

‘U krijgt van mij een pijnstiller
of een onwerkzame stof, dat kan ik
u niet vertellen’

Dokter denkt: Nieuw middel testen in DB RCT

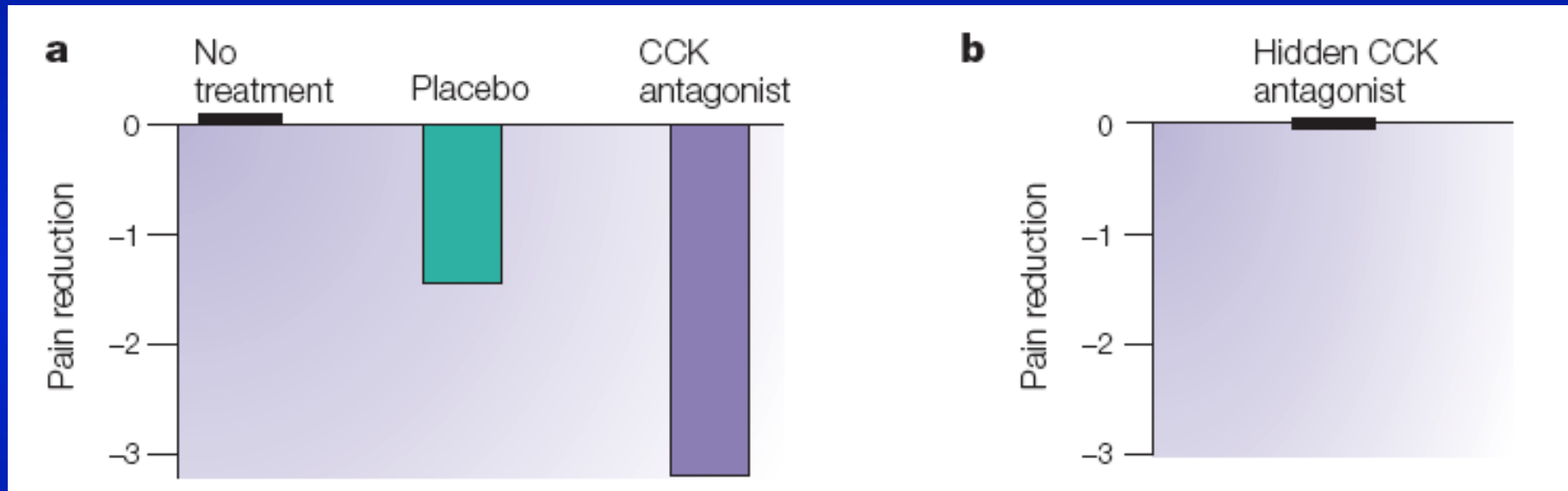
Proglumide trial 1995

DB RCT-3 armen: Informed pt

Placebos and painkillers:
is mind as real as matter?

