



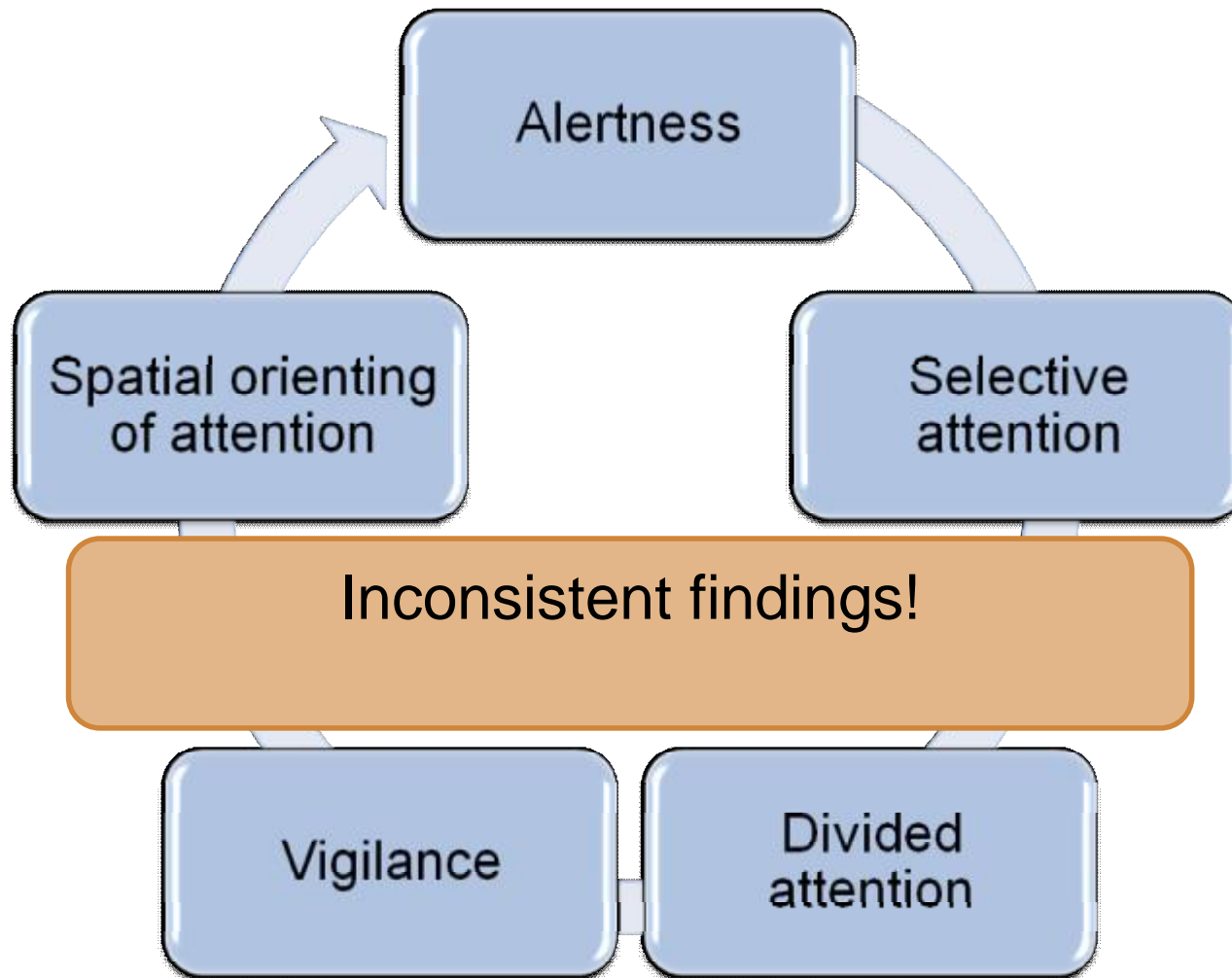
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Attention Processes and its Brain Mechanisms in the Human 5-HT_{2A} and NMDA Antagonist Model of Psychosis

