between subjects is possible, unless it is assumed that the interaction term is 0. With nearly all sets of data this assumption is not warranted, because the performance of subjects under different pairs of treatments is correlated. Ordinarily in most experiments of this type individual differences between subjects are of limited interest anyway, because with most variables that are the object of study the investigator expects a priori substantial differences between subjects.

19.4 ILLUSTRATIVE EXAMPLE OF ONE-FACTOR EXPERIMENT WITH REPEATED MEASUREMENTS

Table 19.1 shows hypothetical data for a one-factor experiment with repeated measurements. Rows are individuals, and columns are treatments. The data are presumed to relate to a random sample of individuals tested under different treatment conditions. This is a mixed model. One basis of classification, the columns, is fixed. The other basis of classification, the rows, is random.

Table 19.1

Data for the analysis of variance with two-way classification: $n = 1$, scores for a sample of subjects tested under four different conditions

	Conditions					
Subject	A	B	C	D	$T_{r.}$	$\bar{X}_{r.}$
1	31	42	14	80	167	41.75
2	42	26	25	106	199	49.75
3	84	21	19	83	207	51.75
4	26	60	36	69	191	47.75
5	14	35	44	48	141	35.25
6	16	80	28	76	200	50.00
7	29	49	80	39	197	49.25
8	32	38	76	84	230	57.50
9	45	65	15	91	216	54.00
10	30	71	82	39	222	55.50
$T_{.c}$	349	487	419	715		$T = 1{,}970$
$\bar{X}_{.c}$	34.90	48.70	41.90	71.50		$\bar{X}_{..} = 49.25$

$\sum_{r=1}^{R} T_{r.}^2 = 394{,}350 \qquad \sum_{c=1}^{C} T_{.c}^2 = 1{,}045{,}756 \qquad \sum_{r=1}^{R}\sum_{c=1}^{C} X_{rc}^2 = 122{,}984$