og deretter til ordlaget. Aktiveringen av nodene på ordlaget reflekterer sannsynligheten for at det presenterte tale-signalet samsvarer med et bestemt ord.

En av de viktigste egenskapene ved TRACE-modellen er at aktiveringen sprer seg i begge retninger, fra bunnen og opp (egenskaper til ord) og fra toppen og ned (ord til egenskaper). Denne toveis flyten av aktivering gjør at modellen kan integrere informasjon fra flere nivåer av bearbeiding og dra nytte av kontekstuell informasjon for å gjenkjenne ord.

TRACE-modellen har hatt stor innflytelse på feltet for taleoppfatning og ordgjenkjenning, og har blitt brukt til å forklare en rekke fenomener, som den fonemiske restaureringseffekten og kontekseffektene på taleoppfatning. Modellen har også blitt utvidet og modifisert over årene for å ta hensyn til nye empiriske funn og for å forbedre ytelsen.

- **Utilitarisme** - *en etisk teori som er opptatt av om en handling skaper bra konsekvenser, ikke prinsipper.*

  “Utilitarisme er en etisk teori som hevder at en handling er moralsk riktig hvis og bare hvis den maksimerer nytte.”

  (Store Norske Leksikon)

Eksperimenter o.l.

- **Gorillaeksperimentet** - *“The best-known study demonstrating inattentional blindness is the Invisible Gorilla Test, conducted by Daniel Simons of the University of Illinois at Urbana–Champaign and Christopher Chabris of Harvard University. This study, a revised version of earlier studies conducted by Ulric Neisser, Neisser and Becklen in 1975, asked subjects to watch a short video of two groups of people (wearing black and white T-shirts) passing a basketball around. The subjects are told either to count the passes made by one of the teams or to keep count of bounce passes vs. aerial passes. In different versions of the video a person walks through the scene carrying an umbrella (as*

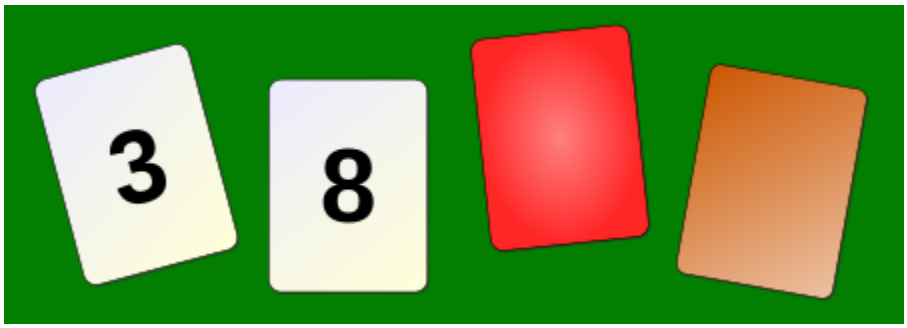
discussed above) or wearing a full gorilla suit. After watching the video, the subjects are asked whether they noticed anything out of the ordinary taking place. In most groups, 50% of the subjects did not report seeing the gorilla (or the person with the umbrella). Failure to perceive the anomalies is attributed to failure to attend to it while engaged in the difficult task of counting passes of the ball. These results indicate that the relationship between what is in one's visual field and perception is based much more on attention than was previously thought.

Out of 228 participants of the tests, only 194 – those who did count the passes correctly – were used for statistical purposes further. The percentage was even as low as 8% in one of the 16 tests performed"

(Wikipedia)

- **Four Card Selection Task** - *"The Wason selection task (or four-card problem) is a logic puzzle devised by Peter Cathcart Wason in 1966. It is one of the most famous tasks in the study of deductive reasoning. An example of the puzzle is:*

  You are shown a set of four cards placed on a table, each of which has a number on one side and a colored patch on the other side. The visible faces of the cards show 3, 8, red and brown. Which card(s) must you turn over in order to test the truth of the proposition that if a card shows an even number on one face, then its opposite face is red?



  The correct response is to turn over the 8 card and the brown card.

  The rule was "If the card shows an even number on one face, then its opposite face is red." Only a card with both an even number on one face and something other than red on the other face can invalidate this rule:

  - *If the 3 card is red (or brown), that doesn't violate the rule. The rule makes no claims about odd numbers. (Denying the antecedent)*
  - *If the 8 card is not red, it violates the rule. (Modus ponens)*
  - *If the red card is odd (or even), that doesn't violate the rule. The red color is not exclusive to even numbers. (Affirming the consequent)*

- *If the brown card is even, it violates the rule. (Modus tollens)*

In Wason's study, not even 10% of subjects found the correct solution. This result was replicated in 1993.

As of 1983, experimenters had identified that success on the Wason selection task was highly context-dependent, but there was no theoretical explanation for which contexts elicited mostly correct responses and which ones elicited mostly incorrect responses.