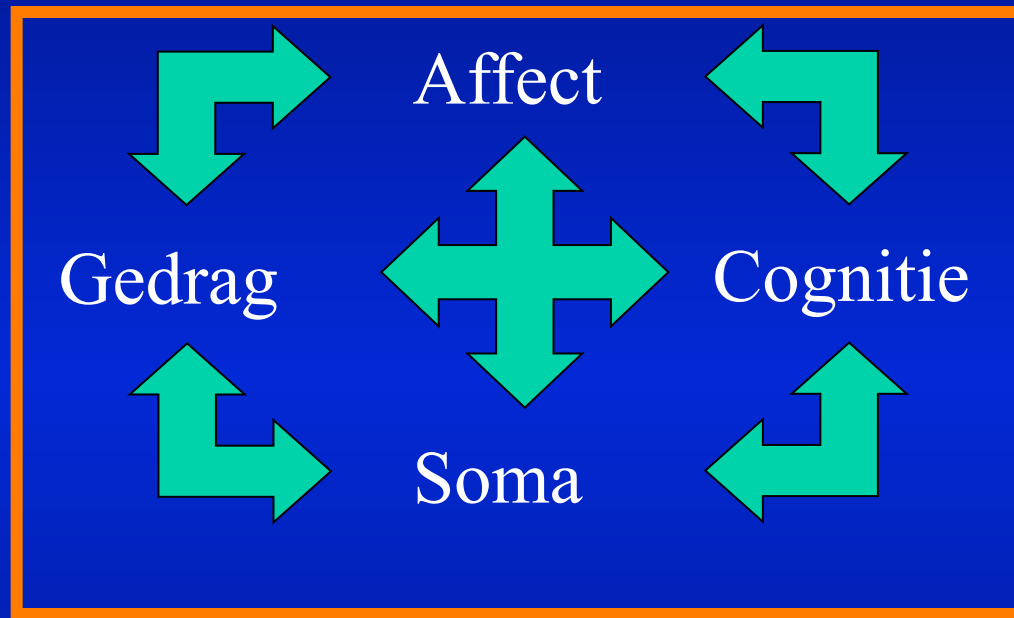
Luana Colloca and Fabrizio Benedetti

NATURE REVIEWS | NEUROSCIENCE VOLUME 6 | JULY 2005 | 545



‘Stiekumme’ toediening

Patiënt denkt: ik hoop/verwacht dat ik de werkzame stof heb!



Patiënt denkt: ik hoop dat ik de werkzame stof heb!

Raclopride verdringing door dopamine

Expectation and Dopamine Release: Mechanism of the Placebo Effect in Parkinson's Disease

Raúl de la Fuente-Fernández,¹ Thomas J. Ruth,
Michael Schulzer,¹ Donald B. Calne,¹ A. Jo

The power of placebos has long been recognized for medical conditions such as Parkinson's disease (PD). Little about the mechanism underlying the placebo effect. Using endogenous dopamine to compete for [¹¹C]raclopride binding positron emission tomography, we provide in vivo evidence of release of endogenous dopamine in the striatum of PD patients on placebo. Our findings indicate that the placebo effect in PD is mediated through activation of the damaged nigrostriatal pathway.

