IST Ü 11

4) Comparing Two Populations

	Schizophrenia	Normal
Sample size	41	49
Mean time	104,23	62,24
Standard deviation	62,24	16,34

a) Define the parameters of interest to the researchers

μ_S ... mean time of schizophrenic persons μ_n ... mean time of normal persons

b) Set up the null and alternative hypothesis for testing the researches theory

$H_0: \mu_S = \mu_n$ vs. $H_1: \mu_S > \mu_n$

c) p-value is reported as 0.001 $\alpha = 0,01$ conclusion?

as the p-value 0,001 is smaller than $\alpha = 0,01$ we reject the null hypothesis (accept the alternative).

d) find 99% confidence interval for target parameter

$$\mu_S - \mu_n \pm z_{\alpha/2}\sqrt{\frac{s_s^2}{n_s} + \frac{s_n^2}{n_n}} = 104,23 - 62,24 \pm z_{0,005}\sqrt{\frac{62,24^2}{41} + \frac{16,34^2}{49}}$$

$$= 41,99 \pm z_{0,005} \cdot 9,9966 = 41,99 \pm 2,58 \cdot 9,9966$$

gives $(16,1988 \; ; \; 67,7812)$ as the confidence interval.