

ERPs, Episodic Memory, and Exogenous Cannabinoids

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BACKGROUND

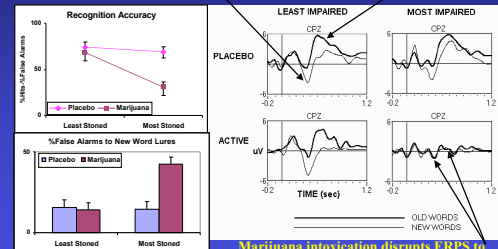
- Cannabinoid sensitive receptors modulate neurotransmission in the hippocampus & frontal lobes.
- Cannabinoids can inhibit induction of LTP.
- Marijuana can acutely disrupt memory for recent events.
- Recognition memory ERPs are disrupted by hippocampal damage (e.g. Smith & Halgren, 1989; Rugg et al, 1991; Düzel et al, 2001).

METHODS

- N=10 young adults tested in two sessions.
- Smoked cigarette with 3.45% delta9-THC or placebo
- Old/new verbal recognition test with 5min study-test lag.
- Concurrent recordings of ERPs.
- Group subdivided based on subjective (ratings) & objective (heart rate, behavior) measures of drug effects.

Acute Marijuana Intoxication Disrupts both Behavioral and Event-Related Potential Measures of Recognition Memory

Larger Negativity in ERP to New Words Larger Positivity in ERP to Old Words



Marijuana intoxication disrupts ERPs to both New and Old Words

Acute Marijuana Intoxication Adversely Impacts Both Familiarity Judgments and Recollection of Study Episodes

- Misattribution of a "new" word's pre-experimental familiarity to recent study is accompanied by attenuation of the normal ERP negativity to lures in the 300-450 msec interval.
- Lack of enhanced positivity to "old" words in 450-650msec interval suggests disruption of the ability to verify familiarity judgments through recollection of study episodes.

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Sponsor: NIDA