

The body can become part of the cue.

Peart & Murray (2026) | one-page evidence briefing

WHAT CHANGED

A drug-induced internal state may become learned information, not only an after-effect. Depending on the learning arrangement, it can predict, select or modulate behaviour.

CONDITIONED STIMULUS

The internal state predicts a meaningful outcome.

DISCRIMINATIVE STIMULUS

It signals when a response is likely to be reinforced.

OCCASION SETTER

It changes whether another cue predicts an outcome.

CANDIDATE BODY-BRAIN PATHWAYS

bodily signals -> vagal / spinal / humoral / central inputs -> partly resolved branched routes -> insula + motivation
No direct vagus-to-insula projection; rodent PBN-cortex tracing does not establish one serial cable.

WHY IT MATTERS

Internal state may be part of addiction's learned context. That sharpens questions about craving, prediction, state-dependent behaviour and vulnerability to a lapse. Recovery research may need to examine how bodily states are predicted and interpreted - not only external cues.

WHAT IT DOES NOT ESTABLISH

- The vagus nerve does not 'cause addiction'.
- Stimulus properties are not reinforcing properties.
- Animal learning is not subjective human craving.
- This review validates no treatment for the proposed mechanism.
- A learned bodily state can influence; it does not compel.

OPEN QUESTIONS

Can human studies dissociate interoceptive stimulus control from reinforcement? Which states generalise across drugs?
Can state-aware cue paradigms predict depth or return better than external-cue models - without pathologising sensation?

READ THE FULL BILINGUAL FINDING

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