

Poster presentation

Effects of low dose nicotine on attention and incidental learning in smokers and never-smokers

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Background

Interest in the relation between cholinergic drugs and the cognitive function greatly increased with the neuropathological demonstrations that cholinergic receptors in the cerebral cortex are reduced in people who die with Alzheimer's disease and that this decrease correlates with the degree of cognitive impairment (Perry *et al.*, 1978). Thus, several studies have investigated the effects of nicotinic and muscarinic agonists and antagonists on different aspects of attention and memory (Spilich *et al.*, 1992, Jones *et al.*, 1992).

Materials and methods

The present study employed a between participants, double-blind, placebo controlled, randomised design in order to look at the effects of nicotine on different aspects of attention and incidental learning. Thirty-six deprived-smokers and 36 never-smokers were administered nicotine or placebo via a Nicorette Inhalator and underwent tasks which have previously been reported to be differentially sensitive to changes in cholinergic activity. These tasks involved incidental learning (Semantic Priming task), focused attention (Rapid Visual Information Processing task) and broadened attention (Water Jars task).

Results

The results of the present investigation did not reveal any significant effect of nicotine inhalation on either the RVIP task or the WJ task. However, there was a clear trend for both deprived-smokers and never-smokers, who received nicotine to perform better on the RVIP task than those who received placebo. In terms of the WJ task the present findings suggest that nicotine impaired deprived-smokers' performance mostly. Perhaps the most interesting finding arising from the current study is that nicotine signifi-

cantly improved performance on the Semantic Priming task in both deprived-smokers and never-smokers.

Discussion

The results of the current study did not provide any firm evidence that nicotine enhances focused attention although the trend in the data clearly added some weight to the hypothesis of a cholinergic mechanism mediating focused attention. No definite conclusions can be drawn for the effects of the drug on broadened attention since the data were more ambiguous. Nevertheless, the study has shed some light on the effects of nicotine inhalation on incidental learning. Since nicotine improved performance on the Semantic Priming task, it could be suggested that the mechanism implicated in incidental learning resides in the cholinergic system. Based only upon the results of the current investigation though, it is clearly premature to draw any definite conclusions and further research is essential.

References

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