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Filipe Andrade, 2025-09-19
DOI 10.17590/asr.0000403

Conditioning Place Preference - CPP- on Rats, using psychedelics

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Summary

Conditioned Place Preference (CPP) is a well-established behavioral paradigm used to assess reward-related learning in animals, typically rodents. It measures an animal's preference for an environment that has previously been paired with a drug or other rewarding (or aversive) stimulus.

In CPP:

* Animals are conditioned to associate one distinct chamber with a drug and another with a neutral substance (e.g., saline).
* After several pairings, animals are allowed to explore both chambers freely.
* A preference for the drug-paired chamber indicates the drug has reinforcing (rewarding) properties.

Why Use Psychedelics in CPP?
Classical psychedelics like psilocybin and LSD, and empathogens like MDMA, are not traditional addictive drugs but have been shown to modulate emotional and social processing in humans and animals. Using CPP allows us to explore whether these substances:

* Possess intrinsic rewarding properties
* Influence social reward systems
* Alter the valuation of the social context or environment

Some psychedelics may produce mild place preference, while others may not, but they may still change social salience, meaning how emotionally meaningful a social cue or space becomes.

Why does this experiment try to use CPP to study the Social Brain?
The social brain, particularly regions such as the anterior cingulate cortex (ACC) and insula, is crucial for empathy, social learning, and affective communication. These regions are heavily modulated by:

* Serotonin (targeted by psychedelics like psilocybin and LSD)
* Oxytocin and dopamine (enhanced by MDMA)

By combining CPP with psychedelics, we can study:
* How acute drug effects influence social and environmental reward learning
* Whether these drugs enhance or disrupt the association between context and emotional valence
* How brain activity (via fiber photometry) in key regions correlates with these behaviors

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Registration details

Status of the study	Registered
Date of registration	2025-09-19
Notified date of accessibility	2027-11-18
DOI	10.17590/asr.0000403
Planned start of the study	2025-11-15
Planned end of the study	2026-03-31
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