

# **PSYC1230 - Eksamensoppgaver 2019/-22 (med fasitsvar)**

I 2019, 2021 og 2022 besto eksamen av 4 flerdelte oppgaver (a, b, c, osv.), hvorav 3 skulle besvares. I 2020 var det hjemmeeksamen pga corona.

Årene det ikke var hjemmeeksamen skulle svarene holdes korte. Svarene kunne avgis på skandinavisk eller engelsk.

Oppgavene er fordelt etter de kategoriene som de ble presentert under ved eksamen.

“Fasit” (hentet fra sensorveiledning) etterfølger hvert spørsmål.

## **Fordeling av emner (2020 ikke inkludert):**

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## **René sier dette om karaktersetting:**

*Only 3 of 4 questions listed above had to be answered. Each question gives max. 5 points, so that the total exam yields a maximum of 15 points. The instructions below provides guidelines for awarding points by subquestion. Maximal points per sub-question are indicated in brackets (see Key points to be addressed in answer). However, should an answer in one subquestion be particularly well formulated it might be used to compensate a “point loss” in another subquestion within the same question. Likewise, penalization is possible (i.e., for unstructured writing, or extensively long answers which are not to the point).*

*Points-to-grade conversion: 5 points (33%) will be the "pass threshold" and grades should accordingly be assigned as:*

- 0-4.99 pts = F
- 5-6.99 pts = E
- 7-8.99 pts = D
- 9-11.99 pts = C
- 12-13.99 pts = B
- 14-15.00 pts = A

## Arbeids- og sensorisk minne

- **2019**
  - (a) Nevn og beskriv kort de fire (4) hovedkomponentene i Baddeleys arbeidsminnemodell.
  - (b) Hvordan ville disse komponentene interagere under følgende oppgave: Skriv inn et telefonnummer som du fant på en nettside, på telefonen din?
  - (c) Hvorfor ville det være et problem å snakke med noen under denne oppgaven?

*Fasit:*

- (a) *Phonological loop, episodic buffer, visual spatial sketchpad, central executive + brief explanation for each in accordance textbook (each 0.5p; Gilhooly p. 124-128) [max 2 points]*
- (b) *Min answer: the phonological loop component (i.e., articulatory control processes) would convert the visual information (from visuo-spatial sketchpad) into speech-based information, which based on (sub)vocal rehearsal mechanisms are kept in the phonological loop. This is controlled by the central executive (highlighted aspects each 0.5p). [max 2 points]*
- (c) *It would be equivalent to the so-called articulatory suppression effect (only full points if named), interfering with the subvocal rehearsal (see Gilhooly, p. 126) [max 1 point]*

- **2019 (utsatt eksamen)**

- (a) Hva er rollen av «fonologiske løkke (FL)» (phonological loop) i Baddeleys arbeidsminnemodell? Hva er FLs underkomponenter?
- (b) Beskriv «irrelevant-tale-effekten» (irrelevant-speech effect) og «ordlengde-effekten» (word-length effect). Hva viser disse effektene?
- (c) George A. Miller på 1950-tallet postulerte "magisk nummer syv". Hva refererte han til? Hvordan er det relatert til ordlengde-effekten?

*Fasit:*

- (a) *PI is the subcomponent of Baddeley's model dealing with verbal material and is based on inner speech. Inner speech supports the rehearsal of content in the PL. Subcomponents are the Phonological buffer (holding the information for a short period, 2-3 sec) and the Articulatory control process, responsible for (i) maintenance (sub-vocal rehearsal) of info in PL; and (ii)*

*conversion of visual information (written word) to a phonological form. (Gilhooly, p. 125-128) [max 2 points]*

*(b) Irrelevant speech effect: irrelevant background speech during learning of target word list affects performance negatively; Word-length effect. Immediate recall of word list is better for lists of shorter words (each 0.5 p) – these effects indicate that WM for verbal material is based on phonological, sub-vocal rehearsal. E.g. for the word-length effect: faster rehearsal = more items in WM (1p) (Gilhooly, p. 125-128) [max 2 points]*

