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Role of acetylcholine and serotonin in novelty processing using an oddball paradigm

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Highlights

A possible cholinergic/serotonergic interaction was assessed with biperiden and ATD  
Biperiden affected novelty processing  
Biperiden did not influence the mismatch negativity component

## Abstract

The processing of novel stimuli is known to take place in the hippocampus and frontal cortex, and is influenced by the cholinergic system. This ability is crucial to help detect changes in the environment and adapt behavior accordingly. Previous research has shown that acetylcholine (ACh) can interact with serotonin (5-HT) at the hippocampal level, which may have consequences for cognitive functioning. However, little is known about the exact nature of this ACh and 5-HT interaction as well their possible interactive effects on novelty processing.

We investigated the interactive role of ACh and 5-HT in novelty processing in healthy young participants. Levels of these neurotransmitters were manipulated with the muscarinic M1 antagonist biperiden, and with acute tryptophan depletion (ATD). Participants received either placebo, biperiden, ATD, or a combination of both in a double-blind cross-over design.

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