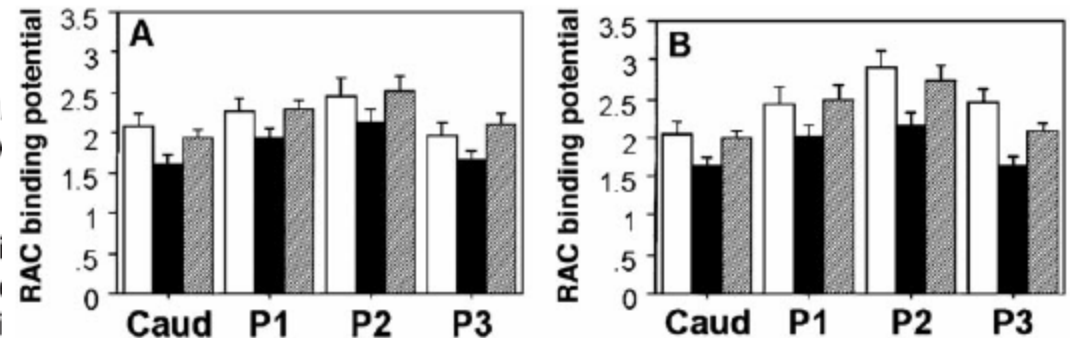
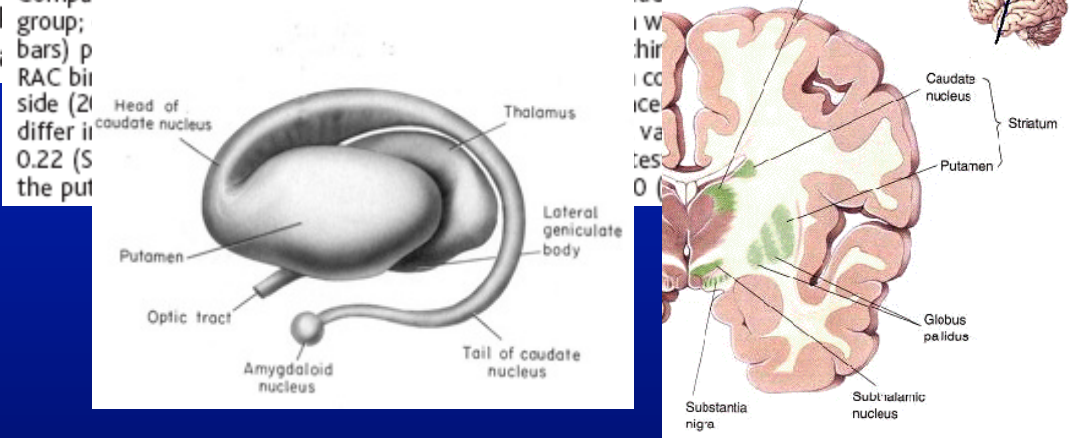