*(c) Miller's refers to the items that can be held in working memory (WM span), 7( $\pm$ 2). Word-length effect says it is not the amount of items per se, but rather the length of the items that determines the WM span. Only if this "contradiction" is worked out = 1 point*

- **2021**

- (a) Hva er sensorisk minne/register?
- (b) Beskriv Sperlings eksperiment og dets viktigste resultater.
- (c) Hvordan brukes verbal-auditiv (fonologisk) informasjon fra sensorisk minne («echoic memory») i arbeidsminnet i henhold til Baddeleys modell?

*Fasit:*

*(a) Sensory information is stored in a more or less unprocessed way for a couple of seconds or less and decays very rapidly. It is, modality specific (iconic, echoic, haptic etc.) and exists after the sensory input has ceased (see Sperling experiment). If mentioned that information is stored "pre-attentively" should be seen as bonus but not prerequisite for full points here. (Gilhooley, p. 112/113) [1 point]*

*(b) Set-up of experiment: Sperling tachistoscopically (50 ms) presented a visual array (e.g., three rows of four letters), and asked participants to repeat what they have seen under two conditions: 'whole report' ("recall as many items as you can") OR 'partial report' ("recall only the line of the array that is indicated by a cue tone"). Importantly the cue was presented right after the stimulus array vanished, and was used to selectively probe one row at a time. Finding: While in the whole report participants managed to report max 4 or 5 items, in the partial-report procedure participants could typically recall about three items from each line probed. This meant that a much larger amount of information was potentially available to the participant than was suggested by the data from whole-report. Interpretation: the iconic registry has potentially very large capacity but its content fades so rapidly that only parts can be reported. (Gilhooley, p. 112/113) [2 points]*

*(c) The questions demands a bit of transfer, i.e. that relationship between sensory registries*

*and working memory is understood. More specifically, the student is required to describe the working of the phonological loop (PL) according to Baddeley. That is, echoic memory content is by attention transferred into the “phonological buffer” [i] of the PL, and the “articulatory control processes” [ii] will maintain the information in working memory by “sub-vocal rehearsal” [iii]. The points terms indicated as “i” to “iii” need to be mentioned to yield full points here. (Gilhooly, p. 125-128) [max 2 points]*

- **2022**

- (a) Hva er forskjellen mellom arbeidsminne og korttidsminne?
- (b) Beskriv kort de 4 hovedkomponentene i Baddeleys arbeidsminnemodell og hvordan de interagerer.
- (c) Hva bestemmer mengden informasjon som kan holdes aktivert i fonologisk arbeidsminne ifølge Baddeley? Hvordan forholder det seg til George A. Miller's magiske nummer 7?

*Fasit:*

- (a) *Multiple answers possible: they might be used as synonyms, or the term short-term memory emphasizes more the storage component, while working memory more the processing aspects. Important here is that the answer shows that the student has thought about the relation [1 point]*
- (b) *Here the 4 main components (phonological loop, visual spatial sketchpad, episodic buffer and central executive) should be described. The main function of each subcomponent and potential subprocesses should be mentioned. The answer also should include that PL, VSS, EB are considered the “slave systems” in support of the central executive. (Gilhooly et al., p. 197ff) [2 points]*
- (c) *The answer should indicate that the amount is determined by the subvocal rehearsal ability/speed of the inner voice within the PL. Rehearsal, i.e. sub-vocal (inner) articulation, revives the memory trace; and the time it takes to rehearse determines memory span. Here the word-length (or comparable) effect might be mentioned. This contradicts the idea of that we have a fixed maximum number of items we can “keep up” in working memory, as e.g. expressed by G. A. Miller's magical number 7. (Gilhooly et al., p. 197ff) [max 2 points]*

## Koding og gjenhenting av minne

- **2019**

- (a) Hvorfor og hvordan hjelper den ordspråklige «knuten i et lommetørkle» å huske ting?
- (b) Forklar effekten av «kontekst» («context-dependent») og «tilstand» («state-dependent») ved gjenhenting av minner fra hukommelsen. Gi et eksempel for hver av de to effektene.
- (c) Hvordan kan man bruke disse effektene for å forbedre minnelytelse under eksamen?