Evolutionary psychologists Leda Cosmides and John Tooby (1992) identified that the selection task tends to produce the "correct" response when presented in a context of social relations. For example, if the rule used is "If you are drinking alcohol, then you must be over 18", and the cards have an age on one side and beverage on the other, e.g., "16", "drinking beer", "25", "drinking soda", most people have no difficulty in selecting the correct cards ("16" and "drinking beer").

In a series of experiments in different contexts, subjects demonstrated consistent superior performance when asked to police a social rule involving a benefit that was only legitimately available to someone who had qualified for that benefit.

According to Cosmides and Tooby, this experimental evidence supports the hypothesis that a Wason task proves to be easier if the rule to be tested is one of social exchange (in order to receive benefit X you need to fulfill condition Y) and the subject is asked to police the rule, but is more difficult otherwise. They argued that experimenters have ruled out alternative explanations, such as that people learn the rules of social exchange through practice and find it easier to apply these familiar rules than less-familiar rules. They argued that such a distinction, if empirically borne out, would support the contention of evolutionary psychologists that human reasoning is governed by context-sensitive mechanisms that have evolved, through natural selection, to solve specific problems of social interaction, rather than context-free, general-purpose mechanisms. In this case, the module is described as a specialized cheater-detection module."

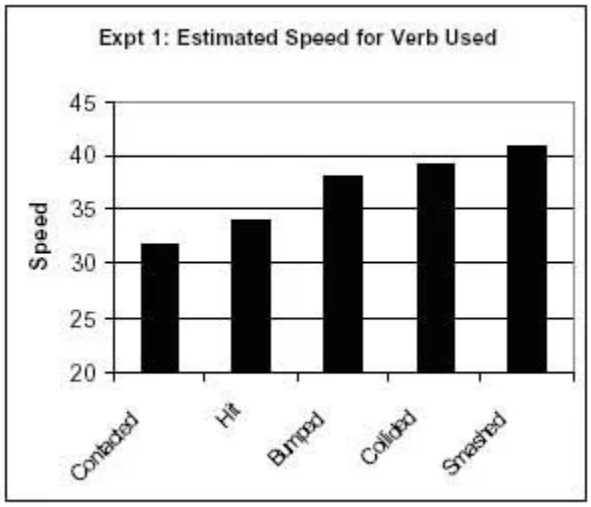
(Wikipedia)

- **Bilkræsjeksperimentet** - *Lofthus & Palmer, 1974.*

Eskperimentet bestod av to deler. I del 1 fikk deltagerene (45 studenter) se klipp av

bilkræsj, som de så ble bedt om å beskrive som om de var vitner. De ble deretter stilt konkrete spørsmål. Et var om hvor fort de (deltagerene) beregnet at bilene smashed / collided / bumped / hit / contacted hverandre. Ulike grupper ble presentert med ulike verb, dvs. at en gruppe ble spurt "Hvor fort beregner du at bilene kjørte da de "smashed" inn i hverandre?" mens en annen gruppe ble spurt "Hvor fort beregner du at bilene kjørte da de "collided" med hverandre?", osv.

Hensikten var å se om valget av verb påvirket farten deltagerene oppga. Det gjorde det. Jo mer voldsomt verb, jo høyere fart ble i snitt rapportert.



Lofthus og Palmer hypotiserte at dette kunne skyldes enten a) en "respons-bias", der det mer voldsomme verbet fikk deltagerene til å oppgi høyere hastighet eller b) at verbet deltagerene ble presentert med faktisk endret deres minne av videoen de hadde sett (dvs skapte en form for falskt minne).

For å teste dette, gjennomførte de en del 2.

I del 2 ble 150 studenter vist en 1 minutt lang film av en bil som kjører i landlige omgivelser, etterfulgt av et 4 sekunder langt klipp av en trafikkulykke.

De ble like etterpå stilt en rekke spørsmål om det de hadde sett. Blant disse spørsmålene ble spørsmålet "how fast were the cars going when they hit each other?" stilt til 50 stykker, 50 stykker ble stilt spørsmålet "how fast were the cars going when they smashed each other?", mens 50 stykker ikke ble stilt noe spørsmål av denne typen (kontrollgruppe).

En uke senere ble forsøkspersonene så brakt inn igjen, for å svare på 10 nye spørsmål (uten å se filmen igjen). Et av spørsmålene var om de hadde sett knust glass. Det var

ikke knust glass i filmen.

I gruppen som 1 uke tidligere hadde fått spørsmål med formuleringen "smashed" svarte 16 at de hadde sett knust glass, mens 34 svarte nei. I gruppen som hadde fått spørsmål med formuleringen "hit", svarte 7 ja og 43 nei, noe som var veldig likt kontrollgruppen, der 6 svarte at de hadde sett knust glass mot 44 som svarte nei.

