Dimension reduction analysis can be interpreted as follows: If the roots from n_o to s are not significant (in other words, if the $s - n_o + 1$ smallest canonical correlations are not significantly different from zero), we may say that the data do not provide evidence of association in more than $n_o - 1$ dimensions (only $n_o - 1$ discriminant functions are significant). In the dental calculus example, only one canonical correlation is significant at the 0.05 level for the TR effect.

5 Univariate analysis of variance results for each of the q response variables. In our example, Figure 1.32f gives the results obtained for the effect TR.

Figure 1.32f

UNIVARIATE F-TESTS WITH (4,100) D. F.

VARIABLE	HYPOTH. SS	ERROR SS	HYPOTH. MS	ERROR MS	F	SIG. OF F
RCAN	6.18306	137.89515	1.54577	1.37895	1.12097	.351
RLI	28.07315	261.87433	7.01829	2.61874	2.68002	.036
RCI	69.55358	423.98046	17.38839	4.23980	4.10123	.004

The sum of squares for the tested effect (HYPOTH. SS) and for the error (ERROR SS) of each response variable are the appropriate diagonal elements of S_h and S_e respectively.

Output for the YEAR effect and the YEAR BY TR interaction is given in Figure 1.32g.

Figure 1.32g

EFFECT .. YEAR BY TR
MULTIVARIATE TESTS OF SIGNIFICANCE (S = 1, M = 1/2, N = 48)

TEST NAME	VALUE	APPROX. F	HYPOTH. DF	ERROR DF	SIG. OF F
PILLAIS	.02445	.81881	3.00	98.00	.487
HOTELLINGS	.02507	.81881	3.00	98.00	.487
WILKS	.97555	.81881	3.00	98.00	.487
ROYS	.02445				

EIGENVALUES AND CANONICAL CORRELATIONS

ROOT NO.	EIGENVALUE	PCT.	CUM. PCT.	CANON. COR.
1	.02507	100.00000	100.00000	.15637

DIMENSION REDUCTION ANALYSIS

ROOTS	WILKS LAMBDA	F	HYPOTH. DF	ERROR DF	SIG. OF F
1 TO 1	.97555	.81881	3.00	98.00	.487

UNIVARIATE F-TESTS WITH (1,100) D. F.

VARIABLE	HYPOTH. SS	ERROR SS	HYPOTH. MS	ERROR MS	F	SIG. OF F
RCAN	.09862	137.89515	.09862	1.37895	.07152	.790
RLI	1.08877	261.87433	1.08877	2.61874	.41576	.521
RCI	9.73563	423.98046	9.73563	4.23980	2.29625	.133

EFFECT .. YEAR

MULTIVARIATE TESTS OF SIGNIFICANCE (S = 1, M = 1/2, N = 48)

TEST NAME	VALUE	APPROX. F	HYPOTH. DF	ERROR DF	SIG. OF F
PILLAIS	.04077	1.38843	3.00	98.00	.251
HOTELLINGS	.04250	1.38843	3.00	98.00	.251
WILKS	.95923	1.38843	3.00	98.00	.251
ROYS	.04077				

EIGENVALUES AND CANONICAL CORRELATIONS

ROOT NO.	EIGENVALUE	PCT.	CUM. PCT.	CANON. COR.
1	.04250	100.00000	100.00000	.20192

DIMENSION REDUCTION ANALYSIS

ROOTS	WILKS LAMBDA	F	HYPOTH. DF	ERROR DF	SIG. OF F
1 TO 1	.95923	1.38843	3.00	98.00	.251

UNIVARIATE F-TESTS WITH (1,100) D. F.

VARIABLE	HYPOTH. SS	ERROR SS	HYPOTH. MS	ERROR MS	F	SIG. OF F
RCAN	3.54279	137.89515	3.54279	1.37895	2.56919	.112
RLI	6.83291	261.87433	6.83291	2.61874	2.60923	.109
RCI	12.97332	423.98046	12.97332	4.23980	3.05989	.083