*Fasit:*

- (a) *Memory retrieval is cue-dependent = retrieval is interaction between cue and memory trace. A memory trace containing multiple facets of information present at encoding can be accessed via retrieval cues matching to these facets. Thus, a “knot” made while encoding of the memory trace can become a retrieval cue when encountered at a later state. (see Groome, p. 138-141); [max 2 points]*
- (b) *Encoding-specificity principle: Retrieval is enhanced when the cues available (during retrieval) match the features present/stored during encoding, this includes context features or state/mood features. Examples, in lecture/book were diving/learning context study and mood induced by music (Gilhooley, p.185-186, Groome, p. 140/141). [max 2 points]*
- (c) *Being in the same context or state when learning, also “Mental context reinstatement”/imagery might be mentioned here [max 1 point].*

- **2021**

- (a) Minneteknikker («mnemonics») gir en fast struktur (f.eks. stedene i «Method of Loci») for å huske stimuli. Hvorfor er dette viktig?
- (b) Forklar effekten av «kontekst» («context-dependent») og «tilstand» («state-dependent») ved gjenhenting av minner fra hukommelsen. Gi et eksempel for hver av de to effektene.
- (c) Hvordan kan man bruke disse effektene for å forbedre minnelytelse?

Fasit:

(a) *Memory retrieval is cue-dependent = retrieval is interaction between cue and memory trace. This structure (here the loci) provide fixed (secure) “cues” to the memory trace, and thus improves the accessibility of memory trace (see Groome, p. 138-141); Answer needs to discuss the “cue-dependent nature” of retrieval for full points [max 2 points]*

(b) *Encoding-specificity principle: Retrieval is enhanced when the cues available (during retrieval) match the features present/stored during encoding, this includes context features or state/mood features. Examples, in lecture/book were diving/learning context study and mood induced by music (Gilhooley, p.185-186, Groome, p. 140/141). [max 2 points]*

(c) *Being in the same context or state when leaning, also “Mental context reinstatement”/imagery might be mentioned here [max 1 point].*

- **2022**

(a) Hvordan fungerer gjenfinning («retrieval») av episodisk hukommelse?

(b) Hva er innkodingen spesifisitets prinsipp? Beskriv en studie som kan teste prinsippet.

(c) Beskriv én (evidensbasert) metode for å forbedre minneytelsen, f.eks. når du vil huske en handleliste.

Fasit:

(a) *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. Bonus if pointed out that the retrieval process is a “reconstruction” of the episode (see Groom, 138-142) [max 1.5 points]*

(b) *Encoding specificity principle: Retrieval is enhanced when the cues available (during retrieval) match the features present/stored during encoding. Example could be any describing context- or state-dependent retrieval effects, like e.g. the diving study (see Gilhooley, p. 266; or Groome p.140/141) [max 1.5 points]*

(c) *Any answer that draws upon empirical effect discussed in the literature. For example, level of processing theory, dual-coding theory, spacing effect, or generation effect. Alternatively, one of the classical mnemonic techniques might be described here, eg. Method of loci. The selected method should be explicitly named, well-described and applied (various places in literature: e.g. Groome, p. 125ff, Gilhooley, p. 263/264) [max 2 points]*

## Læring

- **2021**

- (a) Hvordan gjennomføres klassisk betinging, og hva er resultatet?
- (b) Beskriv viktige elementer i operant betinging.
- (c) Hvordan kan kunnskap om klassisk betinging hjelpe oss å forstå visse psykiske lidelser?

