

# Active inference

In active inference, [behaviour](#) has explorative (epistemic) and exploitative (pragmatic) aspects that are sensitive to ambiguity and risk respectively, where epistemic (ambiguity-resolving) behaviour enables pragmatic (reward-seeking) behaviour and the subsequent emergence of habits.

[Bayesian models](#) of [brain function](#) such as [active inference](#) and [predictive coding](#) offer a general theoretical framework with which to explain several aspects of normal and disordered brain function. Of particular interest to a study is the potential for such models to explain the pathology of auditory [phantom perception](#), i.e. tinnitus. To test this framework empirically, Hullfish et al., performed an [fMRI](#) experiment on a large clinical sample (n = 75) of the human chronic tinnitus population. The experiment features a within-subject design based on two experimental conditions: subjects were presented with sound stimuli matched to their tinnitus frequency (TF) as well as similar stimuli presented at a control frequency (CF). The responses elicited by these stimuli, as measured using both activity and functional connectivity, were then analyzed both within and between conditions. Given the [Bayesian](#)-brain framework, they hypothesized that TF stimuli will elicit greater activity and/or functional connectivity in areas related to the cognitive and emotional aspects of tinnitus, i.e. tinnitus-related distress. They conversely hypothesize that CF stimuli will elicit greater activity/connectivity in areas related to auditory perception and attention. They discuss this results in the context of this framework and suggest future directions for empirical testing <sup>1)</sup>.

<sup>1)</sup>

Hullfish J, Abenes I, Kovacs S, Sunaert S, De Ridder D, Vanneste S. Functional brain changes in auditory phantom perception evoked by different stimulus frequencies. *Neurosci Lett*. 2018 Jul 31. pii: S0304-3940(18)30522-6. doi: 10.1016/j.neulet.2018.07.043. [Epub ahead of print] PubMed PMID: 30075284.

From:

<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:

[https://neurosurgerywiki.com/wiki/doku.php?id=active\\_inference](https://neurosurgerywiki.com/wiki/doku.php?id=active_inference)

Last update: **2025/05/13 02:18**