Response	Smashed	Hit	Control
Saw broken glass	16	7	6
Didn't see broken glass	34	43	44

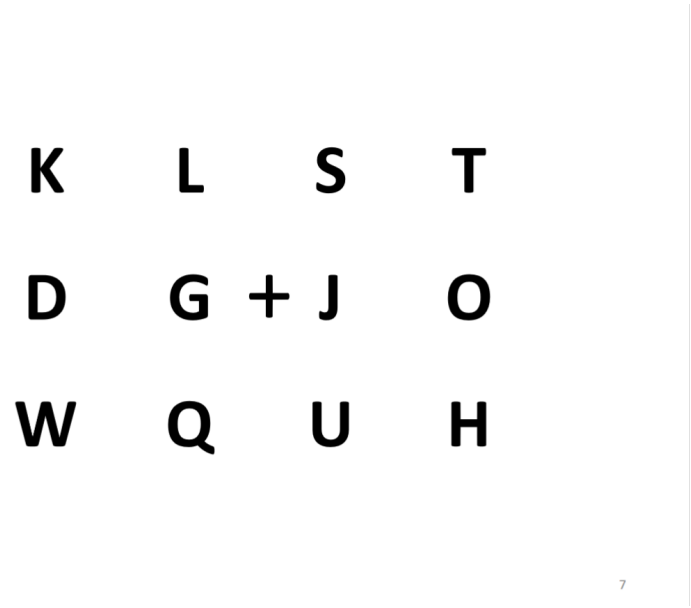
Slik viste Lofthus og Palmer at det ikke var snakk om en responsbias, men at spørsmålsformuleringen faktisk hadde ført til endringer i forsøkspersonenes minner.

Dette støttet opp under hypotesen om minne som en rekonstruktiv prosess.

(Egen, kilde: SimplyPsychology.org)

- **the Sperling experiment** - *viktig eksperiment gjennomført av den amerikanske kognitive psykologen George Sperling (Ph.D. fra Harvard om korttidsminne i 1959) tidlig på 1960-tallet.*

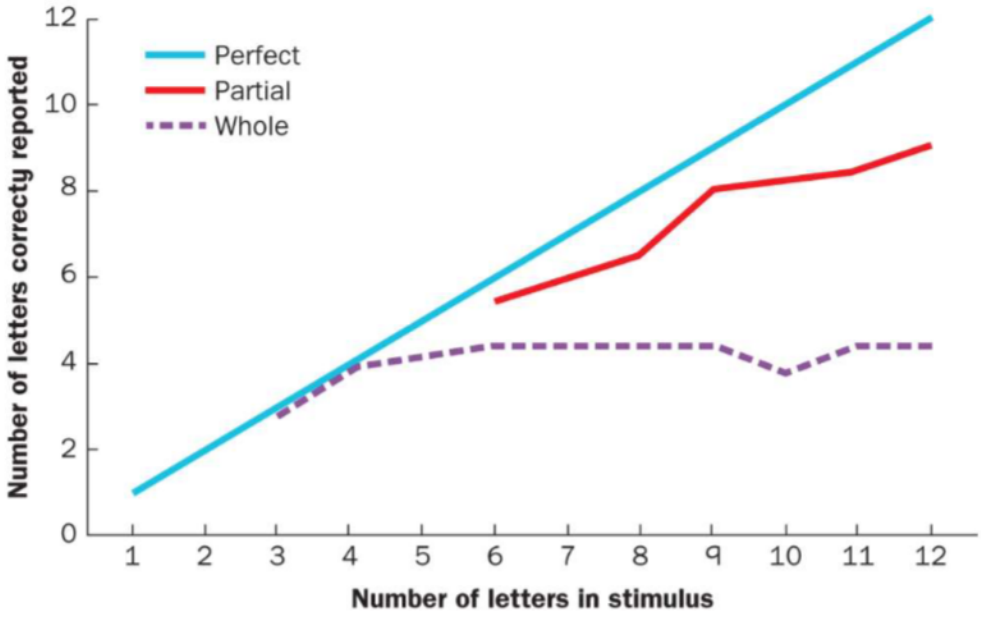
  Sperling ba deltagere fokusere på et kryss på en hvit flate, og viste dem så rader med bokstaver i en veldig kort tid (50ms). De skulle deretter fritt gjengi så mange de klarte (whole report). Han testet med ulike mengde bokstaver, fra 1 til 12, og fant at det meste folk i snitt klarte å gjengi var 4 bokstaver. Dette viste at vårt visuelle korttidsminne har begrenset kapasitet, noe som var ukontroversielt på dette tidspunktet.



Sperling hadde dog en intuisjon om at mennesker lagrer et "perfekt bilde" av alle synsinntrykk, men at dette rett og slett falmer for raskt til at deltagerene kan benytte det til å rapportere alle bokstavene de har sett. Innen de har rukket å rapportert de første 4 bokstavene, har det "perfekte bildet" falmet.