*Fasit:*

(a) Den ubetingede stimulus er noe som utløser en naturlig forekommende (ubetinget) respons. I Pavlovs klassiske studie var den ubetingede stimulus mat og den ubetingede respons var salivering. Den betingede stimulus er en opprinnelig nøytral stimulus som gjentatte ganger blir presentert rett før eller samtidig med den ubetingede stimulus. Hvis betingingsprosedyren blir gjennomført riktig, er resultatet at den betingede stimulus alene kan utløse en betinget respons. Den betingede respons er i hovedsak lik den ubetingede respons. I tillegg til å beskrive det ovenstående, som er det oppgaven spør om, er det ikke irrelevant om studenten nevner ting som ekstinksjon, generalisering og annen ordens betinging. En god beskrivelse av prosedyren og resultatet over skal imidlertid være tilstrekkelig til å få full pott. (Stangor & Walinga, 8.1.) [max. 1 point]

(b) Essensen i operant betinging er at organismens adferd blir formet av sine konsekvenser. Det er rimelig å nevne at konsekvenser kan være positiv eller negativ forsterkning, samt positiv eller negativ straff (tabell med gode beskrivelser fins i Stangor & Walinga 8.2). Det bør belønnes hvis studenten har med et eller flere fenomener som forsterkingsskjemaer (reinforcement schedules), shaping eller sekundære forsterkere (secondary reinforcers, også kalt betingede forsterkere eller conditioned reinforcers). (Stangor & Walinga 8.2). [max. 2 points]

(c) Dette vil typisk handle om angstlidelser. Læreboka nevner fobier og PTSD. Ved PTSD er antagelsen at lidelsen kan oppstå når pasienten har lært en sammenheng mellom en traumatiske hendelse og stimuli (f.eks. militære uniformer eller krigens lyder og lukter) som forekom rett før eller samstundes med hendelsen. Dermed, sier hypotesen, kan en angstrespons senere utløses hvis pasienten blir eksponert for, eller bare tenker på, de relevante stimuli. (Stangor & Walinga 8.1). [max 2 points]

- **2022**

- (a) Hvordan foregår klassisk betinging, og hva vil en korrekt gjennomført prosedyre resultere i?
- (b) Beskriv viktige elementer i operant betinging.
- (c) Forklar hva forsterkningsskjemaer er, og gi eksempler på hvordan forskjellige slike skjemaer påvirker adferd.

*Fasit:*

- (a) Den ubetingede stimulus utløser en naturlig forekommende (ubetinget) respons. I Pavlovs klassiske studie var den ubetingede stimulus mat, og den ubetingede respons var salivering. Den betingede stimulus er en opprinnelig nøytral stimulus som gjentatte ganger blir presentert rett før eller samtidig med den ubetingede stimulus. Hvis betingsprosedyren blir gjennomført riktig, er resultatet at den betingede stimulus alene kan utløse en betinget respons. Den betingede respons er i hovedsak lik den ubetingede responsen. I tillegg til å beskrive det ovenstående, som er essensen i det oppgaven spør om, er det ikke irrelevant om studenten nevner ting som ekstinksjon, generalisering og annen ordens betinging. En god beskrivelse av prosedyren og resultatet over skal imidlertid være tilstrekkelig til å få full pott. (Stangor & Walinga, 8.1.) [max 1.5 poeng]
- (b) Essensen i operant betinging er at organismens adferd blir formet av sine konsekvenser. Det er rimelig å nevne at konsekvenser kan være positiv eller negativ forsterkning, samt positiv eller negativ straff (tabell 8.1 i Stangor & Walinga har gode beskrivelser). Det bør belønnes hvis studenten har med ett eller flere fenomener som forsterkningsskjemaer (reinforcement schedules), shaping eller sekundære forsterkere (secondary reinforcers, også kalt betingede forsterkere eller conditioned reinforcers). (Stangor & Walinga 8.2). [max 1.5 poeng]
- (c) Et forsterkningsskjema er en regel som styrer fordelingen av forsterkere. Det enkleste eksemplet vil være en regel som sier at alle responser i en bestemt kategori blir forsterket. Pensum omtaler flere andre forsterkningsskjemaer: Fixed ratio, fixed interval, variable ratio og variable interval. Disse beskrives nærmere i tabell 8.2 hos Stangor & Walinga. (Det fins også mange andre forsterkningsskjemaer enn dem som nevnes i pensum.) I dyreforsøk med fixed interval-skjemaer, ser man typisk en tendens til responsraten går ned umiddelbart etter forsterkningen. Deretter vil responsraten normalt øke igjen etterhvert som tidspunktet for neste forsterkning nærmer seg. (Pensum bemerker at mange leser til eksamen på samme måte.) I et variable interval-skjema vil tidspunktet for forsterkning variere rundt gjennomsnittsintervallet, noe som gjør det umulig å predikere nøyaktig når en forsterker vil forekomme. Et eksempel kan være å sjekke meldinger på mobilen. Hvis forsterkning i form av nye meldinger forekommer gjennomsnittlig hvert 30. minutt, vil det kunne variere hvor lang tid det går mellom hver melding. Intervall-forsterkningskjemaer gir oftest en lav og jevn responsfrekvens. Adferdseffekt av flere forsterkningsskjemaer omtales i Stangor & Walinga,

