Eksamen PSY2300, v19 utsatt

Norsk versjon

Bare tre (3) av de følgende fire (4) oppgaver skal besvares. Hold svarene korte! Svarene kan avgis på norsk, engelsk, svensk eller dansk.

Oppgave 1 – Oppmerksomhet: (a) Beskriv kort den vanlige fremgangsmåten og et typisk funn for et «dual-task» testparadigme. Gi ett eksempel. (b) Beskriv Kahnemans ressurs-teori om oppmerksomhet (engelsk: «resource theory») og relater denne til Wickens «multiple-resource model». (c) «Det er et problem å være på telefonen mens du kjører.» Diskuter denne uttalelsen basert på «resource theory» og «multiple-resource model».

Oppgave 2 –Arbeidsminne: (a) Hva er rollen til den «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 postulerte det "magiske nummer syv" på 1950-tallet. Hva refererte han til? Hvordan er det relatert til ordlengdeeffekten?

Oppgave 3 - Læring: (a) Beskriv «method of loci»-mnemonic-strategien (f. eks. for å huske en handleliste). (b) Forklar hvorfor «Loci-metoden» forbedrer minnet (bruk en passende teori eller modell fra kognitiv psykologi). (c) En venn spør deg om råd angående en «lærevanske» han har. Han rapporterer at han ikke har noen problemer med å gjenhente nylig lært informasjon når han er hjemme (stedet hvor han vanligvis leser pensum), mens han har alvorlige vanskeligheter med å gjenhente den samme informasjonen i eksamenslokalet. Hva kalles dette hukommelsesfenomenet? Hvordan kan han forbedre sin minneytelse når han er i eksamenslokalet?

Oppgave 4 - Representasjon av kunnskap: (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 («functional equivalence hypothesis») 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.

English version

Only three (3) of the following four (4) questions have to be answered. Keep the answers brief! The answers can be given in English, Norwegian, Swedish, or Danish.

Question 1 – Attention. (a) Briefly describe the principle approach and typical finding of "dual-task" paradigms. Provide one example. (b) Describe the "resource theory" of attention as suggested by Kahneman, and relate it to the "multiple-resource model" suggested by Wickens. (c) "It is a problem to be on the phone while driving a car", discuss this statement based on the "resource theory" and the "multiple-resource model".

Question 2 – Working memory: (a) What is the role of the "phonological loop (PL)" within Baddeley's working-memory model? What are the subcomponents of the PL? (b) Describe the "irrelevant-speech effect" and the "word-length effect". What do these effects demonstrate? (c) George A. Miller postulated the "magical number seven" in the 1950s. What did he refer to? How does it relate to the word-length effect?

Question 3 - Learning: (a) Describe the "method of loci" mnemonic strategy (e.g., for encoding a shopping list). (b) Explain why the "method of loci" improves memory (use an appropriate theory or model from cognitive psychology). (c) A friend seeks your advice with his "learning difficulties". He reports to have no difficulties in retrieving newly learned information when at home (the place where he is usually revising), while he has severe difficulties retrieving this information when in the examination room. What is this memory phenomenon called? How could he improve his memory performance when in the exam-room?

Question 4 –Representation of knowledge: (a) What is the differences between grounded and amodal representation of concepts? What is "cognition" assuming it is based on grounded representation? (b) The "functional equivalence hypothesis" claims that visual imagery and visual perception rely on comparable processes. Describe an experiment that indicates that visual imagery and visual perception are indeed "comparable". (c) Describe an experiment which shows that they are not identical.

Exam PSY2300, v19 utsatt, grading instructions

The grading instructions are formulated for graders with a background 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 example of ideal answers to the questions.

1. General grading instruction

Only 3 of 4 questions listed below 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: 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). Also, 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:

- All questions refer to the textbook Gilhooly, K., Lyddy, F. and Pollick, F. (2014). *Cognitive Psychology*. London: McGraw Hill. ISBN13-9780077122669;

2. Questions and key points

2.1 Question 1

- **Attention -** (a) Briefly describe the principle approach and typical finding of "dual-task" paradigms. Provide one example. (b) Describe the "resource theory" of attention as suggested by Kahneman, and relate it to the "multiple-resource model" suggested by Wicken's. (c) "It is a problem to be on the phone while driving a car", discuss this statement based on the "resource theory" and the "multiple-resource model".

