

GENERAL INSTRUCTION FOR THE EXAM

Written Exam Perceptual-Motor Learning

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Monday, 15th December 2014

1. On EACH response sheet, write your NAME and STUDENT NUMBER
2. The exam consists of 9 questions, most of which consist of several sub-questions. Read the questions carefully. Notice, you will often be asked to provide an explanation of why you gave the answer you did, don't forget to do so!
3. Answer the questions as clearly and concisely ('beknopt') as possible. Only answer the question, irrelevant digressions may lead to a subtraction of points.
4. For each question, the number of points that will be awarded for a correct answer is given between brackets.
5. The exam starts at 12.00 am and ends at 14.45 pm.
6. The exam hall cannot be left before 12.30 am.
7. The correct answers will be provided on Blackboard after the exam.
8. Good luck!!

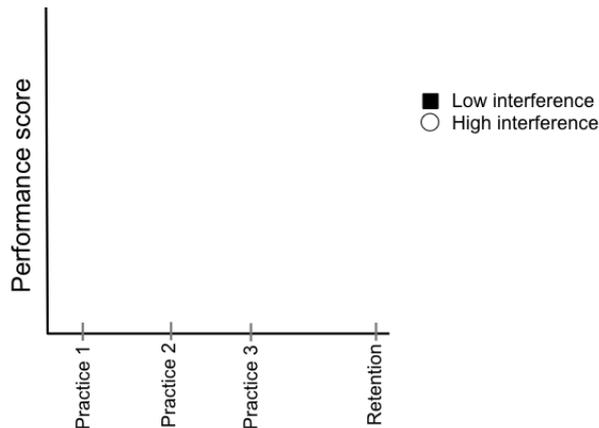
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PS. Enjoy your holidays, but do not forget to submit your Essay and Evaluation report!

Question 1

One conclusion from research that addresses contextual interference is that "performance during practice is an imperfect indicator of learning."

- a) Copy the figure below on your answer sheet, and complete it such that it illustrates the typical results of research comparing high and low contextual interference for learning three different tasks. In the figure you must indicate performance scores for three practice blocks and performance scores for the retention test for the high (circles) and low (squares) contextual interference conditions. (You can depict the average performance scores across task, if necessary) **(5)**



- b) In the case of learning three tasks, how would practice in the high and low interference conditions be scheduled? **(5)**
- c) There are two hypotheses that explain the contextual interference effect. Name and describe one of them. **(5)**

Question 2

Research studies (e.g., Janelle et al., 1997; Ste-Marie et al., 2013) demonstrate that self-controlled feedback groups show enhanced learning compared to so-called yoked groups.

- a) Describe how self-controlled feedback groups differ from yoked groups in terms of the scheduling of feedback. **(5)**
- b) How do Ste-Marie et al. (2013) explain the enhanced learning effects for self-controlled feedback? **(5)**

(see next page)

Question 3

A field-hockey coach hesitates about the nature of the instruction she would give for performing a drag flick ('sleppush' in Dutch, see figure) penalty corner. She can either direct the players' attention to the incoming ball; the positioning of their feet; the way the stick is moved toward the ball; or to the opponent's goalkeeper.

According to the common-coding approach (e.g., Wulf & Prinz, 2001), to which of these aspects can the trainer best direct attention for learning to perform the drag flick? Explain your answer. **(10)**

Question 4

Descartes argued that perception and action are incommensurable, that is, the sensory and motor systems use fundamentally different codes. This creates the problem of how the sensory codes are transformed into motor codes. To solve this problem, Descartes postulated that the pineal gland act as an interpreter. Both the common coding approach and the ecological approach propose an alternative way to solve the incommensurability between perception and action.

Describe how the common coding approach and the ecological approach solve the problem of incommensurability between perception and action. In your answer, you must also explain whether these solutions reflect a representational and/or anti-representational theory. **(10 + 5 bonus for a correct answer)**

Question 5

The ecological approach to perception and action distinguishes two processes of learning after a (rudimentary) control law has been formed.

- a) Name and describe these two remaining processes of change. In your answer, also refer to the control law. **(5)**
- b) *Quiet eye is a phenomenon that refers to the final gaze fixation before the onset of the movement. For example, the final gaze to the ball before the swing of the club is initiated in golf putting. High skilled players typically show longer quiet eye durations than low skilled players.*

In terms of the law of control, what learning process must be induced among low skilled players to improve their performance? Explain your answer. **(10)**

(see next page)

Question 6

Within Willingham's (1999) control-based learning theory (COBALT) three control principles can be distinguished, one of which is the principle of neurological separability.

- a) Describe the principle of neurological separability, and provide an example. **(5)**
- b) *Milner and Goodale (1995, 2008) propose that two functionally separate visual systems exist. Researchers investigating the two-visual system hypothesis often make use of visual illusions.*

Explain why visual illusions are used in these investigations, and name the control principle (as distinguished in COBALT) on which this work sheds light. **(5)**

Question 7

To induce implicit learning researchers use dual tasking.

- a) Explain how dual tasking promotes implicit learning. **(5)**
- b) *Using an errorless practice protocol, Zhu, Poolton, Wilson, Maxwell and Masters (2011, Study 2) show that neural co-activation can serve as a yardstick (i.e., an indicator) for implicit learning.*

Would they also have been able to show this if they had used a dual task to induce implicit learning? Explain your answer. **(5)**

Question 8

Zhu, Poolton, Wilson, Maxwell and Masters (2011, Study 2) used an errorless learning protocol to practice participants' golf putting. They did so by gradually increasing the distance to the hole. Consequently, participants made few errors, especially early in practice. From a dynamic systems approach, the learning that occurs can be described as a change of the potential landscape (or attractor layout) that represents a participant's intrinsic dynamics.

Describe the change(s) that occur(s) in the potential landscape (or attractor layout) of the intrinsic dynamics of a participant who follows the errorless learning protocol of Zhu et al. (2011). Explain your answer. **(10)**

Question 9

The non-linear pedagogy or constraint-led approach identifies three categories of constraints that set the boundaries within which co-ordination arises. These categories were first identified by Newell (1986).

- a) Name the three categories of constraints. **(5)**
- b) According to the non-linear pedagogy approach, which of these categories of constraints is most suitable for a teacher, trainer or therapist to manipulate? Give one example for such a manipulation. **(5)**

(End)