

- For each test, there is 0.95 probability of not having a type I error.
- But when we do three tests the probability is $0.95 \times 0.95 \times 0.95$ which equals 0.857.
- So that means there is a 14.3% chance of us falsely rejecting the null hypothesis $(1 - 0.857) \times 100 = 14.3$

The familywise error rate

- This is known as the familywise error rate.

$$\text{familywise error} = 1 - (0.95)^n$$

- If we had 5 conditions, and hence 10 t-tests to conduct, our error rate would be 0.4 – which means there is a 40% chance of having made at least one type I error (i.e., thinking we have an effect when none is present).