*del 8.2. (Stangor & Walinga, 8.2) [max 2 poeng]*

## **Oppmerksomhet**

- **2019**

- (a) Kontinuitetsfeil i filmer (ulogiske endringer mellom to påfølgende scener) går ofte ubemerket hen. Hva kalles dette fenomenet i kognitiv psykologi? Beskriv fenomenet på en generell måte og foreslå hvordan det kan studeres i et eksperiment.
- (b) Beskriv «(Perceptual) Load Theory» (Lavie, 2005) og bruk den til å forklare det ovennevnte fenomenet.
- (c) Ved hjelp av Lavies teori, hvordan kan en filmregissør redusere sannsynligheten for at seerne opplever kontinuitetsfeil?

*Fasit:*

*(a) change blindness = the failure to detect changes in the physical aspects of a scene due to not attending the changes (1p); Any good conceptualisation of an experiment, e.g., following the classical experiment by Rensink et al (1997) (1p) (Gilhooly, p.96) [max 2p]*

*(b) Lavie's "load theory", basic idea: the amount of processing of unattended stimuli depends on the difficulty of the processing of the attended stimuli (i.e. "load"; Gilhooly, p.81) – correctly relating the theory to "early" vs "late" attentional selection can be seen as bonus (1p). Thus, "change blindness" occurs since the processing of the attended stimulus is so demanding that the likelihood of detecting the irrelevant stimulus is reduced (1p); [max 2p]*

*(c) any good argumentation, should include sth like "make sure that the focus of attention is overloaded with important information, i.e. demands attentional resources; should be argued on an theoretical level not just by examples (1p). [max 1p]*

- **2020 (hjemmeeksamen)**

- (a) Hvordan kan et fenomen forklare at vi ikke «ser» (bevisst oppfatter) det som er rett fremfor oss?
- (b) Beskriv hvordan fenomenet er blitt studert i et eksperiment.
- (c) Hvordan kan fenomenet påvirke hendelser fra virkeligheten, som for eksempel

bilkjøring?

Fasit:

(a) En god definisjon på *Inattentional blindness* (1 poeng). Bonus for å diskutere at oppmerksomheten er selektiv og at dette gjelder selektiv oppmerksomhet for visuell stimuli (1 poeng).

(b) Simon og Chabris sitt eksperiment eller Mack og Rock sitt eksperiment. Her må hele eksperimentet forklares og studenten må vise at han/hun har skjønt hva resultatene indikerer. For eksempel: "Mack & Rock viste at deltagerne ikke så formene, selv om de stirret rett på dem, fordi de ikke forventet noen former og dermed ikke var forberedt på dem (2 poeng). Bonus for å inkludere objektbasert oppmerksomhet (1 poeng)

(c) Studenten må anvende teorien for å forklare virkelige hendelser (1 poeng).

## Langtidshukommelse

- 2021

(a) Endel Tulving skiller mellom to typer deklarativt minne: Hvilke er disse? Hva er hovedforskjellen mellom de to typene?

