exhaustive hypotheses is to be rejected and which one is to be accepted at some specified risk of making an incorrect decision (Clark, 1963).

A statistical hypothesis can be either exact or inexact. The hypothesis that the mean (μ) of population j is equal to 40

$$H_0: \mu_j = 40 \tag{1}$$

is an exact hypothesis. The hypothesis

$$H_0: \mu_j \leq 40 \tag{2}$$

is an example of an inexact hypothesis. The alternative (H_1) to the exact null hypothesis above can take any one of several different forms; for example,

$H_1: \mu_j = 43$ (exact alternative hypothesis)

$H_1: \mu_j \neq 40$ (inexact two-tailed alternative hypothesis).

The alternative to the inexact null hypothesis above can be written

$$H_1: \mu_j > 40.$$

If a comparison of the central tendency of two populations j and j' is of interest, the null and alternative hypotheses can take any of the following forms:

$$H_0: \mu_j - \mu_{j'} = 0$$
$$H_1: \mu_j - \mu_{j'} \neq 0$$

or

$$H_0: \mu_j - \mu_{j'} \leq 0$$
$$H_1: \mu_j - \mu_{j'} > 0$$

or

$$H_0: \mu_j - \mu_{j'} \geq 0$$
$$H_1: \mu_j - \mu_{j'} < 0.$$

It should be noted that hypothesis testing in the behavioral sciences usually involves either two inexact hypotheses or one exact and one inexact hypothesis. The distinction between exact and inexact hypotheses is unimportant from a practical standpoint because the same general test procedures are followed in each case. Although we may speak of testing a single hypothesis, in practice we behave as though we were deciding which one of two mutually exclusive and exhaustive hypotheses is supported by our data. The procedure by which we make this decision is called a statistical test.

STATISTICAL TEST

A statistical test is the comparison of two hypotheses in the light of sample data according to a set of decision rules. The null hypothesis