

Makkelijker kunnen we het niet maken, wel leuker

Het effect van zelfstudie dmv e-learning op het kennisniveau bij werkcolleges.

Self study assignment 3
Part 1: Effect of receptor activation

When working with neuropharmacological concepts it is essential to be aware of the type of receptor that is targeted, the subsequent (intracellular) process that is activated and how this relates to neuronal activity. This, in combination with the localisation of the specific receptor, allows you to reason how a compound acting on that receptor with affect a neural network.

Neurotransmitters & Receptors

Neurotransmitters are chemicals that directly or indirectly affect neuronal activity. They can be classified into two main groups: **ionotropic** and **metabotropic**.

- Ionotropic receptors:** These receptors are directly coupled to ion channels. When a neurotransmitter binds to the receptor, it causes the channel to open, allowing ions to flow across the membrane. This leads to a rapid change in the membrane potential, which can result in the generation of an action potential.
- Metabotropic receptors:** These receptors are indirectly coupled to ion channels. They activate a G-protein, which then activates a second messenger system. This system can lead to the opening or closing of ion channels, resulting in a slower and more prolonged effect.

Self study assignment 3
Part 1: Effect of receptor activation within the CNS

The cellular effect of receptor activation, and its subsequent effect on neuronal activity, depends on the type of receptor and the intracellular pathway(s) that are activated upon ligand-receptor binding.

In general the neurotransmitter receptors can be subdivided in two types: ion channel-coupled receptors and G-protein coupled receptors (see picture below).

In the next slide you will see a filmclip in which these different mechanisms are explained and an overview is given of different receptor types for each neurotransmitter.

Self study assignment 3
Question 2

Open the schemes on the serotonin system from workshop 1 and answer the following questions.

What are the effects of the following compounds on the activity of the postsynaptic neuron, explain your answer:

- 5-HT₄ receptor agonist tegaserod
- biased 5-HT_{1A} receptor agonist F15599 (preferentially activates postsynaptic 5-HT_{1A} receptors)
- 5-HT₃ receptor antagonist ondansetron
- biased 5-HT_{1A} receptor agonist F13714 (preferentially activates presynaptic 5-HT_{1A} receptors)
- tryptophan hydrolase inhibitor PCPA

Model antwoord

Z Hoorcollege immuno

Z Hoorcollege neuro

Z Werkcollege immuno 1

Z Werkcollege neuro 1

Z Werkcollege immuno 2

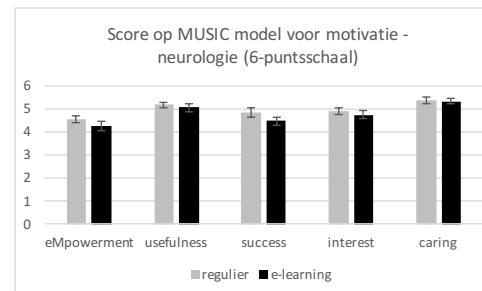
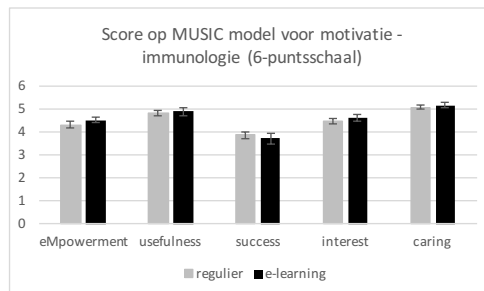
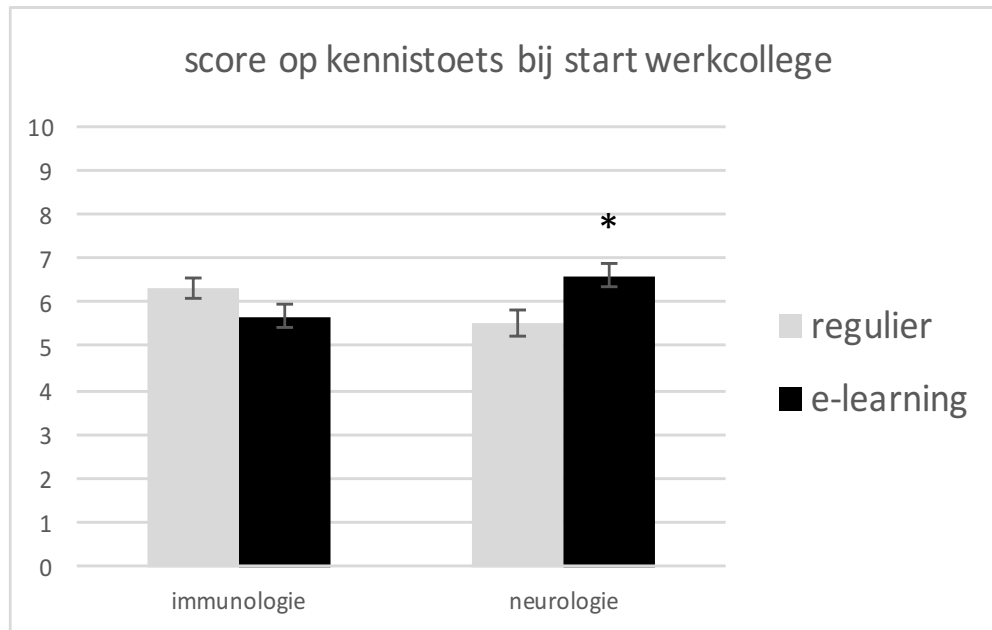
E Werkcollege neuro 2

E Werkcollege immuno 3

Z Werkcollege neuro 3

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Resultaten



Lessen uit de focusgroep:

- Groot verschil tussen immunologie en neurologie in behoefte aan e-learning.
- Meer studenten gingen voorbereiden.
- Meer studenten namen deel aan discussie, niet per se betere discussie.
- E-learning geen vervanging van boek.
- Fijne tools:
 - Video's, met name hand-written tutorials
 - Vragen + modelantwoorden