**Exercise 1 : Experimental Psychology - Visual Attention Task**

**Context:**

You have data from a visual attention experiment. Participants (patients and controls) were tasked with detecting a visual stimulus displayed on a screen at various brightness levels. Their responses (correct or incorrect) and reaction times for each trial were recorded.

The data includes the following columns:

* **participant\_id**: unique identifier for the participant.
* **group**: group classification (patient or control).
* **intensity**: stimulus brightness intensity (scale from 1 to 10).
* **response**: binary response (1 = correct, 0 = incorrect).
* **reaction\_time**: reaction time in milliseconds.

**Instructions :**

1. **Data Exploration** 
   * Load the dataset and inspect its structure.
   * Identify and handle missing.
2. **Descriptive Analysis** 
   * Compute the percentage of correct responses for each brightness intensity, separately for patients and controls.
   * Compare mean reaction times between the two groups.
   * Fit a sigmoid curve to the data of each group.
   * Compute R2 of the fitted data
3. **Visualization** 
   * Plot the reaction time distribution and the significance
   * Plot the dot of the mean answer of each subject in function of the intensity. Add the fitted psychometric curve.

**Packages :**

import pandas as pd

import numpy as np

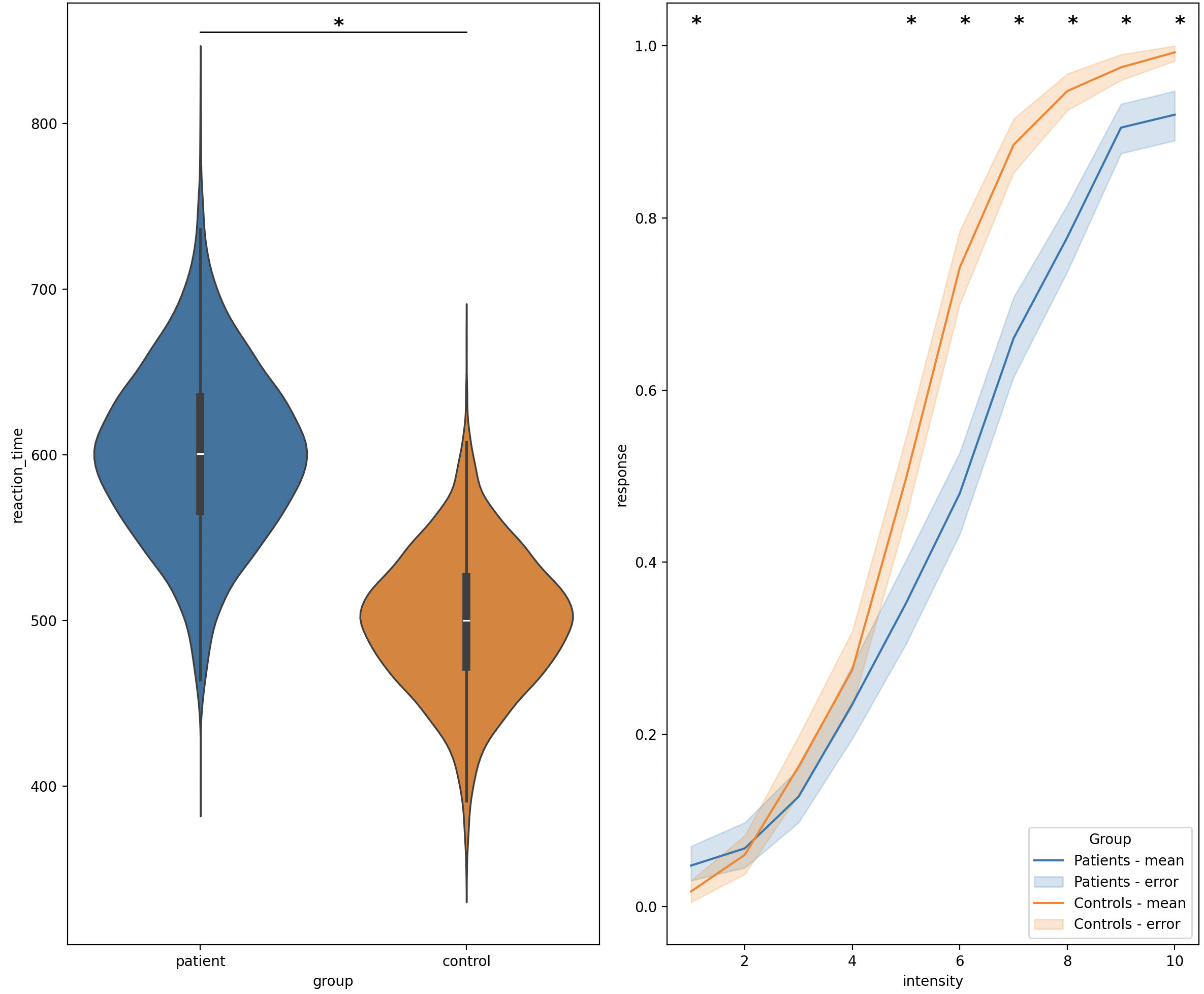
import matplotlib.pyplot as plt

import seaborn as sns

from scipy.stats import ttest\_ind

from scipy.optimize import curve\_fit

**Outputs :**

 Une image contenant ligne, diagramme, Tracé, pente

Description générée automatiquement