(b) Pasienter med bilaterale hippocampuslesjoner, som pasient H.M., er kjent for å ha amnesisyndromet. Hva er de 5 viktigste symptomene?

(c) Definer begrepet «priming». Utform et eksperiment for å sjekke om priming er påvirket hos amnesipasientene.

Fasit:

(a) subtypes: semantic vs episodic memory; semantic = factual knowledge about the world; episodic = autobiographical episodes, events, experiences (Gilhooly, p. 151-154). [clear description awards 0.5p per term = max 1 point]

(b) Five cardinal symptoms: i) Short-term/Working memory, as measured by digit span for example, is intact (e.g., he answers questions). ii) Memory for language, and concepts, is largely intact (e.g., CW knows what a marriage is); iii) There is a severe and lasting anterograde amnesia (e.g., he forgets information his wife just gave him); iv) There will be a retrograde amnesia, (but not complete) – temporally graded loss of memory for events prior to event; v) Skill learning, conditioning and priming will be unaffected (see Gilhooly, p. 144-

149) [each 0.5 points = 2.5 points].

(c) priming definition: “facilitatory effect of previous exposure to a stimulus on the subsequent processing of that stimulus or a related stimulus.” (Gilhooley p. 156). The answer to the second part should include a clear description of any priming paradigm, for example, as the experiment shown in Fig. 5.6. (gilhholey, p. 157) [0.5 points for definition + 1 point for experiment = max 1.5 points]

## Språkproduksjon

- 2019

(a) Navn de minste meningsfulle lydenhetene på et språk. Når er de utviklet?

(b) Definer produktiviteten til menneskelig språk. Hvordan er det oppnådd?

(c) Navngi de fem stadiene av taleproduksjon foreslått av Garett (1985). Hva skjer på Funksjonsnivå?

Fasit:

(a) Phonemes (0.5p) which are acquired during early childhood (0.5p) (Gilhooly, p.367) [max 1 point]

(b) Two aspects: We construct novel sentences when we speak; we do not generally repeat back or ‘parrot’ previous productions. Similarly, we do not rely on stock phrases, or on memory for practised utterances. Instead we create new sentences as and when we need them. (1p) We apply syntactic/morphological rules. One of them is recursion (repeated application of a rule, the same rule can be applied again and again to create a novel utterance) (1p) Bonus if student mentions recursion. (Gilhooly, p.369) [max 2 points]

(c) Conceptual, (functional), positional, phonological and articulation (1p = 0.25 points for all but functional level, which is given in the next question). At the functional level, the syntactic and semantic framework of the sentence is constructed. Or, in other words, there is lexical selection (choose words) and syntactic role attribution (subject, verb, object). [Either of the answers is correct = 1 point]. (Gilhooly, p. 380) [max 2 points].

## Språkforståelse

- 2019 (utsatt eksamen)

- (a) Definer de to (2) hovedutfordringene i (auditiv) språkpersepsjon.
- (b) Språk med alfabetiske skrivesystemene kan deles inn i to grupper basert på dets grafem-til-fonem korrespondanse. Navngi de to gruppene. Ved bruk av «Dual Route»-modellen for lesing (Coltheart, 2001), angi hvilken «leserute» vil bli brukt av nybegynnere i hver språkgruppen.
- (c) Navngi to (2) mulige kandidatord som skal bli aktivert i henhold til Cohort (Marslen-Wilson og Tyler, 1980) og Trace (McClelland & Elman, 1986) modell for ordgjenkjenning, når man hører ordet "cat" (to ord til hver modell).