For å teste dette ga han en annen gruppe samme test, men deltagerene i denne gruppen skulle bare gjengi bokstavene de hadde sett på én av radene (partial report). Hvilken av radene visste de ikke på forhånd, det ble avgjort av en kort tone som ble spilt av rett etter at bokstavene hadde forsvunnet. Hørte de en lys tone, skulle de gjengi den øverste raden, hørte de en middels tone, skulle de gjengi den midterste raden, osv.

Ved å så slå sammen gjenommsnittsresultatene fra gruppene som gjenga de ulike radene, fant han at de samlet sett hadde svært høy gjengivelsesgrad. På en oppgave med 12 bokstaver, kunne de samlet gjengi 8 av disse, mot 4 for gruppen med free recall.



Fordi testpersonene i partial report-gruppen ikke hadde visst på forhånd hvilken av radene de skulle fokusere på, men likevel klarte å svare såpass riktig, måtte det bety at Sperling hadde rett. De hadde et nærmest perfekt bilde av samtlige bokstavene lagret i en form for visuelt kortidsminne (visual store), som de kunne hente informasjonen fra. Denne funksjonen kalte Sperling ikonisk minne.

Han eksperimenterte med å øke avstanden fra bokstavene ble vist og lyden ble spilt av i partial report-gruppen. Når denne ble 1 sekund, gjorde ikke partial recall-gruppen det bedre enn whole report-gruppen. Slik demonstrerte Sperling at ikonisk minne (visual store) ha stor kapasitet, men en varighet på under 1 sekund.

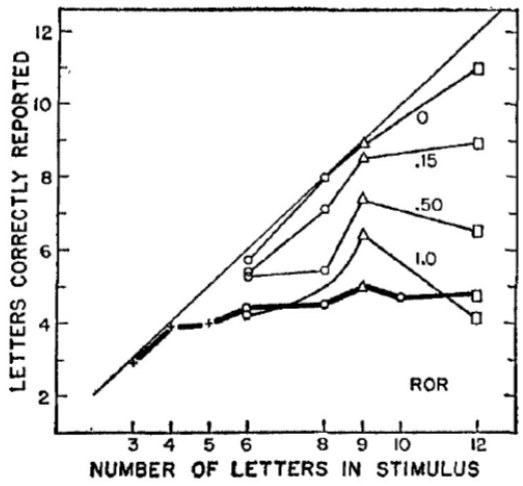


FIG. 9. Immediate-memory and available information. The parameter is the time at which available information is sampled (delay of instruction). Heavy line indicates immediate-memory for the same materials. One subject (ROR).

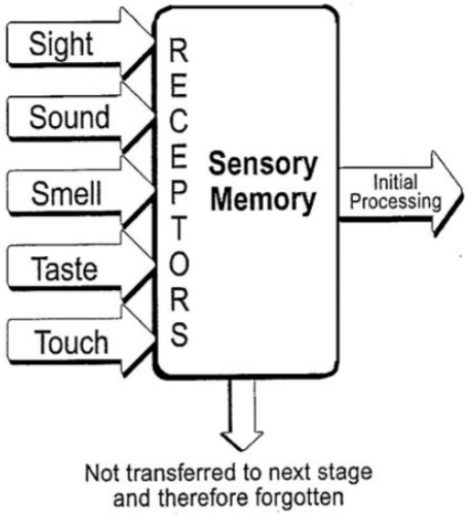
Instruction *partial report* but varying the time between array presentation and the "cue" (up to 1.0 seconds)

Senere ble det gjort lignende forsøk med andre sanser. Det ble funnet at vi har et lignende, enda bedre system for hørsel (echoic memory) og et lignende, men langt svakere, system for berøring (haptic memory).

Iconic memory: representations of visual stimuli (duration: 200-500 ms)

Echoic memory: representation in auditory system (duration: 3–4 seconds)

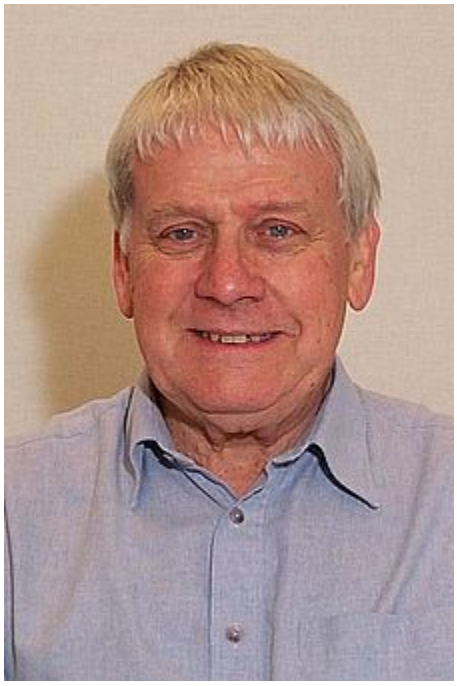
Haptic memory: representation in somatosensory system (duration: about 2 seconds)