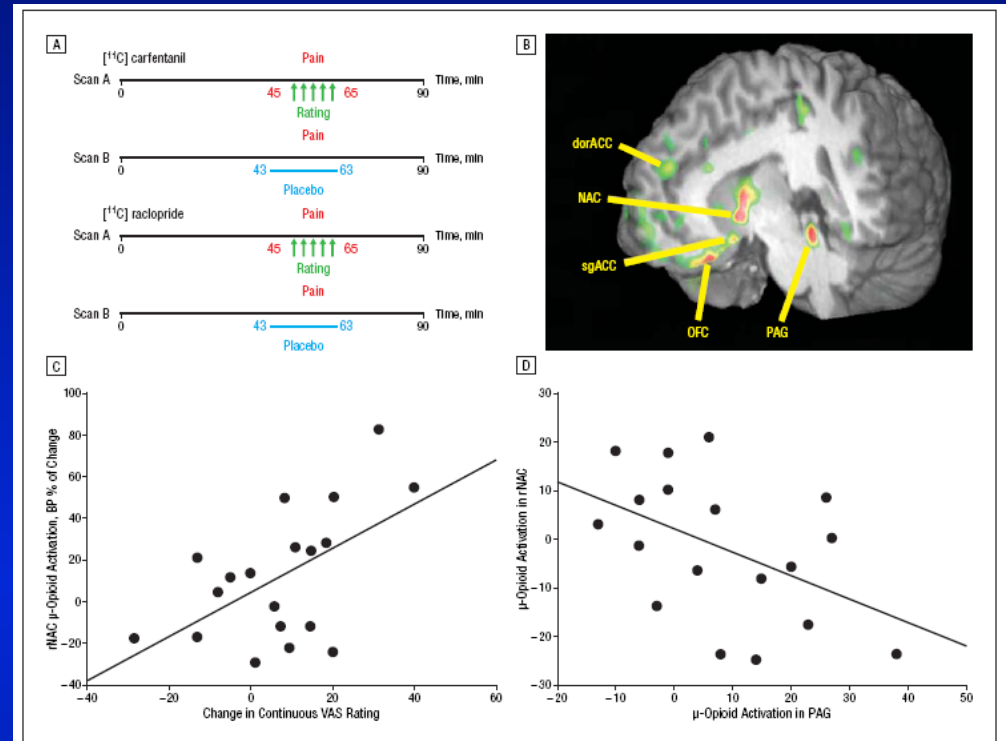
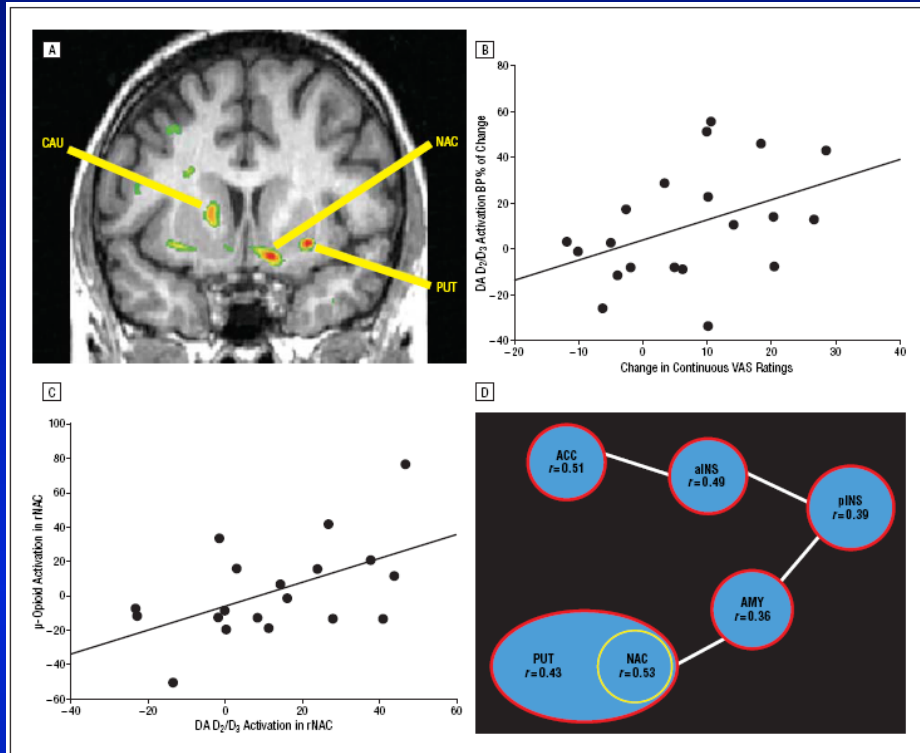