J. Daumann & E. Gouzoulis-Mayfrank
University of Cologne, Germany
Department of Psychiatry and Psychotherapy

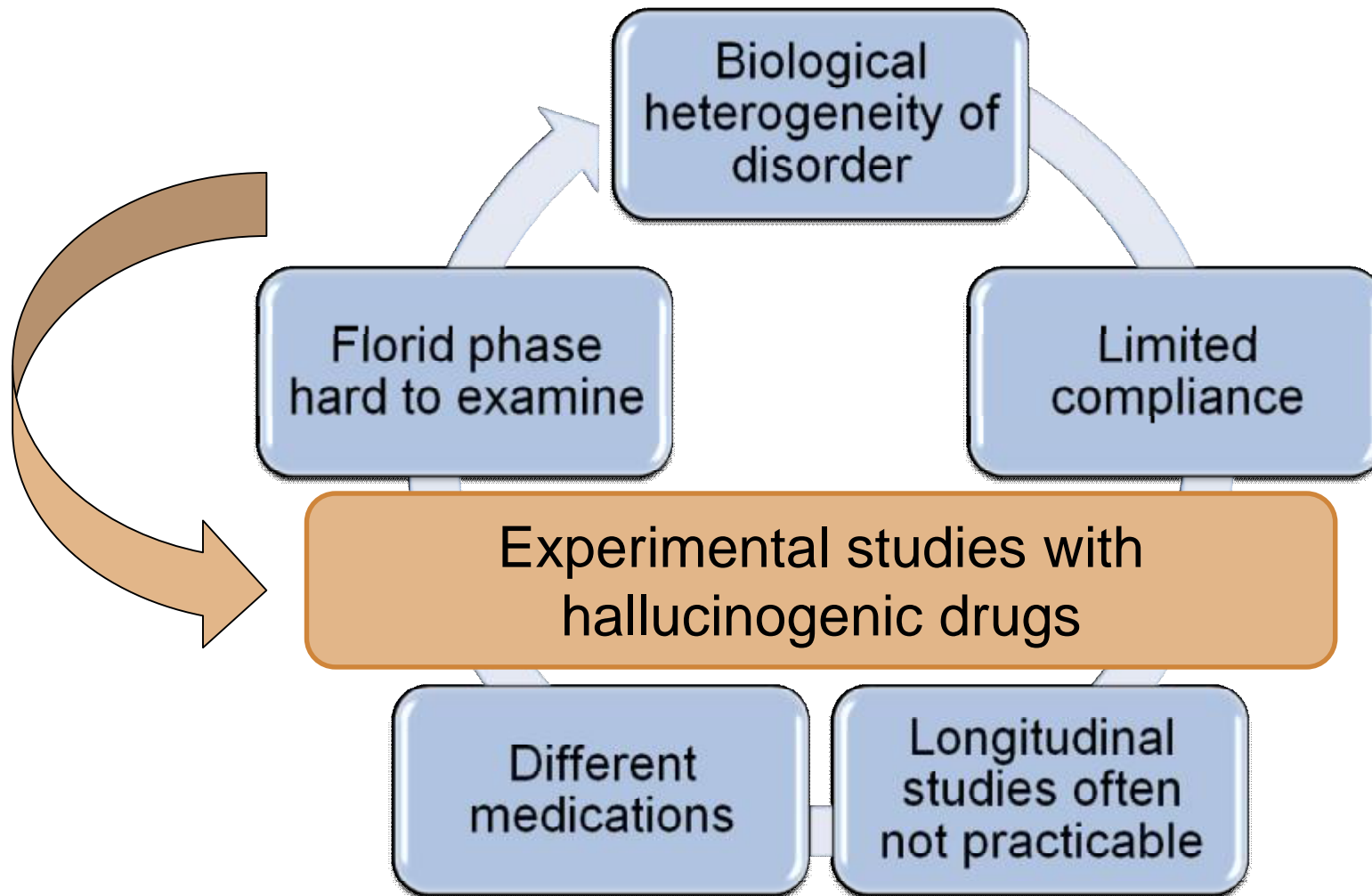


Attentional deficits in schizophrenic patients



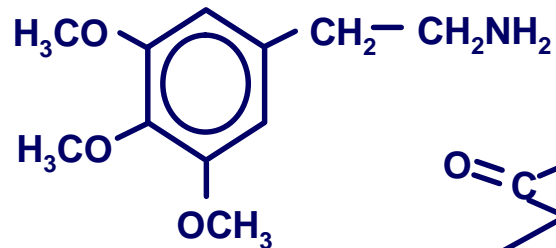


Shortcomings of biological schizophrenia research

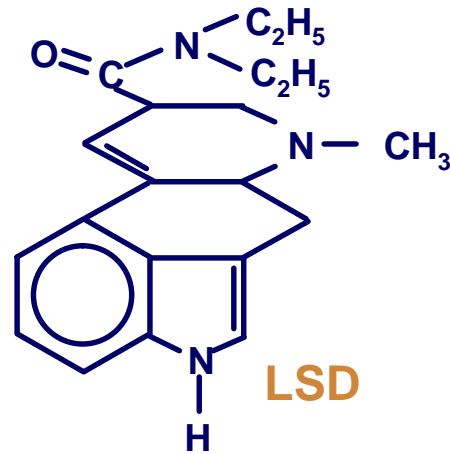




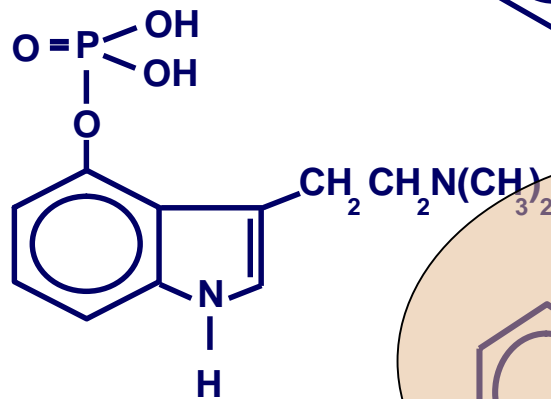
5-HT agonists



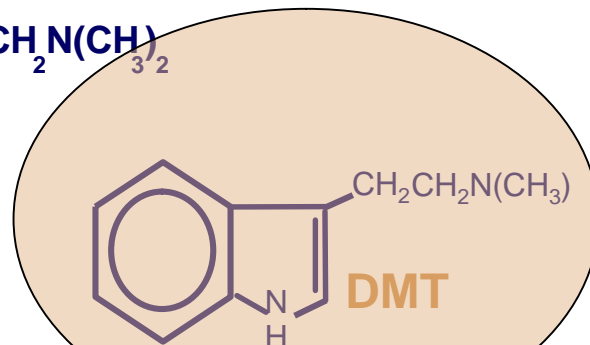
Mescaline



LSD

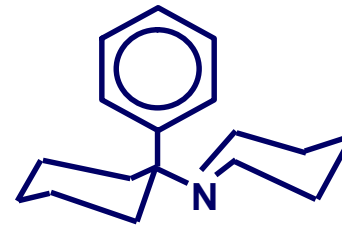


Psilocybin

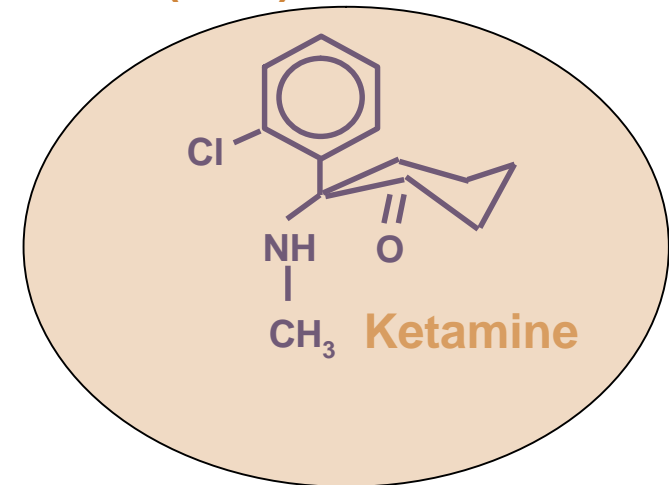


DMT

NMDA antagonists



Phencyclidine (PCP)