*Fasit:*

- (a) *Segmentation: a clear definition pointing out that speech is rapid (0.5p) and continuous (0.5p), i.e., there are no gaps/boundaries between words. Invariance/Variability: a clear definition pointing out that speech is variable across speakers (0.5p) and contexts/words. (0.5p) (Gilhooly, p.404-405) [max 2 points]*
- (b) - *Opaque (or orthographically deep) and transparent (or shallow) languages (1p)  
Grapheme-to-phoneme conversion route for reading in transparent (or shallow) languages and lexical route for reading in opaque (or deep) language. (1p) (Gilhooly, p.429, 434) [max 2 points]*
- (c) *Cohort model: the possible candidates are words starting with "c" (sound /k/) and/or "ca", e.g., "cola", "ketchup", "candy", "crack", "camp", "can", "castle", "club", "cash", etc. (0.5p for two correct words); Trace model: the possible candidates are any three-sound related words, e.g., "cap", "mat", "cut", "can", "gat", "pat", "nap", "cash", "bat", "sat", "map", etc. (0.5p for two correct words). (Gilhooly, p.414, 416) [max 1 point].*

## Kognitiv psykologi

- **2019 (utsatt eksamen)**

- (a) Definer begrep «kognisjon» som brukt i psykologi.  
 (b) Hva var den «kognitive revolusjonen»? Hva var det viktigste resultatet?  
 (c) Hva er «dobel dissosiasjon»? Hvordan bidrar det til forståelse av sentrale begreper i kognitiv psykologi?

*Fasit:*

- (a) *Clear definition pointing out the role of internal representation and cognitive operations; examples are not sufficient for full points (Gilhooly, p. 4/5, also p. 14/15) [1p];*
- (b) *Paradigm shift in psychology (triggered by computer development) from behaviourism*

*(negating the relevance of internal processes) to modern cognitive psychology (information processing idea: resulting in emphasising the relevance of internal mental representations/operations and the possibility of studying these (Gilhooly, p.14/15) [2p];*

*(c) Double dissociation allows to demonstrate that two related mental processes are functionally independent of each other. Classically done for lesion studies; Principle finding: lesion in region Y affects function A but not B, while damage in X shows affects in B but not A. Example, Broca vs Wernicke area. Full points, only if added value in addition to single dissociation is pointed out: i.e. single dissociation does not exclude that affected functions builds upon non-affected function (i.e. in difficulty) (Gilhooly, p. 20/21) [max 2p]*

- **2022 (obs! Trolig ikke pensum lenger (2023), spør foreleser)**

(a) Hva er forskjellen mellom grunnet («grounded») og amodal konseptrepresentasjon («representation of concepts»)? Hva er kognisjon forutsatt at den er basert på grunnet representasjon?

(b) Den funksjonelle ekvivalenshypotesen hevder at visuell forestillingsevne («visual imagery») og visuell persepsjon bygger på lignende prosesser. Beskriv en forskningsstudie som indikerer at visuell forestilling og visuell persepsjon faktisk er «lignende».

(c) Beskriv en studie som viser at de to ikke er identiske.

*Fasit:*

*(a) Grounded representations are representations that involve sensory-motor codes; i.e. concepts are represented by sensory information; Amodal representations are representations that are abstract and do not involve any sensory codes; i.e. concepts are represented by symbols unrelated to sensory information. From a grounded rep perspective: Cognition is based on simulation of previous perceptual experience, i.e an re-enactment of perceptual, motor and introspective states acquired during experience of the world (Gilhooly, p.307/308) [max 2 points].*

*(b) any study showing a relation between perceptual distance and imagery-related responses, e.g. mental rotation or mental scanning tasks (various examples can be found in chapter 9 of Gilhooley, p. 312ff) [max 1.5 points].*

*(c) the rabbit-duck illusion study (Gilhooly, p.318) – shows that the image can be “flipped” in perception but not as “imagined” picture [max 1.5 points].*

## **Problemløsning**

- **2019 (utsatt eksamen) (obs! Trolig ikke pensum lenger (2023), spør foreleser)**
  - (a) Hvordan kan trening på et område bidra til utvikling av ekspertise?
  - (b) Hva innebærer ekspertise med henblikk på hukommelsen?
  - (c) Hva vil det si å arbeide “fremover” (forward) og “bakover” (backward) ved problemløsning? Hva gjør novisen og hva gjør eksperten i denne sammenheng?

