Studying habit acquisition with an avoidance learning task

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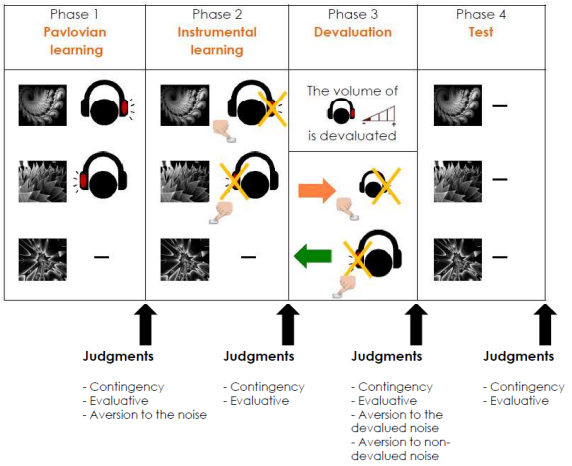
Introduction

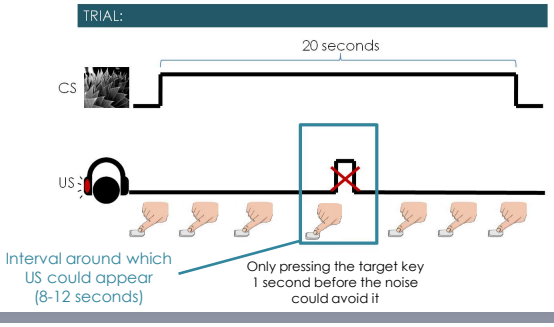
The study of habit acquisition and expression is considered relevant to improve our understanding of mental disorders characterised by the presence of compulsive or incontrollable behaviours, such as obsessive-compulsive disorder or addictions. Most studies on habit learning, both in animals and in humans, are based on positive reinforcement paradigms (Yin, Knowlton, & Balleine, 2005; Dolan & Daya, 2013; Tricomi, Balleine, & O'Doherty, 2009). The study of Tricomi et al. is an interesting example of experiment of habit acquisition based on acquisition of insensitivity to the reinforcer devaluation in humans. They found habit acquisition with a paradigm of positive reinforcement only in a over-training group (for 3 days), but not in a one day-training group. But although most studies are based on positive reinforcement paradigms, compulsions and habits involved in some mental disorders may be better understood as avoidance behaviours, which seem to be based on a paradigm of negative reinforcement. These avoidance behaviours are involved in anxiety states, that have been shown to promote habitual responses.

We conducted a **PILOT EXPERIMENT** aimed to study habit acquisition based on the acquisition of insensitivity to reinforcer devaluation in humans using a paradigm of negative reinforcement and to check whether traits such as uncertainty intolerance, anxiety or impulsiveness may predispose to habit acquisition.

Method

We used a free-operant discriminated avoidance procedure. Participants learned to avoid an aversive noise presented either to the right or to the left ear by pressing two different keys. After a devaluation phase where participants could reduce the volume of the noise presented to one of the ears, participants went through a test phase where the noise was never administered

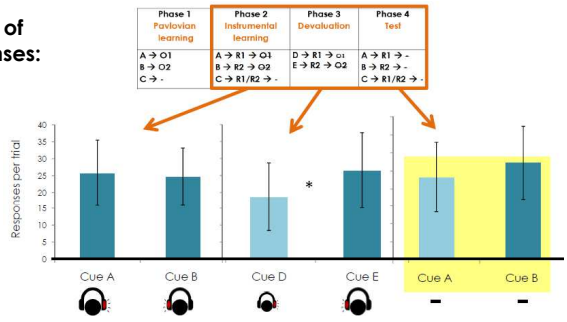




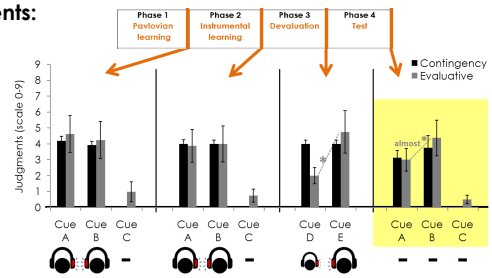
Results

N = 8

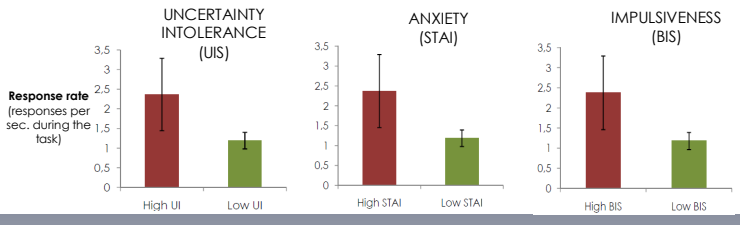
In rate of responses:



In judgments:



In differences in rate of responses per groups of high and low:



Discussion

Our results showed a sensitivity to devaluation during the devaluation phase, that is a lower rate of responses to the stimulus signalling the devalued reinforcer than to the stimulus signalling the non-devalued reinforcer.

Furthermore, the absence of differences in the rate of responses between the stimulus signalling the devalued reinforcer and to the stimulus signalling the non-devalued reinforcer in the test phase indicated habit acquisition. This result suggests that the use of a paradigm of negative reinforcement could be more efficient to set up a habit than a paradigm of positive reinforcement.

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