Fig. 1. Placebo-induced changes in RAC binding potential in the striatum ipsilateral (A) and contralateral (B) to the more affected body side of patients with PD. The ROIs are on the head of the caudate nucleus (Caud) and on the putamen, from P1 to P3. Comparisons were made between the group of patients studied and the group of healthy controls.



DB CT analgeticum

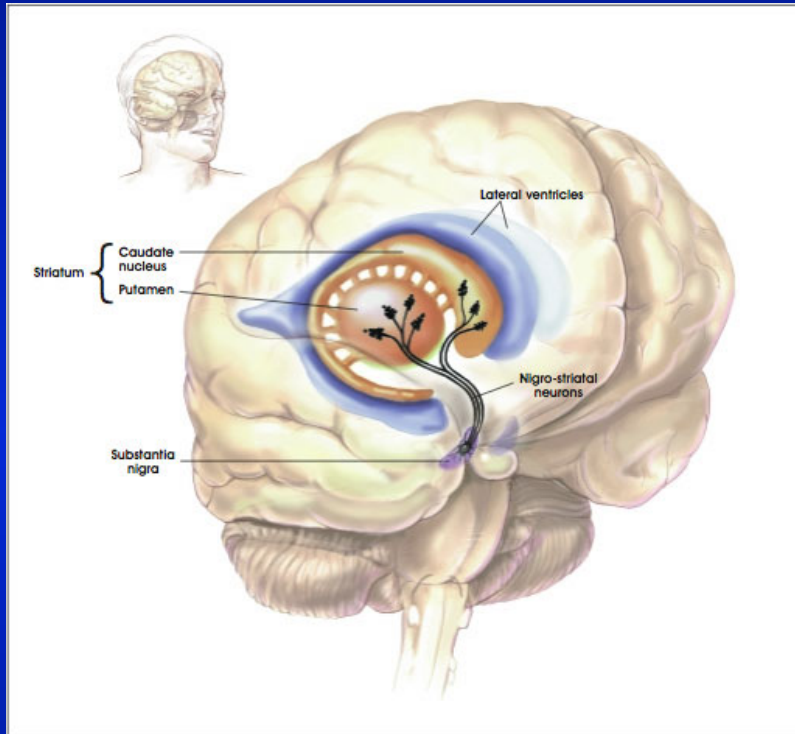