Navn

- **Alan Baddely** - *"Alan David Baddeley (born 23 March 1934) is a British psychologist. He is known for his research on memory and for developing the three-component model of working memory. He is a professor of psychology at the University of York."*

(Wikipedia)



Alan Baddeley

- **Anne Treisman** - *“Anne Marie Treisman (27 February 1935 – 9 February 2018) was an English psychologist who specialised in cognitive psychology.*

  Treisman researched visual attention, object perception, and memory. One of her most influential ideas is the feature integration theory of attention, first published with Garry Gelade in 1980. Treisman taught at the University of Oxford, University of British Columbia, University of California, Berkeley and Princeton University. Notable postdoctoral fellows she supervised included Nancy Kanwisher and Nilli Lavie.

  In 2013, Treisman received the National Medal of Science from President Barack Obama for her pioneering work in the study of attention. During her long career, Treisman experimentally and theoretically defined the issue of how information is selected and integrated to form meaningful objects that guide human thought and action.”

(Wikipedia)

Anne Treisman

- **Broca** - *“Pierre Paul Broca (28 June 1824 – 9 July 1880) was a French physician, anatomist and anthropologist. He is best known for his research on Broca's area, a region of the frontal lobe that is named after him. Broca's area is involved with language. His work revealed that the brains of patients with aphasia contained lesions in a particular part of the cortex, in the left frontal region. This was the first anatomical proof of localization of brain function.”*

  (Wikipedia)

Pierre Paul Broca

- **Cowan, Nelson** - *amerikansk professor i psykologi. Lanserte Embedded Processes Working Memory Model (EPWM) på 1990-tallet.*

- **Elizabeth Lofthus** - *kjent for bilkræsjeksperimentet. Ofte brukte som ekspertvitne om betydningen av nettopp vitner av forsvaret i straffesaker, fordi forskningen hennes viser hvor lite hukommelsen vår er til å stole på.*

  “Elizabeth F. Loftus (born 1944) is an American psychologist who is best known in relation to the misinformation effect, false memory and criticism of recovered memory therapies.”

  (Wikipedia)

Elizabeth Lofthus

- **Elman, Jeffrey** - *“Jeffrey Locke Elman was an American psycholinguist and professor of cognitive science at the University of California, San Diego. He specialized in the field of neural networks.”*

  (Wikipedia)

  Sto bak TRACE-modellen for ordgjenkjenning og språkforståelse sammen med McClelland.

Jeffrey Elman

- **Endel Tulving** - *“Endel Tulving (born May 26, 1927) is an Estonian-born Canadian experimental psychologist and cognitive neuroscientist. In his research on human memory he proposed the distinction between semantic and episodic memory.”*

  (Wikipedia)

Endel Tulving

- **Garret, Merril F.** - *professor i psykologi ved University of Arizona, har forsket mye på språk. Står bak Garrett's Model/Theory of Speech Production.*

Merrill F. Garrett

- **Genie** - *“Genie (born 1957) is the pseudonym of an American feral child (also called wild child - a young individual who has lived isolated from human contact from a very young age, with little or no experience of human care, social behavior, or language). Her circumstances are prominently recorded in the annals of linguistics and abnormal child psychology. When she was approximately 20 months old, her father began keeping her in a locked room. During this period, he almost always strapped her to a child's toilet or bound her in a crib with her arms and legs immobilized, forbade anyone from interacting with her, provided her with almost no stimulation of any kind, and left her severely malnourished. The extent of her isolation prevented her from being exposed to any significant amount of speech, and as a result she did not acquire language during her childhood. Her abuse came to the attention of Los Angeles County child welfare authorities in November 1970, when she was 13 years and 7 months old, after which she became a ward of the state of California.*

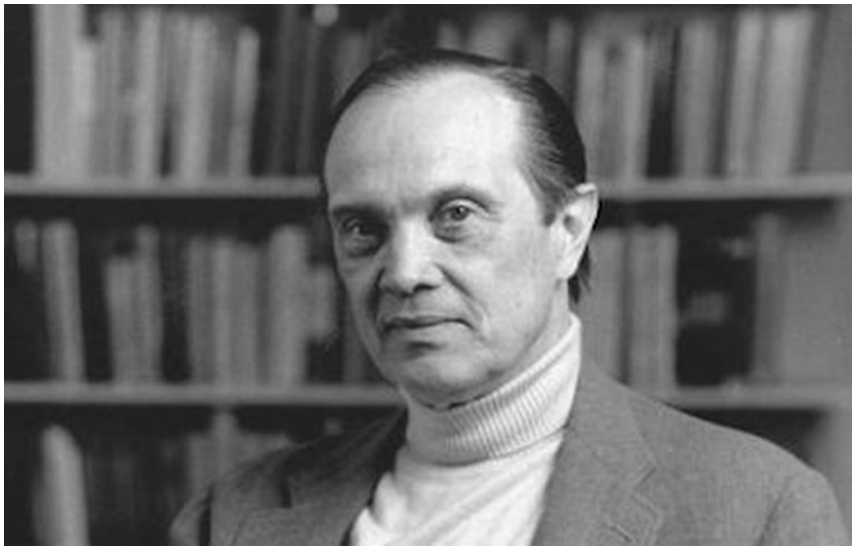
  Psychologists, linguists, and other scientists almost immediately focused a great deal of attention on Genie's case. Upon determining that she had not yet learned language, linguists saw her as providing an opportunity to gain further insight into the processes controlling language acquisition skills and to test theories and hypotheses identifying critical periods during which humans learn to understand and use language. Throughout the time scientists studied Genie, she made substantial advances in her overall mental and psychological development. Within months, she developed exceptional nonverbal communication skills and gradually learned some basic social skills, but even by the end of their case study, she still exhibited many behavioral traits characteristic of an unsocialized person. She also continued to learn and use new language skills throughout the time they tested her, but ultimately remained unable to fully acquire a first language.”