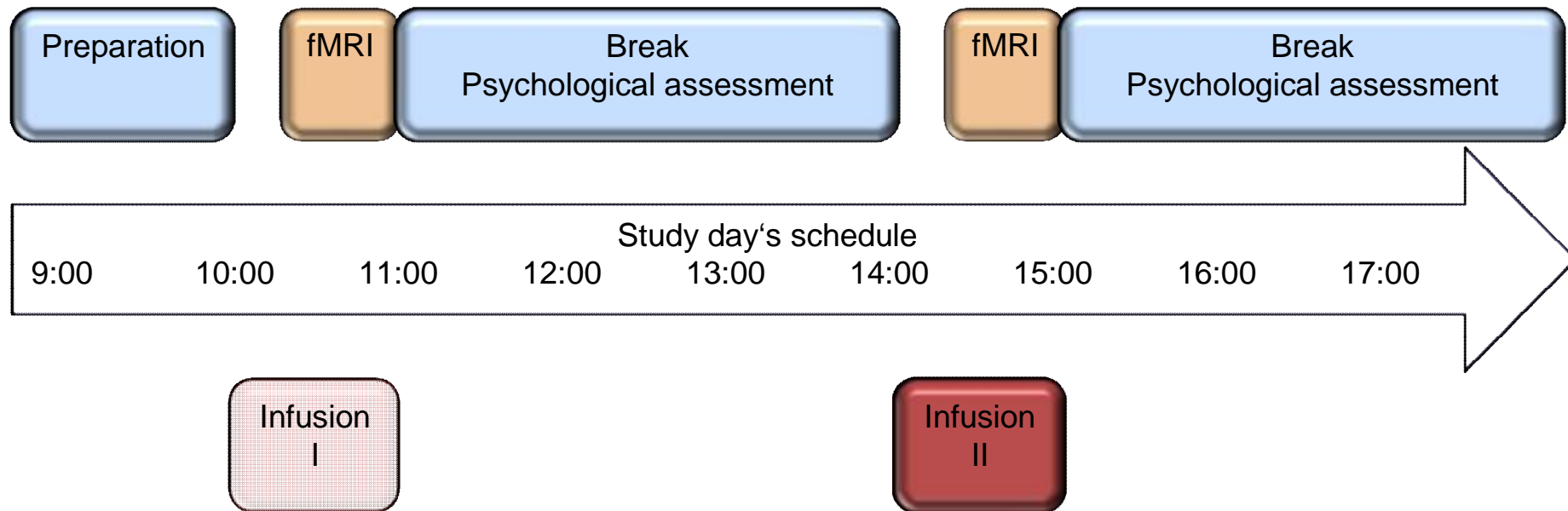


Ketamine



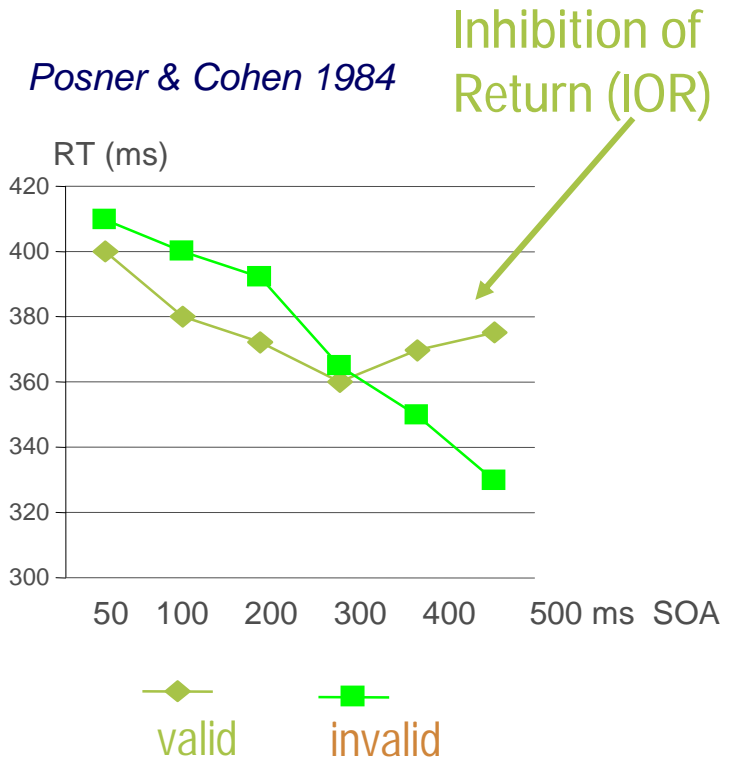
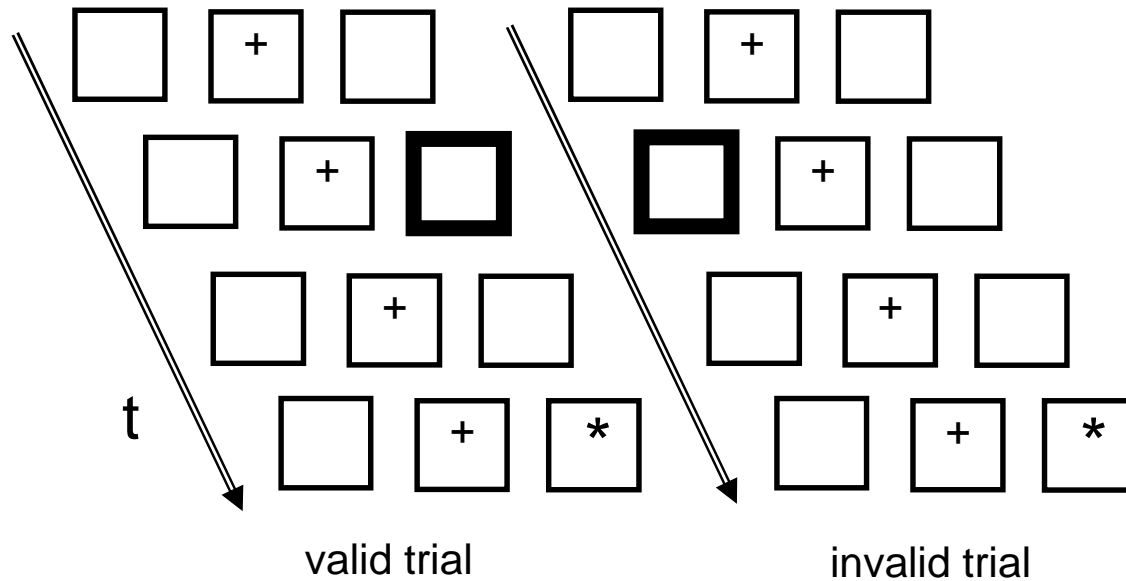
Randomized, double-blind, placebo-controlled, cross-over event-related pharmacological fMRI study

