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What is depression?

Major depression is a common psychiatric illness.

Typical symptoms of depression include:

-Persistent feelings of **sadness**

-**Anhedonia** (inability to enjoy pleasurable activities such as eating, exercise or social interaction)



The causes of depression are uncertain but it is thought that **genetic factors** and **stressful life events** contribute to trigger the illness.

How is depression treated?

Depression is mostly treated with **psychotherapy**, **antidepressant drugs**, and **electroconvulsive therapy (ECT)** (the last two treatments only for adults). However, in many cases a full recovery is never achieved and also frequent relapses are usually observed.

Therefore it is important to improve treatments of depression

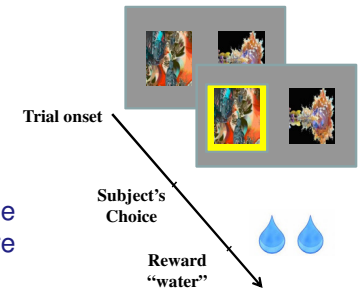
We can use fMRI to study depression

People with depression **don't enjoy** things and **don't experience rewarding** events in the same way as people without depression.

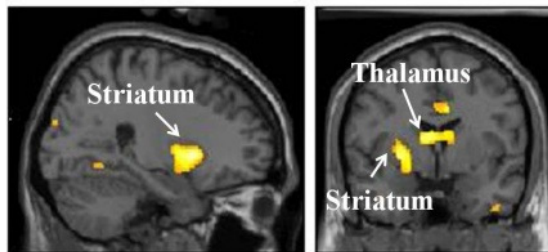
Are these symptoms related to an abnormal functioning of a particular brain area?

To answer this question we compared the brain activity in a group of healthy subjects and a group of depressed patients while they performed a **task that involves rewards**:

In the task, two pictures (such as those shown opposite) were shown several times and each time the subject had to choose one of them. Depending on their choice, the subject received either two drops of water (the reward!) or nothing.



One of the pictures is more likely to deliver the water. The purpose of the task is to learn, by trial and error, which picture has more chances to deliver the water.



Comparison of the results showed that **depressed patients** had **reduced** brain activity while doing the task in regions like the **striatum** and **thalamus** compared to healthy subjects.

This suggests that these brain regions could be related to anhedonia depressive symptoms.

fMRI is a powerful technique that allows a better understanding of how brain function is affected in depression. We hope that advancing our understanding will improve the treatment of depression.

(For further information on fMRI, please see separate poster.)

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