  (Wikipedia)

Genie

- **George A. Miller** - *“George Armitage Miller (February 3, 1920 – July 22, 2012) was an American psychologist who was one of the founders of cognitive psychology, and more broadly, of cognitive science. He also contributed to the birth of psycholinguistics. Miller wrote several books and directed the development of WordNet, an online word-linkage database usable by computer programs. He authored the paper, "The Magical Number Seven, Plus or Minus Two," in which he observed that many different experimental findings considered together reveal the presence of an average limit of seven for human short-term memory capacity. This paper is frequently cited by psychologists and in the wider culture. Miller won numerous awards, including the National Medal of Science.“*

  (Wikipedia)

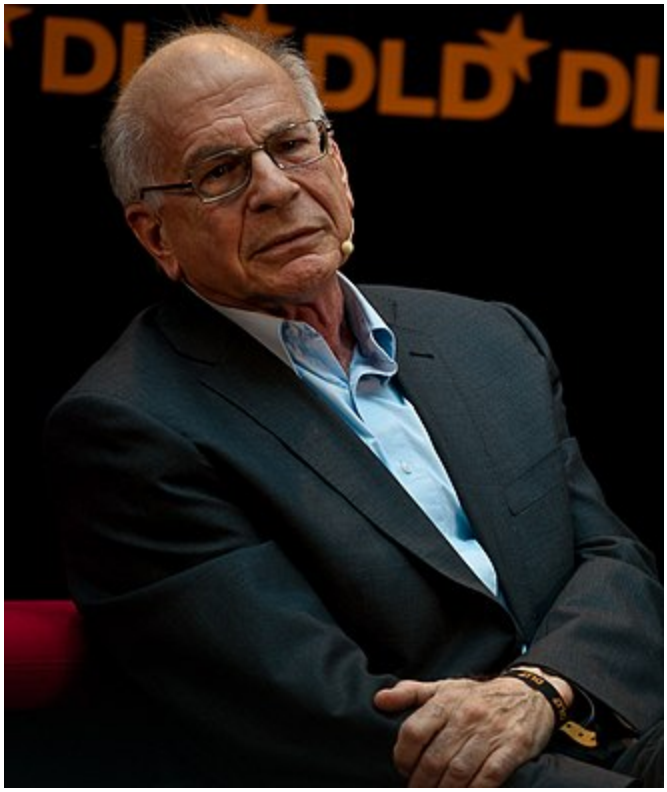


George A. Miller

- **Kahneman** - *“Daniel Kahneman (born March 5, 1934) is an Israeli-American psychologist and economist notable for his work on the psychology of judgment and decision-making, as well as behavioral economics, for which he was awarded the 2002 Nobel Memorial Prize in Economic Sciences (shared with Vernon L. Smith). His empirical findings challenge the assumption of human rationality prevailing in modern economic theory.*

  With Amos Tversky and others, Kahneman established a cognitive basis for common human errors that arise from heuristics and biases, and developed prospect theory.

  He was married to cognitive psychologist and Royal Society Fellow Anne Treisman, who died in 2018.”



Daniel Kahneman

- **Lavie** - *Nillie Lavie. Britisk-israels psykolog og nevroviter. Står bak Lavie's Load Theory, også kjent som Perceptual Load Theory (1995).*

Nillie Lavie

- **McClelland, James** - *professor i psykologi ved Stanford. Står bak TRACE-modellen for ordgjenkjennelse og taleoppfatning sammen med Jeffrey Elman.*

James McClelland

- **Pasient C.W.** - *Clive Wearing, mann som bare husker ca. siste 30 sekunder + sin kone. Har dog en del semantisk minne fra før fenomenet slo inn.*

  “Clive Wearing (born 11 May 1938) is a British former musicologist, conductor, tenor and keyboardist who has chronic anterograde and retrograde amnesia. He lacks the ability to form new memories and cannot recall aspects of his memories, frequently believing that he has only recently awoken from a comatose state. In educational psychology contexts, Wearing's dual retrograde-anterograde amnesia phenomenon is often referred to as '30-second Clive' in reference to his 30-second episodic memory capacity.”