2 separate days at least 14 days apart with drug and placebo condition on each day



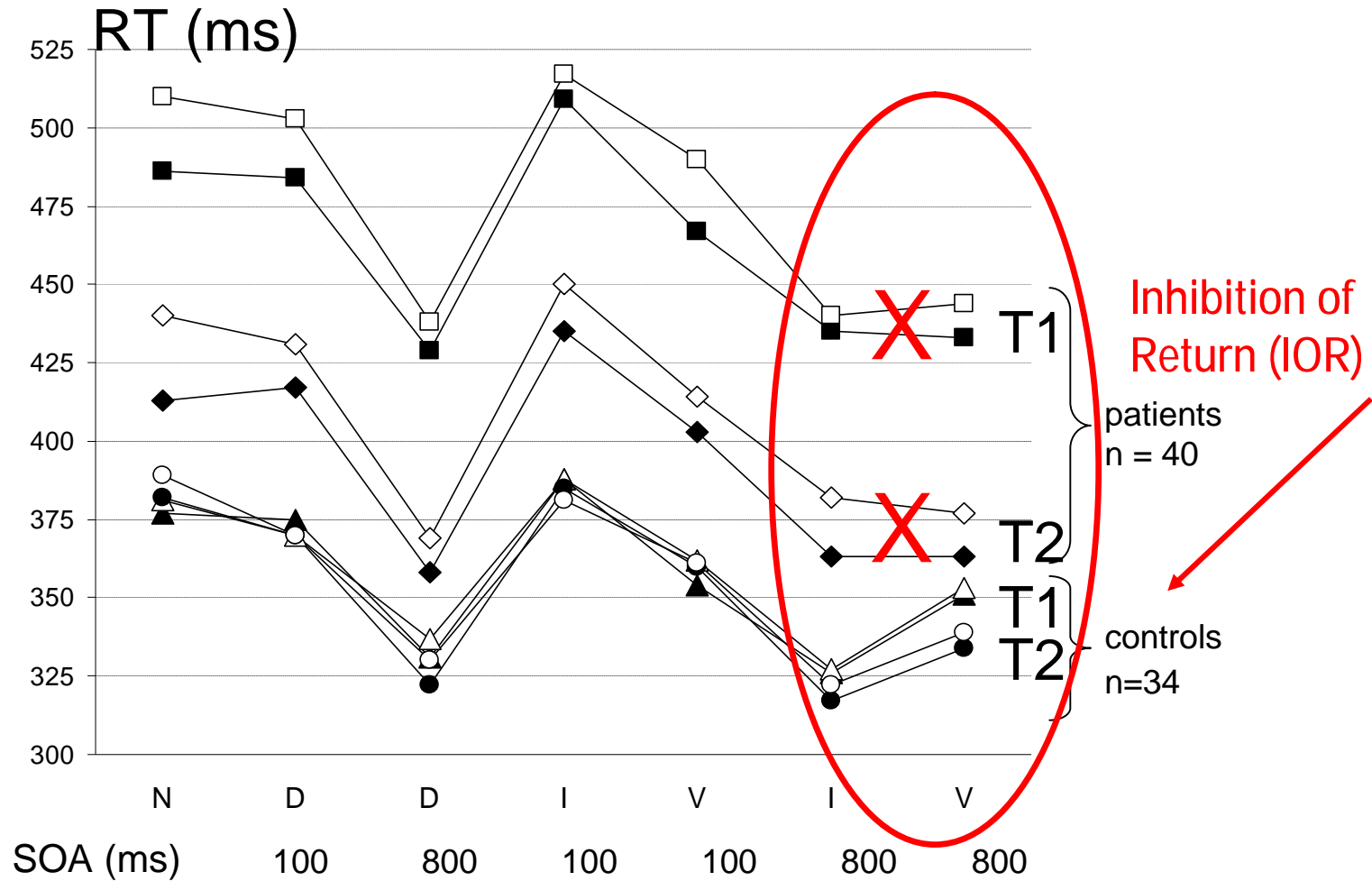


Spatial orienting of attention



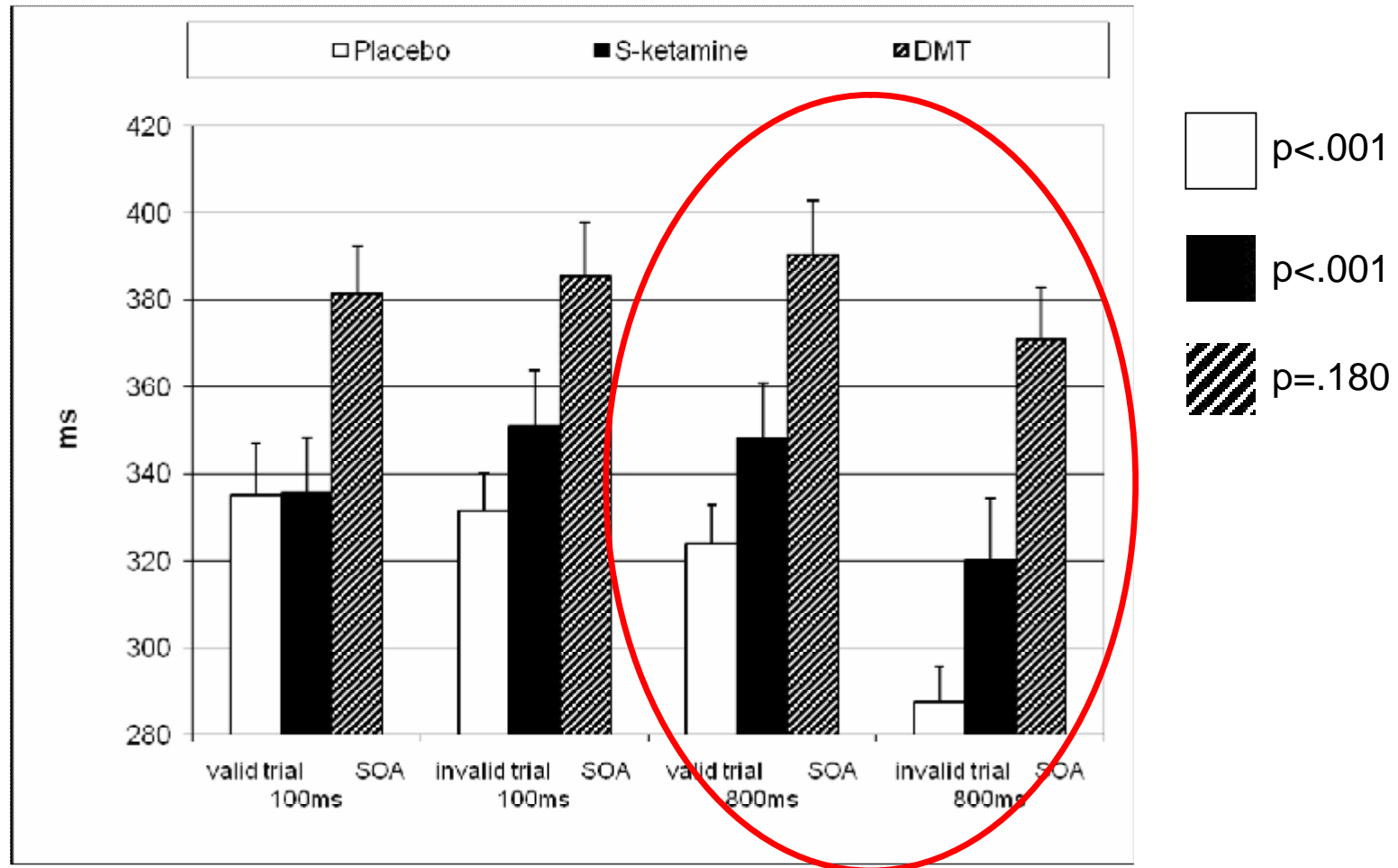