De positieve verwachting activeert
dopamine

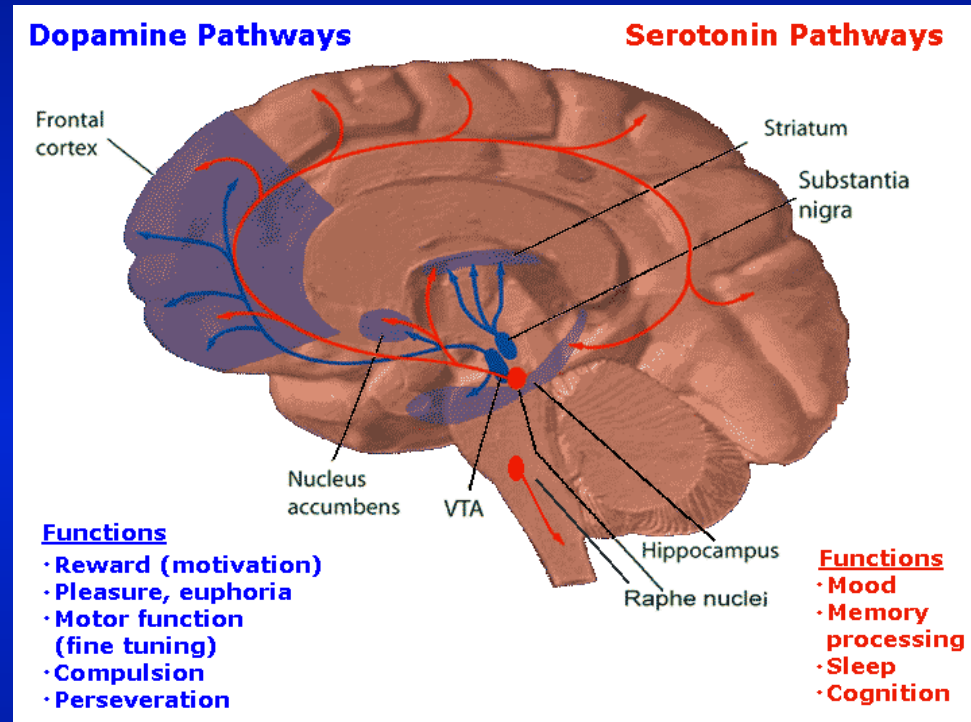
en

endogene opioide banen

Placebo effect door positieve verwachting



Tonische activatie
nigro-striatale dopaminerge
neuronen



PFC Nacc PAG

Placebo effect door positieve verwachting

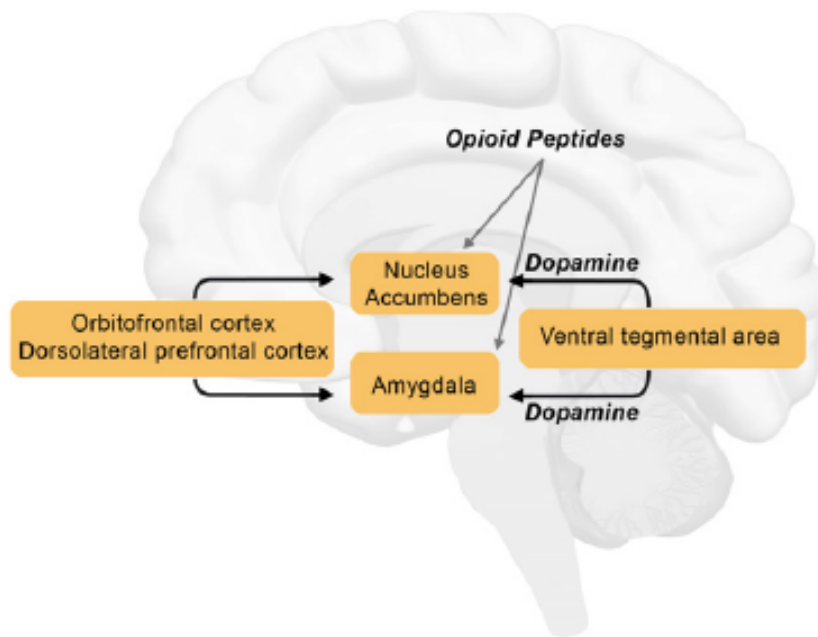
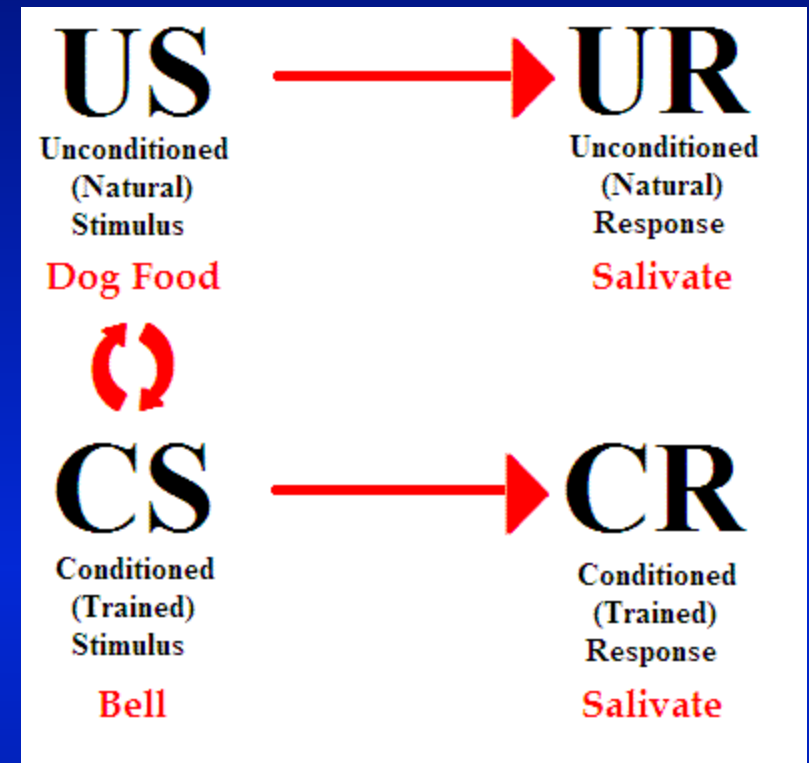
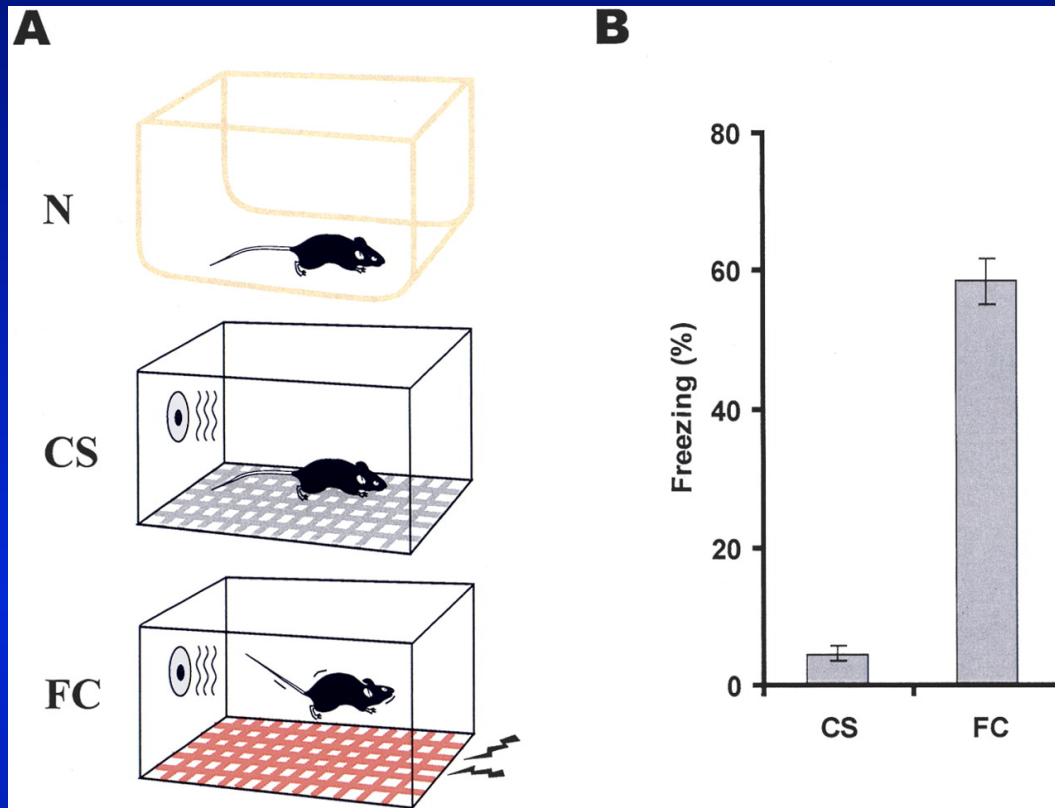


