* (Moorman & Aston-Jones, 2014) argument that OFC activity tracks cue driven reward seeking behaviours
* Inhibition has been argued to be the characteristic feature of OFC function
  + Old hypothesis linking OFC dysfunction to basal ganglia disorders characterised by impaired inhibitory control (OCD).
  + Still proposed by recent researchers [find JNeuro electrophys paper]
* This view is supported by studies showing impaired extinction and reversal learning following OFC damage
* However, recent hypotheses have focused on the role of the OFC in the representation of the expected outcome value.
* “Instead, OFC, acting together with the amygdala and medi- odorsal thalamus, represents the specific identity of predicted outcomes and their up-to-the-moment value, taking into account an animal’s or human’s current state (Gottfried and Zelano, 2011; Holland and Gallagher, 2004; Passingham and Wise, 2012; Schoenbaum et al., 2009).” – Rudebeck & Murray 2014 - Neuron
* More recently it has been argued that the OFC is critical for the representation of task state space when changes in states are hidden i.e. not externally signalled by physical cues.

It has been argued that the OFC cannot be simply involved in the inhibition of responding, however this conclusion has been based on indirect evidence from tasks involving behavioural suppression that can be achieved without any inhibition per se.

Chudasama and robbins – 5CSRTT evidence of increased behavioural inhibition.

* Extinction – Impaired extinction learning (Panayi & Killcross, 2014)
  + Similar to proposed deficits in reversal learning
  + Specifically, Extinction
* Extinction involves the formation of novel inhibitory associations
  + Context specific
  + Could be formation of many types of association
  + Inhibitory CS-CR; Context-CR or Excitatory CS-NoUS; Context-NoUS association
* Conditioned inhibition usually studied in the context of feature negative discriminations
  + Important to use retardation and summation tests to control for
    - Generalisation decrement/External inhibition [Summation]
    - Attentional/latent inhibition – [Retardation]
    - Need both to conclude the presence of inhibition

Overview important for inhibition – (Papini & Bitterman, 1993)

For theories of OFC look at (Rudebeck & Murray, 2014; Wilson, Takahashi, Schoenbaum, & Niv, 2014) (looking at sequential feature negative discrimination).

Need to re-read (Delamater, 2004)- Extinction overview; look at role of inhibition and (Rescorla, 1969; Williams, Overmier, & LoLordo, 1992)

(Wilson et al., 2014)

OFC is responsible for representing task space/states that are partially or completely unobservable. Observable state = explicit change in context, change of cues e.g. a conditioned inhibitor is a very explicit change in state.

Deciphering hidden task states may involve the use of working memory.

OFC lesioned animal can still perform basic tasks albeit using only observable (stimulus bound) states based on current perceptual information.

In the reversal task modelling it is argued that there is nothing to disambiguate perceptual states so learning involves unlearning of old associations and re-learning of new associations! This is in exact contradiction to the findings of extinction in (Panayi & Killcross, 2014).

Win-shift studies show that OFC lesioned primates have issues with this alternation behaviour but not once delays are removed between trials. This suggests that working memory of the prior action is required.

In Extinction the prediction is that within session extinction should be impaired, as modelled on instrumental extinction data from (Butter, 1969).

Also: Prediction of No spontaneous recovery! Unlearning occurs in their model. SO between session recovery is not predicted!!!!!

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