Exam PSY1300/PSYC1230, v21

Norsk versjon

Bare tre (3) av de følgende fire oppgaver skal besvares. Hold svarene korte! Svarene kan avgis på norsk, engelsk, svensk eller dansk.

Oppgave 1 – Læring ved betinging: (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?

Oppgave 2 – Sensorisk og arbeidsminne: (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?

Oppgave 3 – Langtidshukommelse: (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.

Oppgave 4 – Koding og gjenhenting av minne. (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 minneytelse?'

English version

Only three (3) of the following four questions have to be answered. Keep the answers brief! The answers can be given in English, Norwegian, Swedish, or Danish.

Question 1 – Learning by conditioning: (a) How is classical conditioning carried out, and what is the result? (b) Describe central elements of operant conditioning. (c) How can knowledge of classical conditioning help us understand certain mental disorders?

Question 2 – Sensory and working memory: (a) What is sensory memory/registry? (b) Describe Sperling's experiment and its major findings. (c) How is verbal auditory (phonological) information from sensory memory (echoic memory) utilised in working memory according to Baddeley's model?

Question 3 – Long-term memory: (a) Endel Tulving distinguishes two types of declarative memory: Which are these? What is the main difference between the two types?; (b) Patients with bilateral hippocampus lesions, like patient H.M., are famous for showing a clear amnestic syndrome. What are its 5 major symptoms? (c) Define the term "priming". Design an experiment to check whether priming is affected in amnesia patients.

Question 4 – Memory encoding and retrieval. (a) Memory techniques (mnemonics) provide a fixed structure (i.e., the locations in the Method of Loci) for remembering stimuli. Why is this important? (b) Explain "context-dependent" and "state-dependent" effects during memory retrieval and give one example for each of the two; (c) How can one use these effects to enhance memory performance?

Exam PSY1300/PSYC1230, v21, grading instructions

The grading instructions are formulated for graders with good background knowledge in cognitive psychology. Accordingly, the instructions only highlight the key aspects, which should be discussed in an ideal answer to the given question. The provided instruction should not be seen as examples of ideal answers to the questions.

1. General grading instruction

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.

Cautious note: The exam will allow students to use the textbook, so please be aware of potential plagiarism. These answers should be counted as 0 points. Please contact me (rene.westerhausen@psykologi.uio.no) if you have any questions or notice any irregularities during grading. For example, in the past it has occurred that one question was too difficult, i.e. no candidate got 5 points in this question. In this case, as all the questions should be of approximately the same difficulty, the grading was adjusted accordingly (i.e., the question was weighted when summing up the total score). I encourage to use an excel table to track the

points per question across all candidates. If you do so, please feel free to share it with me after grading so that I can assess difficulty of the questions and systematic inter-grader differences etc to be able to improve the objectivity of the instruction.

References:

- Gilhooly, K., Lyddy, F. and Pollick, F. (2014). *Cognitive Psychology*. London: McGraw Hill. ISBN13-9780077122669;
- Groome & Eysenck (2016). An introduction to applied cognitive psychology (2nd edition). Psychology Press.

2. Questions and key points

2.1 Question 1 – Learning by conditioning: (a) How is classical conditioning carried out, and what is the result? (b) Describe central elements of operant conditioning. (c) How can knowledge of classical conditioning help us understand certain mental disorders?

(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 forsterkningsskjemaer (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 traumatisk 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]**

2.2 Question 2 - Sensory and working memory: (a) What is sensory memory/registry? (b) Describe Sperling's experiment and its major findings. (c) How is verbal auditory (phonological) information from sensory memory (echoic memory) utilised in working memory according to Baddeley's model?

(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 in 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 indicateded as "i" to "iii" need to be mentioned to yield full points here. (Gilhooly, p. 125-128) **[max 2 points]**

2.3 Question 3 – Long-term memory systems: (a) Endel Tulving distinguishes two types of declarative memory: Which are these? What is the main difference between the two types?; (b) Patients with bilateral hippocampus lesions, like patient H.M., are famous for showing a clear amnestic syndrome. What are its 5 major symptoms? (c) Define the term "priming". Design an experiment to check whether priming is affected in amnesia patients.

(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]**

2.4 Question 4 - Memory encoding and retrieval. (a) Memory techniques (mnemonics) provide a fixed structure (i.e., the locations in the Method of loci) for remembering stimuli. Why is this important? (b) Explain "context-dependent" and "state-dependent" effects during memory retrieval and give one example for each of the two; (c) How can one use these effects to enhance memory performance?

(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].**