  (Wikipedia)

  Film: https://www.youtube.com/watch?v=Vwigmktix2Y

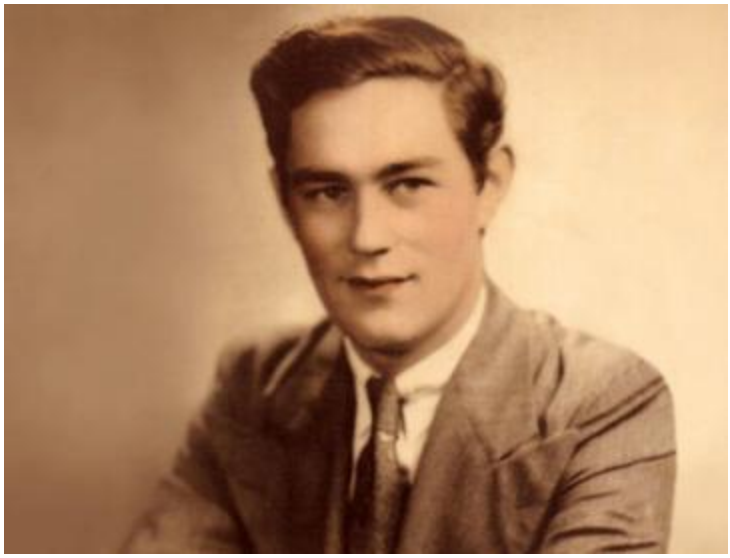
Pasient C.W. - Clive Wearing

- **Pasient H.M.** - *“Henry Gustav Molaison (February 26, 1926 – December 2, 2008), known widely as H.M., was an American who had a bilateral medial temporal lobectomy to surgically resect the anterior two thirds of his hippocampi, parahippocampal cortices, entorhinal cortices, piriform cortices, and amygdalae in an attempt to cure his epilepsy. Although the surgery was partially successful in controlling his epilepsy, a severe side effect was that he became unable to form new memories.*

  A childhood bicycle accident is often advanced as the likely cause of H.M's epilepsy. H.M. began to have minor seizures at age 10; from 16 years of age, the seizures became major. Despite high doses of anticonvulsant medication, H.M.'s seizures were incapacitating. When he was 27, H.M. was offered an experimental procedure by neurosurgeon, W.B. Scoville. Previously Scoville had only ever performed the surgery on psychotic patients.

  The surgery took place in 1953 and H.M. was widely studied from late 1957 until his death in 2008. He resided in a care institute in Windsor Locks, Connecticut, where he was the subject of ongoing investigation. His case played an important role in the development of theories that explain the link between brain function and memory, and in the development of cognitive neuropsychology, a branch of psychology that aims to understand how the structure and function of the brain relates to specific psychological processes.”

  (Wikipedia)

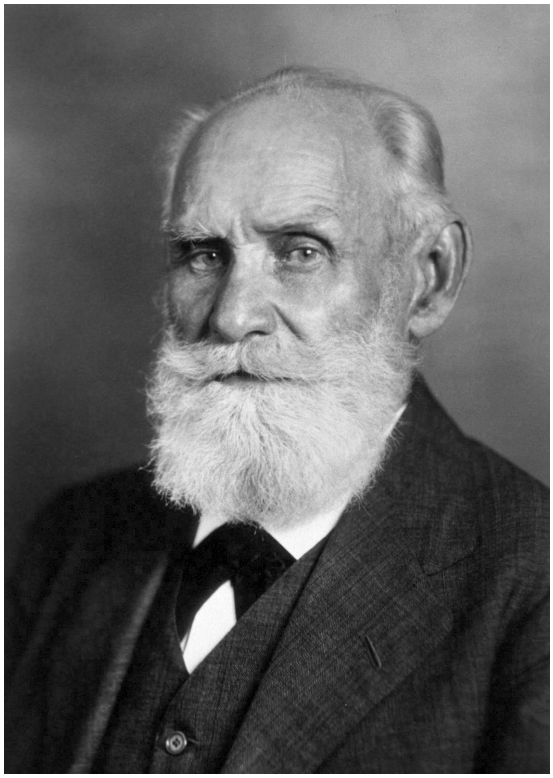


Pasient H.M. - Henry Molaison

- **Pasient Leborgne**- *Louis Victor Leborgne. Pasient av Jean Paul Broca. Mistet evnen til å snakke da han var 30, kunne kun si en eneste stavelse ("Tan"). Studier av Leborgne ledet Broca til å navngi tilstanden som i dag kalles Brocas afasi.*