Figure 1. Simplified Scheme of the Reward System

Placebo administration has been found to activate both dopamine and endogenous opioid peptides in the nucleus accumbens, thus suggesting an involvement of reward mechanisms in some types of placebo effects (de la Fuente Fernández et al., 2001; Scott et al., 2008). Note: the main propose of this sketch is to focus on neural substrates of the reward system in the context of the placebo response which, in this case, takes precedence over anatomical accuracy.

Verbaal verwachting wekken
Opioide bijwerkingen
Te remmen door naloxon



Placebo effect door associatief leren (Pavlovianse conditionering)

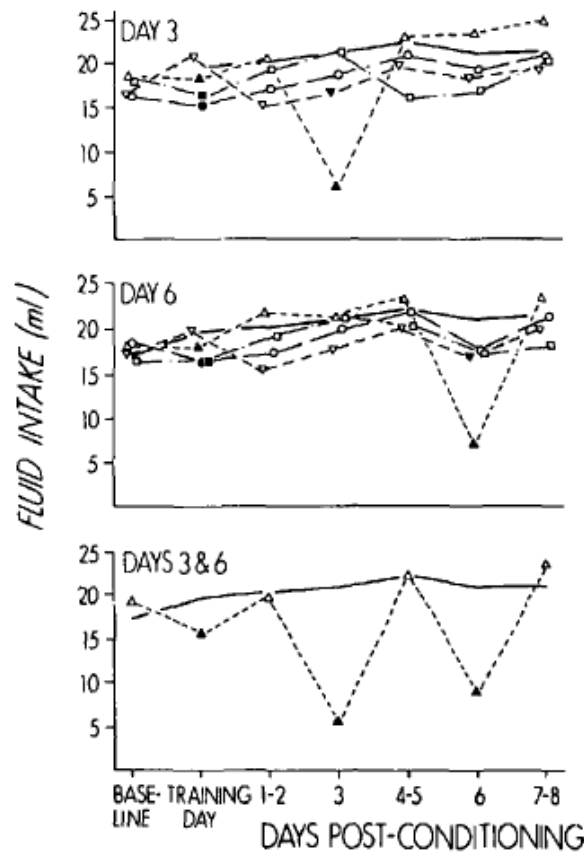


Fig. 1. Mean intake of plain water (open symbols) and saccharin (filled symbols) for placebo (—) and nonconditioned (▼) animals, and conditioned animals that received saccharin (Δ), cyclophosphamide (□), or neither (○) on Day 3, Day 6, or Days 3 and 6. As a point of reference, the placebo-treated animals are shown in each panel.