*Fasit:*

- (a) *Best results require 10 years of intensive and systematic training, guided by a plan, and with the help of a teacher or trainer. Feedback is important. Strong motivation is needed.* (Gilhooly et al., pp. 282-283; Groome & Eysenck, pp. 319-321) [max 1.5 points]
- (b) *More efficient use of memory within the domain of expertise (without better memory outside the domain). A little extra bonus if the candidate mentions chunking, and the point that much expertise seems to be procedurally based. The expert seems able to recognize thousands of relevant patterns that can tell him/her much about how a task should be solved and what the solution is.* (Gilhooly et al., pp. 282-283; Groome & Eysenck, pp. 320-321, 333) [max 2 points]
- c) *To solve a task, the expert typically works "forward" from the starting point toward the goal state, because the expert is able to "see" promising paths towards the goal. The novice will typically work "backwards" from general principles, because he/she does not have sufficient relevant specialist knowledge.* (Gilhooly et al., pp. 282-283) [1.5 points]

## Annet (kategori ikke oppgitt på eksamensoppgaven)

- **2020 - hjemmeeksamen**

Hva har lesjonsstudier (inkludert studier på amnesipasienter) lært oss om hvordan hukommelsen er organisert? Beskriv og diskuter.

*Fasit:*

1. *Time-perspective: Separate memory stores for retaining information over a short versus long period of time. Lesions to the medial temporal lobe impairs long-term (episodic declarative) memory but spares working memory. Here the students might mention the double dissociation of function in patients with amnesia syndrome (intact short-term memory, but deficient long-term memory) and patients such as KF (mentioned in lecture on working memory - with intact long-term memory, but deficient short-term memory). It is not required to mention the anatomical areas responsible for working memory. Bonus if the student mentions and describes the*

*temporal gradient of retrograde amnesia - the fact that the retrograde amnesia after lesions to the medial temporal lobes usually does not impair memories for more than a few years back in time.*

*2. We have different memory systems for different groups of memory processes and they have different anatomical substrates. Amnesic patients have impaired episodic declarative memory, but intact non-declarative memory. This illustrates that long-term memory consists of at least two subsystems; declarative and non-declarative memory, and that the medial temporal lobes are crucial for episodic declarative memory, but not for non-declarative memory. The semantic memory (memories for facts and concepts, including language) of amnesic patients, is relatively unaffected, supporting the distinction within declarative memory between semantic and episodic memory. Relevant examples to mention (the student should mention at least one example to get a full score): The case of H.M: amnesia for events (episodic memory) but no memory impairment in non-declarative memory. H.M. could learn new skills, such as "Mirror drawing". The case of C.W.: Can play the piano (intact non-declarative memory), and knows what a wedding is (at least partly intact semantic memory), but does not remember what his wife tells him for longer than a few seconds (impaired episodic memory). The case of E.P.: Intact short-term memory and memory for skills, but impaired memory for both facts and events (i.e. impaired performance on 5 verbal and non-verbal tests). The case of E.P. is thus slightly different from the other cases, in that not only episodic, but also semantic memory was impaired. It is briefly discussed in chapter 5 that the reason why memory for language and concepts is spared in many amnesic patients might be that this knowledge is laid down early in life. The debate about whether semantic memory is affected by damage to the medial temporal lobes or not was also mentioned in the lecture on long-term memory. Mentioning this debate/ whether semantic memory is impaired or not is not required to get a full score.*

- **2020 - hjemmekesamen (obs! ikke pensum i 2023)**

Hvilke medikamenter kan sies å forbedre kognitive prestasjoner, og hvordan?

*Fasit:*

*The question is based primarily on chapter 10, up to the part on circadian rhythms and hormone effects. Students should mention coffee/caffeine and nicotine (one point). Extra points for knowing the receptors these drugs act on. Extra point for mentioning the cognitive enhancer modafinil. Bonus for knowing which types of cognitive performance measures are sensitive to effects of different drugs.*