Another Canonical

Purpose of the study was to look for predictors of college performance. We had standardized test scores and "personality" variable scores for high school kids, along with a measure of their first-year college performance. For the multiple regression analyses the criterion was college performance and the predictors were the test and personality measures (and some interactions). The RHs were about comparing the incremental validity from adding the personality measures to the standardized test model they were currently using.

What else can we do with these data? One thing canonical correlation is great for is asking if different criteria are best predicted by subsets of predictors (you can also do that my running parallel multiple regression models for the different criteria and comparing them, but sometimes that approach and this give different "ideas" of how the variables interrelate!)

So, for this exploratory multivariate modeling:
Criteria are

1) the 5 standardized HS tests – representing "high school performance"
2) we disaggregated the college performance in to "required" and "elective" measures – representing "first year college performance"

Predictors are:
Ses, sex, locus, concpt, motv, hsprog & interactions with sex & sex (pretty common interactions in educational models),

Data Prep:

```
*hsprog 1=collegeprep 2 = vo-tech 3 – general.
if (hsprog = 1) hsprog_col1_gen0 = 1.
if (hsprog = 2) hsprog_col1_gen0 = 0.
if (hsprog = 3) hsprog_col1_gen0 = 0.

if (hsprog = 2) hsprog_tech1_gen0 = 1.
if (hsprog = 1) hsprog_tech1_gen0 = 0.
if (hsprog = 3) hsprog_tech1_gen0 = 0.


*computing interactions with sex.
compute int_sex_locus = sex * locus.
compute int_sex_concpt = sex * concpt.
compute int_sex_motv = sex * motv.

*computing interactions with ses.
compute int_ses_locus = ses * locus.
compute int_ses_concpt = ses * concpt.
compute int_ses_motv = ses * motv.
```

MANOVA Syntax:

```
manova   rdg   wrtg   math   sci   civ  colperf_elec colperf_req
with
ses sex locus   concpt   motv   hsprog_col1_gen0   hsprog_tech1_gen0
int_sex_locus  int_sex_concpt  int_sex_motv  int_ses_locus  int_ses_concpt  int_ses_motv
 /print signif(multiv dimenr eigen)
 /discrim raw stan cor.
```

Results:

Dimension Reduction Analysis

Roots	Wilks L.	F	Hypoth. DF	Error DF	Sig. of F
1 TO 7	.41068	1.89598	91.00	1124.32	.000
2 TO 7	.61278	1.28878	72.00	985.11	.018
3 TO 7	.74162	1.02054	55.00	841.39	.036
4 TO 7	.82476	.90171	40.00	691.98	.646
5 TO 7	.90487	.69012	27.00	535.10	.879
6 TO 7	.97244	.32365	16.00	368.00	.994
7 TO 7	.98817	.31652	7.00	185.00	.946

Eigenvalues and Canonical Correlations

Root No.	Eigenvalue	Pct.	Cum. Pct.	Canon Cor.	Sq. Cor
1	.49210	48.51076	48.51076	.57429	.42981
2	.21025	20.72644	69.23721	.41681	.27373
3	.11211	11.05121	80.28841	.31750	.15081
4	.09713	9.57521	89.86362	.29755	.05853
5	.07468	7.36158	97.22520	.26361	.06949
6	.01617	1.59418	98.81938	.12615	.01591
7	.01198	1.18062	100.00000	.10879	.01183

Correlations between DEPENDENT and canonical variables

Function No.

Variable	1	2	3
rdg	.67553	-.00700	.11247
wrtg	.78578	.02951	.25117
math	.34891	.34979	.54868
sci	.76414	.25419	.12573
civ	.84057	.17072	-.11427
colperf_	.21454	.75581	.21149
colper_1	.18984	.71637	-.11254

Correlations between COVARIATES and canonical variables

CAN. VAR.

Covariate	1	2	3
ses	.26011	.61210	.55437
sex	.58284	-.22924	.22134
locus	.68077	.59793	.44583
concpt	.16413	.46850	-.22122
motv	.43013	.16052	.66841
hsprog_col1_gen0	.45705	-.19343	.51414
hsprog_tech1_gen0	-.33459	.02812	.12471
int_sex_locus	.62546	.18792	-.09872
int_sex_concpt	.39655	-.06707	.11212
int_sex_motv	.21736	-.18917	.01201
int_ses_locus	.08833	.48421	.55574
int_ses_concpt	.11959	.37538	.22140
int_ses_motv	.11828	.41108	.55147