IOR in schizophrenic patients



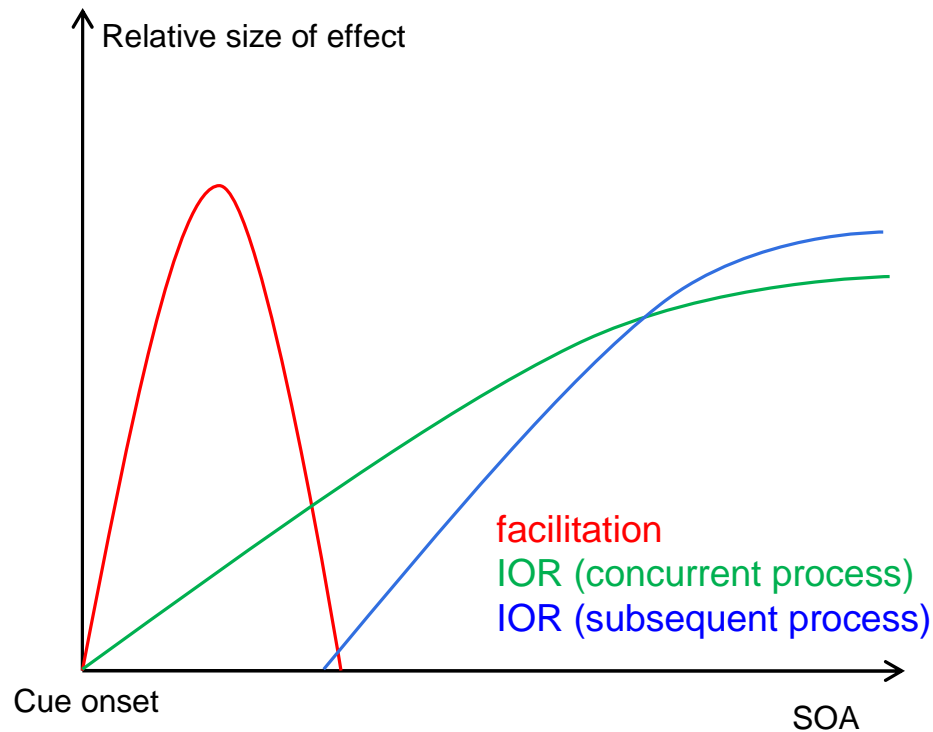


IOR in model psychosis: performance



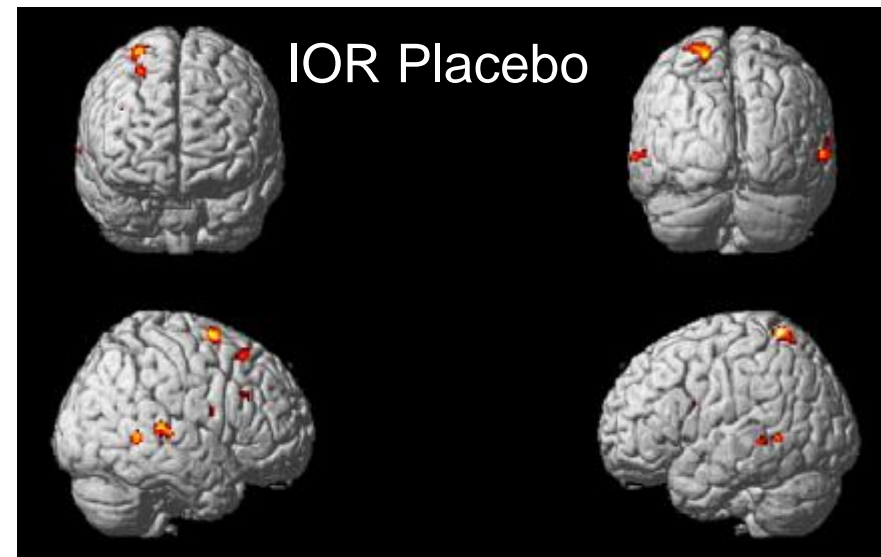


IOR in model psychosis: Baseline fMRI



