STATISTICS IN PSYCHOLOGY AND EDUCATION

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IN PSYCHOLOGY AND EDUCATION

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CHAPTER 1

THE FREQUENCY DISTRIBUTION

I. MEASURES IN GENERAL

1. Ways of measuring

Measurement may be of several kinds and may be taken to various degrees of precision. When people or objects have been ranked or arranged in an *ordinal* series with respect to some trait or attribute, we have perhaps the simplest sort of measurement. School children may be put in 1,2,3 order for height, marks on an examination, or regularity of school attendance; salesmen for experience or sales volume over the year; advertisements for amount of color used, or for cost, or sales appeal. Rank order gives us serial position in the group, but it does not provide an exact measurement. We cannot add or subtract ranks as we do inches or pounds, as a person's rank is always relative to the ranks of other members of his group and is never absolute, i.e., in terms of some known unit.

Measurement of individual performance by means of tests is usually expressed as a *score*. Scores may be in terms of time taken to complete a task or amount done in a given time; less often scores are expressed in terms of difficulty of the task or excellence of result. Mental test scores vary with performance, and changes in score parallel closely changes in performance.

Many mental tests are not scaled in equal units. When scores are expressed in equal units they constitute an *interval scale*. Standard psychological tests are usually interval scales, as they have equal units or equal steps; but they do not possess a true zero. Scaled test scores may be added or subtracted just as we add or subtract inches. But we cannot say that a score of 40 is twice as good as a score of 20, as neither is taken from a zero of just no ability.