

Exercise 1

Imagine you conducted an experiment in which you flash stimuli on a computer screen for just a few milliseconds and at low contrast, so that they are really hard to see. On every trial, the stimulus is either a square or a diamond, with random order and equal probability across trials. After every presentation you ask your subject whether the square or the diamond was presented.

Can you use SDT to analyze your data? Motivate your answer.

Exercise 2

Imagine you conducted an experiment in which you flash stimuli on a computer screen for just a few milliseconds and at low contrast, so that they are really hard to see. On every trial, the stimulus is either a square or a diamond, with random order and equal probability across trials. After every presentation you ask your subject whether she consciously perceived the stimulus that was presented.

Can you use SDT to analyze your data? Motivate your answer.

Exercise 3

- You run two races.
- In one race your time was 1.5 hours, the population mean was $\mu = 2.25$ hours and the population standard deviation was $\sigma = 0.25$.
- In the second race, your time was 1.75 hours, the population mean was $\mu = 2.5$ hours and the population standard deviation was $\sigma = 0.2$.
- In which race did you do better relative to everyone else? (I.e., in which race did you have the lower z-score?)

Exercise 4

- You are comparing two diets, the Paleo diet and the Atkins diet.
- You take two samples of 10 people each and measure the amount of weight each person loses on their respective diets.
- The results are given in the table to the right.
- Calculate an independent samples t-test and state whether or not there is a difference between the amount of weight lost under the two diets.

Paleo (kg)	Atkins (kg)
5.16	4.6
5.21	5.12
5	5.06
5.5	5.64
4.69	4.66
4.86	4.71
4.88	4.65
5.05	4.66
5.01	4.83
4.73	4.55