Lepsien & Pollmann J Cogn Neurosci, 2002

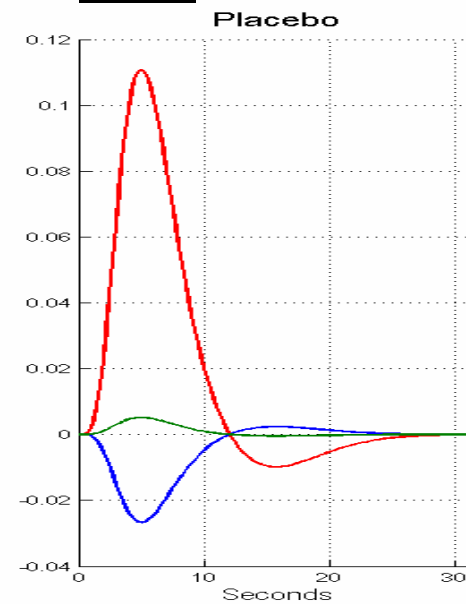
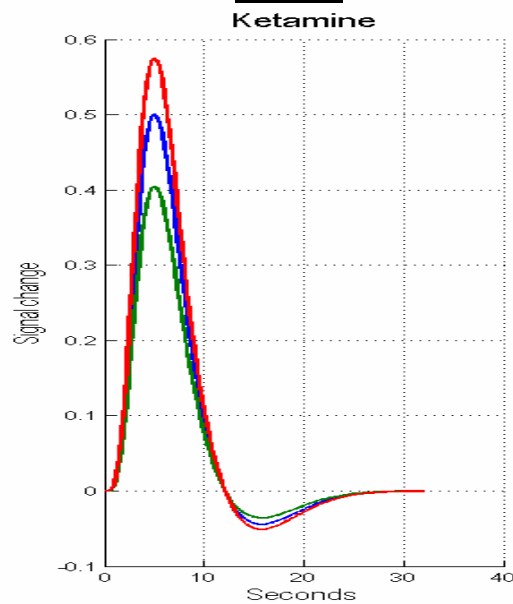
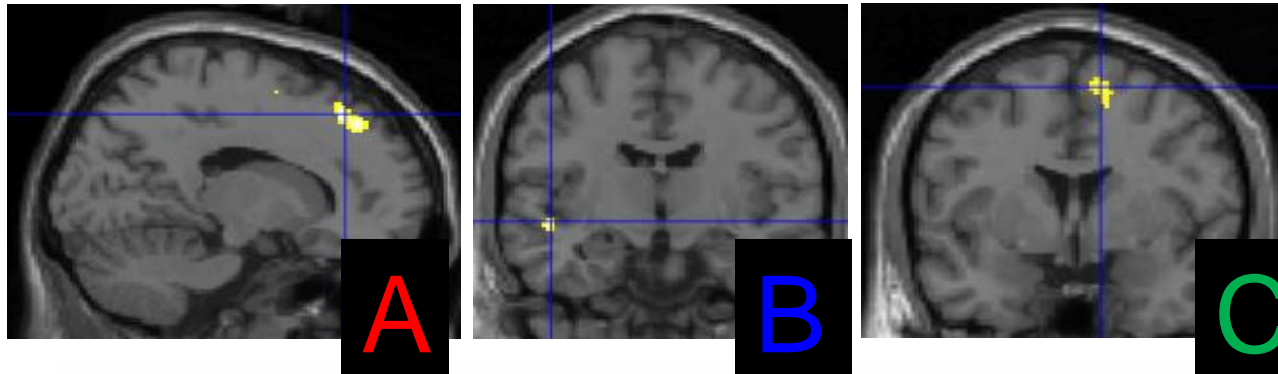
IOR = Long SOA - Short SOA



