

Oral presentation

## Effects of cholinergic drugs on pilot performance

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from International Society on Brain and Behaviour: 1st International Congress on Brain and Behaviour  
Hyatt Regency Hotel, Thessaloniki, Greece, 20–23 November, 2003

Published: 23 December 2003

Received: 1 November 2003

*Annals of General Hospital Psychiatry* 2003, **2**(Suppl 1):S17

This article is available from: <http://www.general-hospital-psychiatry.com/content/2/S1/S17>

The cholinergic system of the CNS plays an essential role in attention, learning, and memory. For example, pharmacologic agents have been developed to increase cholinergic function in the brain to treat patients with Alzheimer's disease. There are currently two common pharmacologic mechanisms used to increase activation of cholinergic receptors: 1) directly through administration of cholinergic agonists, and 2) indirectly through administration of acetylcholinesterase inhibitors. To evaluate the kind and size of the effects of direct and indirect cholinergic drugs on performance, we compared the effects of nicotine (a direct cholinomimetic) and donepezil (an indirect cholinomimetic) on performance in older, normal subjects, using pilot performance as our model. Compared to placebo, both, nicotine and donepezil significantly improved overall pilot performance. Both cholinergic drugs showed the largest effects on flight tasks requiring sustained visual attention. We observed that although the two tested cholinergic drugs have different pharmacologic mechanisms, their effects on flight performance were similar in kind and size.