# Exam PSY1300/PSYC1230, v19 (utsatt), 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,
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> 5-6.99 pts  = E,
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> 7-8.99 pts = D,
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> 9-11.99 pts = C,
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> 12-13.99 pts = B,
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> 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). 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

- ***Cognitive Psychology***: (a) Define the term "cognition" as used in psychology. (b) What was the "cognitive revolution"? What was its major result? (c) What is "double dissociation"? How does it contribute to our understanding of central concepts in cognitive psychology?

*Key points to be addressed in answer:*

(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]**

### 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 effect demonstrate? (c) George A. Miller in the 1950s postulated the "magical number seven". 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 base don 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

- **Language comprehension:** (a) Define the two (2) major challenges in (auditory) speech perception; (b) Languages with the alphabetic writing systems can be divided into two groups based on their grapheme-to-phoneme correspondence. Name the two groups. Using the Dual Route model of reading (Coltheart, 2001), indicate which "reading route" would be used by novices of each language group. (c) Name two (2) possible candidate words that would be activated according to the Cohort (Marslen-Wilson and Tyler, 1980) and the Trace (McClelland & Elman, 1986) model of word recognition, when hearing the word "cat" (two words for each model).

*Key points to be addressed in answer:*

(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].**

### 2.4 Question 4

- *Problem solving.* (a) How can training within a domain contribute to the development of expertise? (b) What does expertise entail with regard to memory? (c) What does it mean to work "forward" and "backward" when solving problems? What does the novice do and what does the expert do in this respect?

*Key points to be addressed in answer:*

(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]**