Daumann et al. Psychopharmacology, 2008



IOR in model psychosis: Ketamine > Placebo



Right superior frontal
Left superior temporal
Right midfrontal

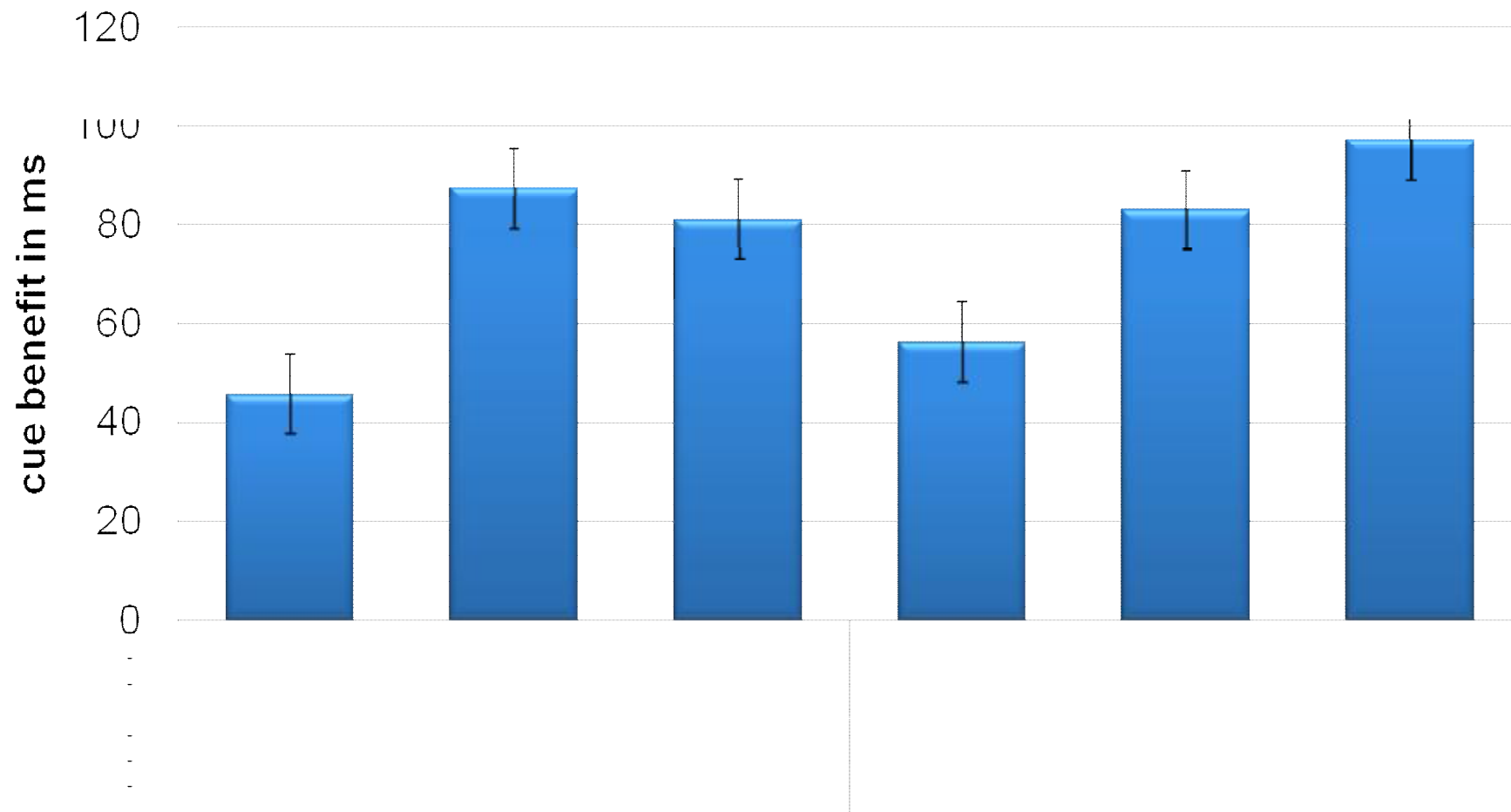


Alertness



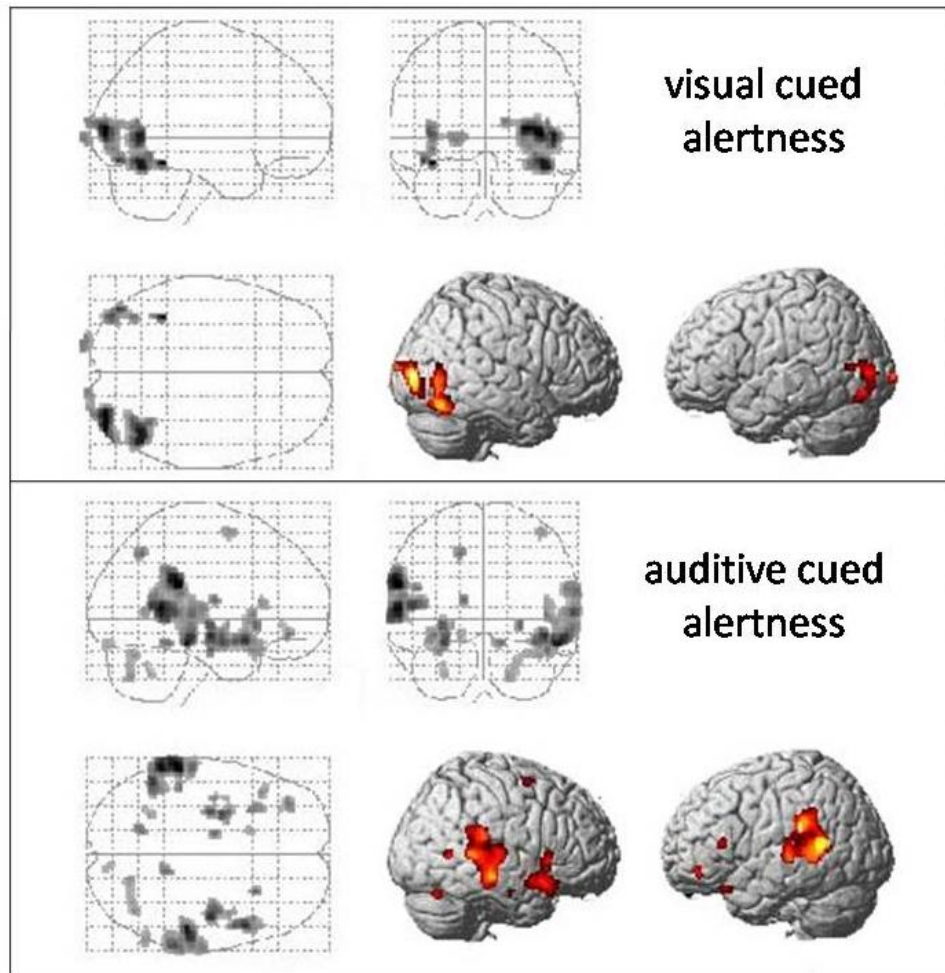


Alertness in model psychosis: performance

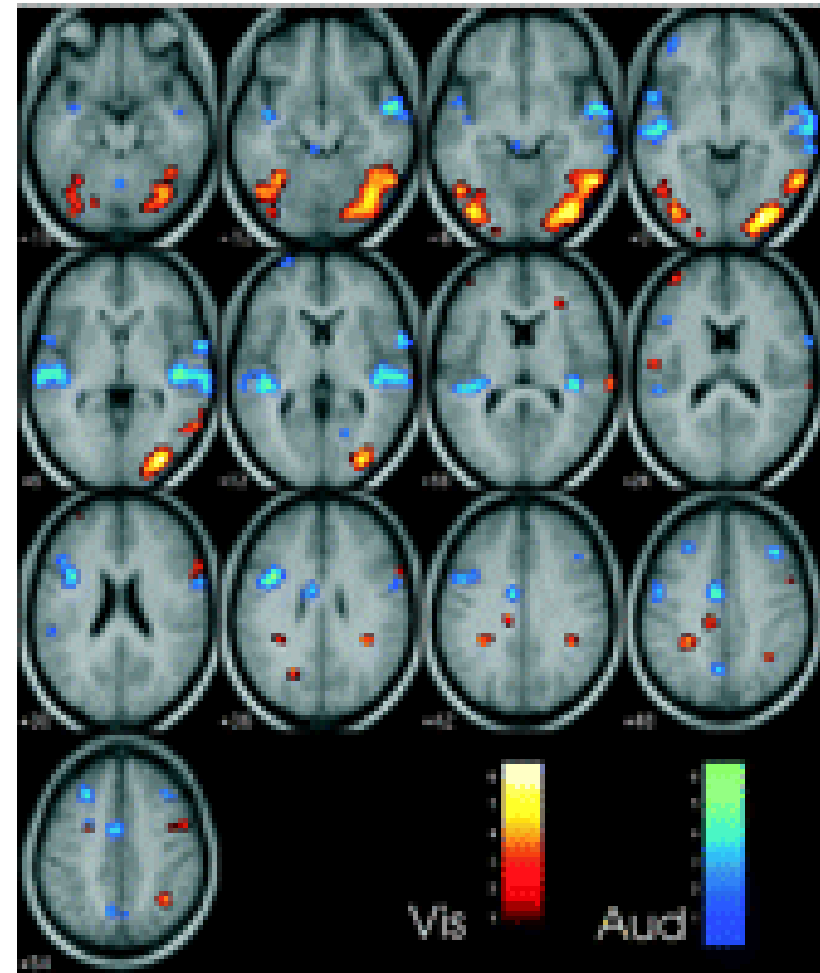




Alertness in model psychosis: Baseline fMRI



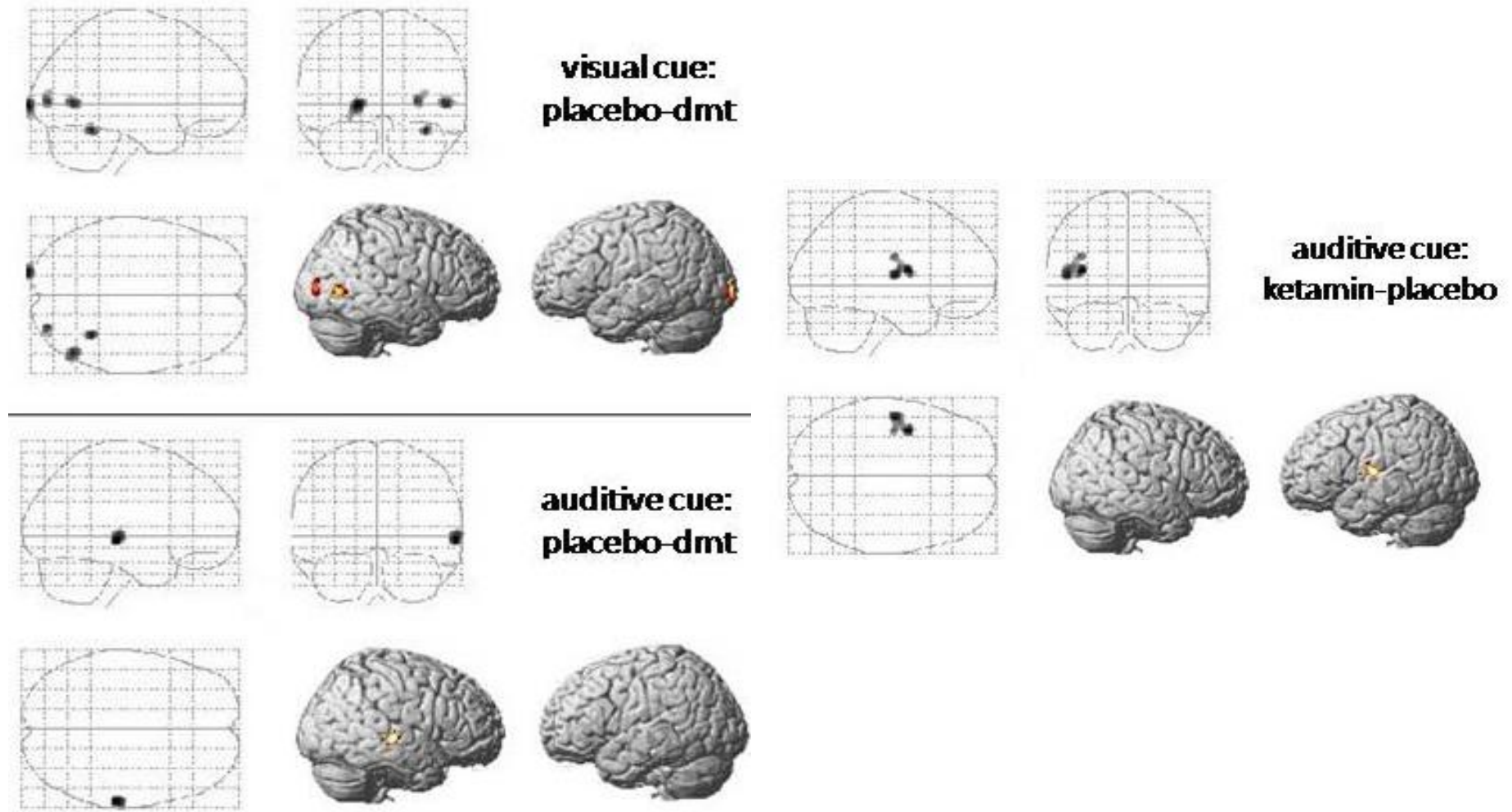
Daumann et al. J Psychopharmacol, 2009



Thiel and Fink J Neurophysiol, 2007



Alertness in model psychosis: fMRI drug effects





Conclusions

Pharmacological fMRI might be a sensitive tool to detect drug-modulated BOLD signal changes in the absence of cognitive impairment.

Serotonergic agonists and NMDA antagonists may reflect different neurobiological mechanisms of psychosis.

Additional studies in schizophrenic patients using similar fMRI paradigms are needed.



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Thank you very much for your
attention !

