

Abstract

Background: Anhedonia is an important core symptom of major depressive disorder with significant implications on treatment response and prognosis. Past literature has recognized the multi-faceted nature of anhedonia, involving deficits in different aspects of hedonic capacity, decision-making and goal-directed behaviour. There have only been a limited number of studies using laboratory-based effort-based decision-making tasks to assess these components in depression. The present study aims to characterize the deficits in hedonic capacity in the four phases of decision-making, effort-expenditure, anticipatory pleasure and consummatory pleasure in major depressive disorder, using the Effort-based Pleasure Experience Task (E-pet).

Methods: Sixty depressed patients and sixty healthy controls were administered the E-pet, which consisted of an effort-based decision-making task, where subjects were asked to choose between an easy task or hard task after being presented with information regarding the reward magnitude and probability of winning the monetary reward, prior to attempting the task chosen. Effort-expenditure was assessed by the strength of each subject's grip. Anticipatory and consummatory pleasure experiences were assessed before and after the reward was obtained. A variety of clinical rating scales were also utilised to assess hedonic capacity. Data was analysed using Generalized Estimating Equation (GEE).

Results: Compared with controls, depressed subjects were less willing to engage in tasks requiring higher effort expenditure, with relative blunting of the motivational effects of increased probability of winning rewards and reward magnitude. Depressed subjects also experienced less anticipatory and consummatory pleasure in response to reward than controls. However, depressed subjects were found to have no deficits in the effort-expenditure phase, reflecting no difficulties in the translation of plans into goal-directed behaviour.

Conclusions: The findings of the present study support that the phenomenon of anhedonia in depression is multi-faceted, involving biased judgement on value and effort computation affecting decision-making, and diminished ability to experience anticipatory and consummatory pleasure. However, we did not find that patients with depression had defective translation of affective experiences into motivated behaviour.

Keywords: Major depressive disorder; Anhedonia; Amotivation; Affective experience; Decision-making