

Let's return to our earlier example.

A clinical psychologist wants to test hypothesis ( $H_1$ ) that people who seek treatment have higher IQs than general population. She wants to use IQs of 25 randomly sampled patients and is interested in a difference of 5 points between the mean of the general population and the mean of her client population.

So,  $\mu_0 = 100$ ,  $\mu_1 = 105$ ,  $\sigma = 15$

First we need to select the Test Family, Type of Test and Type of Power Analysis.

The screenshot shows the G\*Power 3 software interface. At the top, there are two tabs: "Central and noncentral distributions" and "Protocol of power analyses". Below these, there are three main sections: "Test family", "Statistical test", and "Type of power analysis". Each of these sections has a dropdown menu. The "Test family" dropdown is set to "t tests". The "Statistical test" dropdown is set to "Correlation: Point biserial model". The "Type of power analysis" dropdown is set to "A priori: Compute required sample size - given  $\alpha$ , power, and effect size". Below these sections, there are two columns: "Input parameters" and "Output parameters". The "Input parameters" column includes a "Determine" button, a "Tail(s)" dropdown set to "One", and three input fields: "Effect size |r|" set to 0.3, " $\alpha$  err prob" set to 0.05, and "Power (1- $\beta$  err prob)" set to 0.95. The "Output parameters" column lists five parameters with question marks: "Noncentrality parameter  $\delta$ ", "Critical t", "Df", "Total sample size", and "Actual power". At the bottom right, there are two buttons: "X-Y plot for a range of values" and "Calculate".

Central and noncentral distributions Protocol of power analyses

Test family Statistical test

t tests Correlation: Point biserial model

Type of power analysis

A priori: Compute required sample size - given  $\alpha$ , power, and effect size

Input parameters Output parameters

Determine Tail(s) One

Effect size |r| 0.3

$\alpha$  err prob 0.05

Power (1- $\beta$  err prob) 0.95

Noncentrality parameter  $\delta$  ?

Critical t ?

Df ?

Total sample size ?

Actual power ?

X-Y plot for a range of values Calculate