It was also observed that some of the cyclophosphamide-treated animals died and that mortality rate tended to vary directly with the volume of saccharin originally consumed.

Behaviorally Conditioned Immunosuppression

ROBERT ADER, PHD AND NICHOLAS COHEN, PHD

Psychosomatic Medicine Vol. 37, No. 4 (July-August 1975)

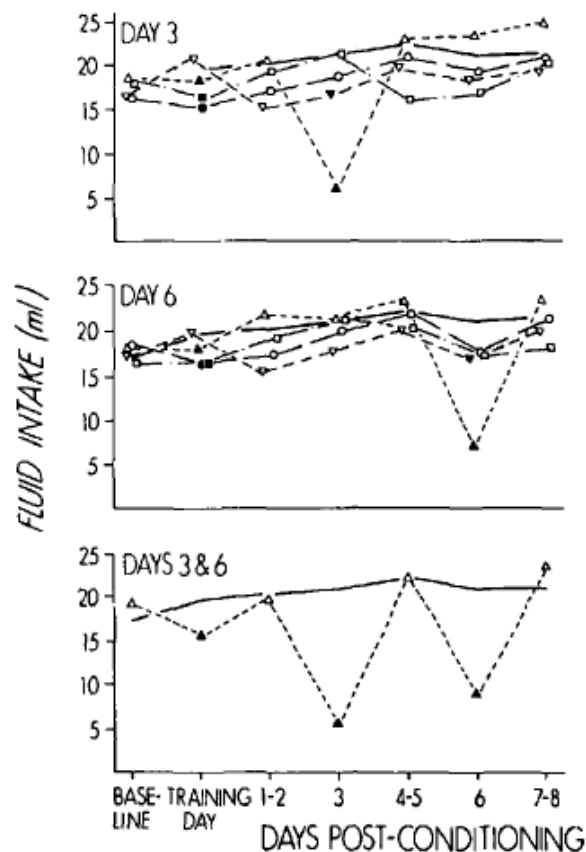


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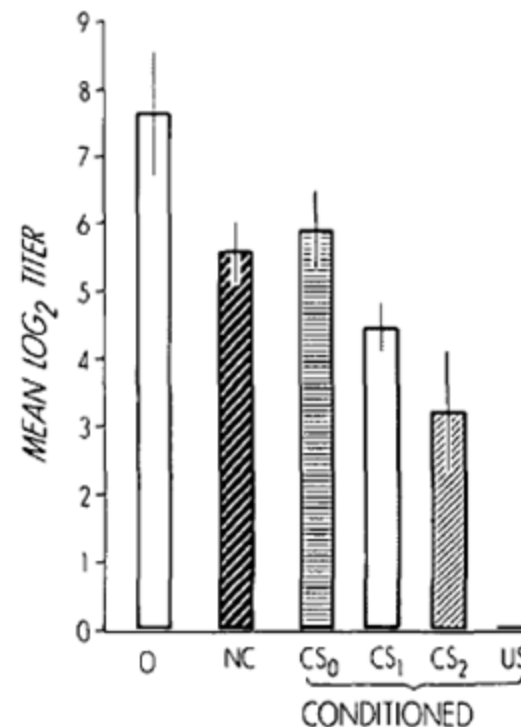


Fig. 2. Hemagglutination titers (means \pm SE) obtained 6 days after ip injection of antigen (SRBC). NC = nonconditioned animals provided with saccharin on Day 3 or Day 6; CS₀ = conditioned animals that did not receive saccharin following antigen treatment; CS₁ = conditioned animals given one exposure to saccharin on Day 3 or Day 6; CS₂ = conditioned animals exposed to saccharin on Days 3 and 6; US = conditioned animals injected with cyclophosphamide following treatment with antigen.

Psychosomatic Medicine Vol. 37, No. 4 (July-August 1975)