Key points to be addressed in answer:

(a) With a dual-task paradigm task performance is measured on each task by itself and for when both tasks are performed simultaneously. Typically performance is lower when performing both tasks simultaneously ("interference" aspect should come out) (1p); Any example would do if following the general idea (1p); **[max 2 p]**

(b) Kahneman (1973) treats attention as a limited resource to distribute (available capacity). Several activities can be attended at the same time (distributed attention), provided that total demand does not exceed the available capacity (1p) ; Wickens suggests multiple resources and only interference if task within the same "resource" type (1p); **[max 2 p]**

(c) Applying the theory: contradicting predictions between Kahneman (=should interfere since attention is one resource) and Wickens (=should not interfere that much since two different resources auditory/phone and mostly "visual" driving) (p.81-85) **[1p]**

2.2 Question 2

- ***Working memory*** (a) What is the role of the "phonological loop (PL)" within Baddeley's working-memory model? What are the subcomponents of the PL? (b) Describe the "irrelevant-speech effect" and the "word-length effect". What do these effects demonstrate? (c) George A. Miller postulated the "magical number seven" in the 1950s. What did he refer to? How does it relate to the word-length effect?

Key points to be addressed in answer:

(a) Pl 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 effect 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(±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 work out = **1 point**

2.3 Question 3

- **Learning:** (a) Describe the "method of loci" mnemonic strategy (e.g., for encoding a shopping list). (b) Explain why the "method of loci" improves memory (use an appropriate theory or model from cognitive psychology). (c) A friend seeks your advice with his "learning difficulties". He reports to have no difficulties in retrieving newly learned information when at home (the place where he is usually revising), while he has severe difficulties retrieving this information when in the examination room. What is this memory phenomenon called? How could he improve his memory performance when in the exam-room?

Key points to be addressed in answer:

(a) familiar route is imagined and images of the items to be recalled are linked to landmarks along this route (s. p. 182), **1p**.

(b) Paivio's "dual coding account" or Tuling & Craik's "level of processing theory" could be used, maybe others. E.g., Paivio: MoL forces to verbally and visually (imagine) encode the to be learned items; Paivios has shown that such dual encoding improves memory compared to "unimodal" verbal encoding (like a shopping list) (**max 2p** for theory and application);

(c) Encoding-specificity principle: = Retrieval is enhanced when the cues available (during retrieval) match the features present/stored during encoding OR (more specific) context-dependent retrieval = better recall performance in same environment (either gives 1p). Any acceptable idea, but ideally imagining the exam hall during encoding OR imagining the encoding environment during exam (1p). **[max 2p]**

2.4 Question 4

- **Representation of knowledge**: (a) What is the differences between grounded and amodal representation of concepts? What is "cognition" assuming it is based on grounded representation? (b) The "functional equivalence hypothesis" claims that visual imagery and visual perception rely on comparable processes. Describe an experiment that indicates that visual imagery and visual perception are indeed "comparable". (c) Describe an experiment which shows that they are not identical.

Key points to be addressed in answer:

(a) Amodal: representations that are abstract and do not involve any sensory codes; i.e. concepts are represented by "symbols" unrelated to sensory information; Grounded representations are representations that involve sensory-motor codes; i.e. concepts are

represented by sensory information (1p). Cognition is based on simulation of previous perceptual experience. That is, the re-enactment of perceptual, motor and introspective states acquired during experience of the world (1p, if re-enactment or simulation mentioned) **[max 2 p.]**;

(b) mental rotation response time is proportional to "degree of rotation" required (p. 226); or scanning mental image of a map takes longer the further objects away from starting point on map (p. 224-225). " (max **1.5p** for good description of one of the studies);

(c) "Duck/rabbit experiment"; while perceptual process allow to alternate between two perceptual states of the same image, this is not possible on the mental representation (**1.5p** for description of idea and study)