- **Pavlov, Ivan**- *"Ivan Pavlov var en russisk fysiolog mest kjent for sine eksperimenter med de såkalte Pavlovs hunder. Han ble i 1904 tildelt Nobelprisen i fysiologi eller medisin og ble utnevnt til æresdoktor ved Universitetet i Oslo i 1911."*

  (Store Norske Leksikon)



Ivan Pavlov

- **Simons and Chabris** - *Professorer i psykologi. Sto bak [gorillaeksperimentet](#).*

Daniel Simons og Christopher F. Chabris

- **Sperling, George** - *amerikansk kognitiv psykolog. Ph.D. fra Harvard om korttidsminne i 1959. Oppdaget ikonisk minne gjennom "the Sperling experiment" tidlig på 1960-tallet, som la grunnlaget for oppdagelsen av andre former for sensorisk minne (sensory registers).*

George Sperling

- **Shaw** - *Det finnes to relevante Shaw, en J.S. Shaw og en Dr Julia Shaw.*

  Den mest sentrale (nevnt i core questions) er J. S. Shaw for sitt arbeid med RIF (Retrieval Induced Forgetting). Kjent studie: "Retrieval-induced forgetting in an eyewitness-memory paradigm" (1995).

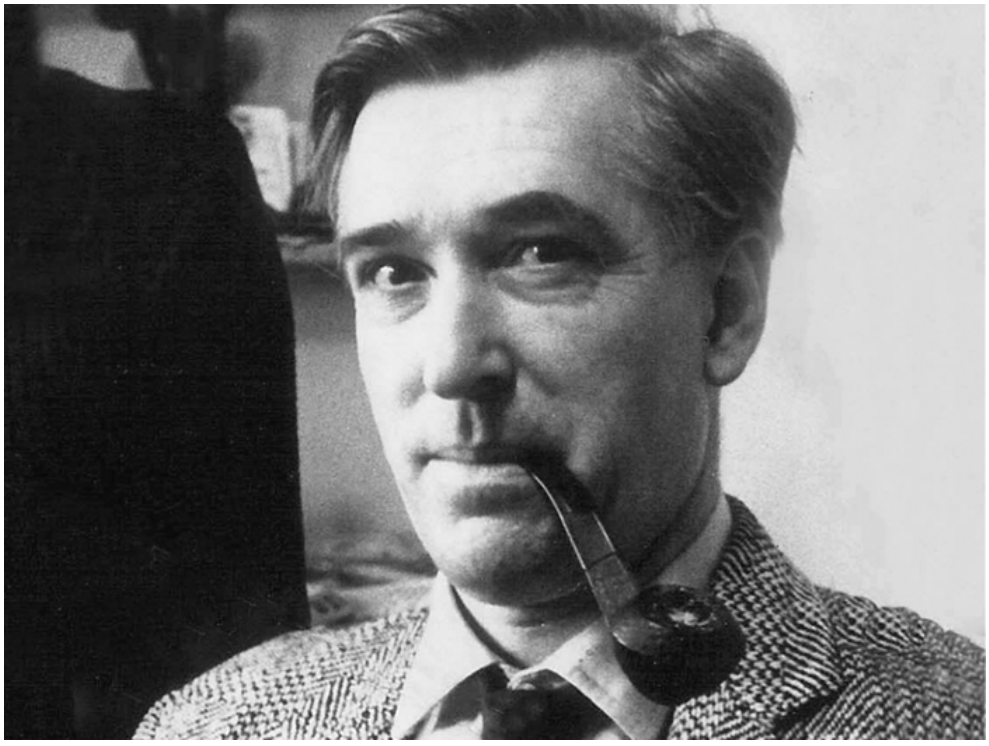
  Dr. Julia Shaw er en del pensum gjennom sitt arbeid med falske minner og studien der folk ble overbevist om at de hadde vært i kontakt med politiet i tenårene ("Do False Memories Look Real? Evidence That People Struggle to Identify Rich False Memories of Committing Crime and Other Emotional Events", 2020)

Dr Julia Shaw

- **Wason** - *“Peter Cathcart Wason (22 April 1924 – 17 April 2003) was a cognitive psychologist at University College, London who pioneered the Psychology of Reasoning. He progressed explanations as to why people make certain consistent mistakes in logical reasoning. He designed problems and tests to demonstrate these processes, for example the Wason selection task, the THOG problem and the 2-4-6 problem. He also coined the term "confirmation bias" to describe the tendency for people to immediately favor information that validates their preconceptions, hypotheses and personal beliefs regardless of whether they are true or not.”*

  (Wikipedia)

  Se Wason selection task



Peter Cathcart Wason

- **McGurk** - *“Harry McGurk (23 February 1936 – 17 April 1998) was a British cognitive psychologist. He is known for his discovery of the McGurk effect, described in a 1976 paper with his research assistant John MacDonald, while he was a senior developmental psychologist at the University of Surrey.”*

  (Wikipedia)

Harry McGurk