INC

may belong to race 'x' (African) or race 'y' (Chinese). In this case both are equally probable, or some skulls of African and some of Chinese. The relationship may be written as,

$H_0 : \mu = \mu_x$ and $H_a : \mu \neq \mu_y$

Where i) H_0 and H_a are null or alternate

ii) μ mean of population of race 'x' or 'y'.

iii) μ_x = mean of sample of skulls of race X.

iii) μ_y = mean of sample of skulls of race 'y'.

Here, one should not insist on calling hypothesis null or alternate since reverse can be true.

Type I & II errors: (Alpha & Beta errors)

When null hypothesis (H_0) is true and it is rejected we commit Type I (Alpha) error. By accepting it at the level of significance, say 0.05. ($P \leq 0.05$) Here, 5% probability, or less than it, of occurance of relation exist. However, this error can be reduced by taking highly stringent level of significance like $P \leq 0.005$ or $P \leq 0.001$.

When null hypothesis is false and it is accepted we commit an error called as type II (Beta) error. For example: H_0 = Age and self-esteem has no relations.

When level of significance is $P \leq 0.05$ and sample support 4% relationship, we committed type I error, because we reject "H_0" on the basis of level of significance. However, when "Age and self-esteem has no relation" is itself false and we deny every relationship exist, we are committing