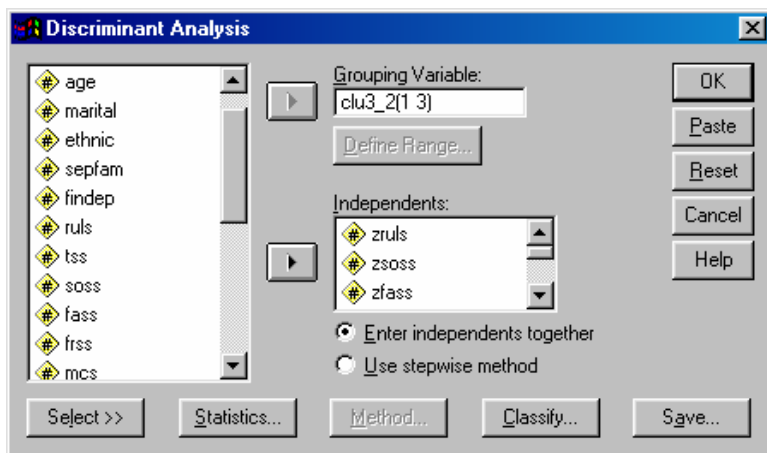


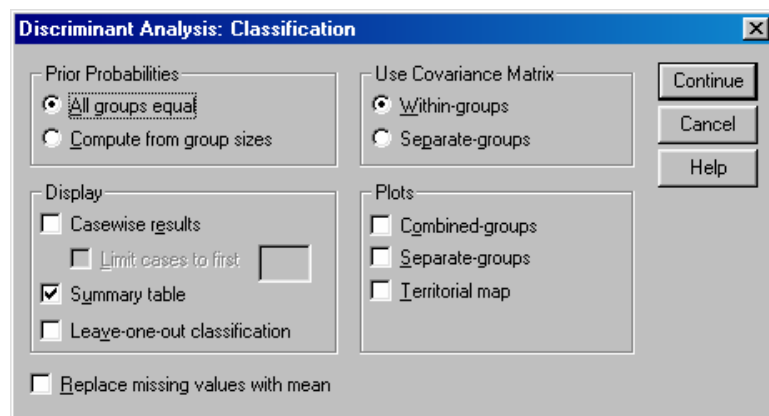
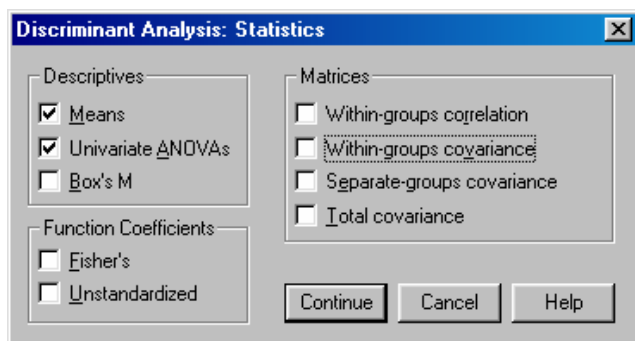
Idf Follow-up Analyses for Clustering

"Internal" Idf



The purpose is to describe differences among the clusters

- working with the same variables used to perform the clustering
- expect very good "reclassification"
- ANOVA's will tell us which groups are different on which profile variables (pairwise follow-ups are helpful)
- Idf gives a multivariate picture of cluster similarities and differences



Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
Zscore: loneliness	.480	64.947	2	120	.000
Zscore: significant other social support	.590	41.633	2	120	.000
Zscore: family social support	.609	38.524	2	120	.000
Zscore: friend social support	.664	30.320	2	120	.000
Zscore: state anxiety scale	.438	77.106	2	120	.000
Zscore: trait anxiety scale	.506	58.530	2	120	.000
Zscore: depression	.580	43.470	2	120	.000
Zscore: stress	.555	48.093	2	120	.000

The means are shown in the profile plot.

As usual, pairwise comparisons are needed to make sense of these...

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 2	.149	221.722	16	.000
2	.709	40.095	7	.000

Structure Matrix

	Function	
	1	2
Zscore: state anxiety scale	.724*	.275
Zscore: trait anxiety scale	.508*	-.062
Zscore: depression	.419*	.061
Zscore: significant other social support	-.316*	.204
Zscore: family social support	-.228*	.231
Zscore: friend social support	-.190	.349*
Zscore: loneliness	.523	-.763*
Zscore: stress	.389	.201*

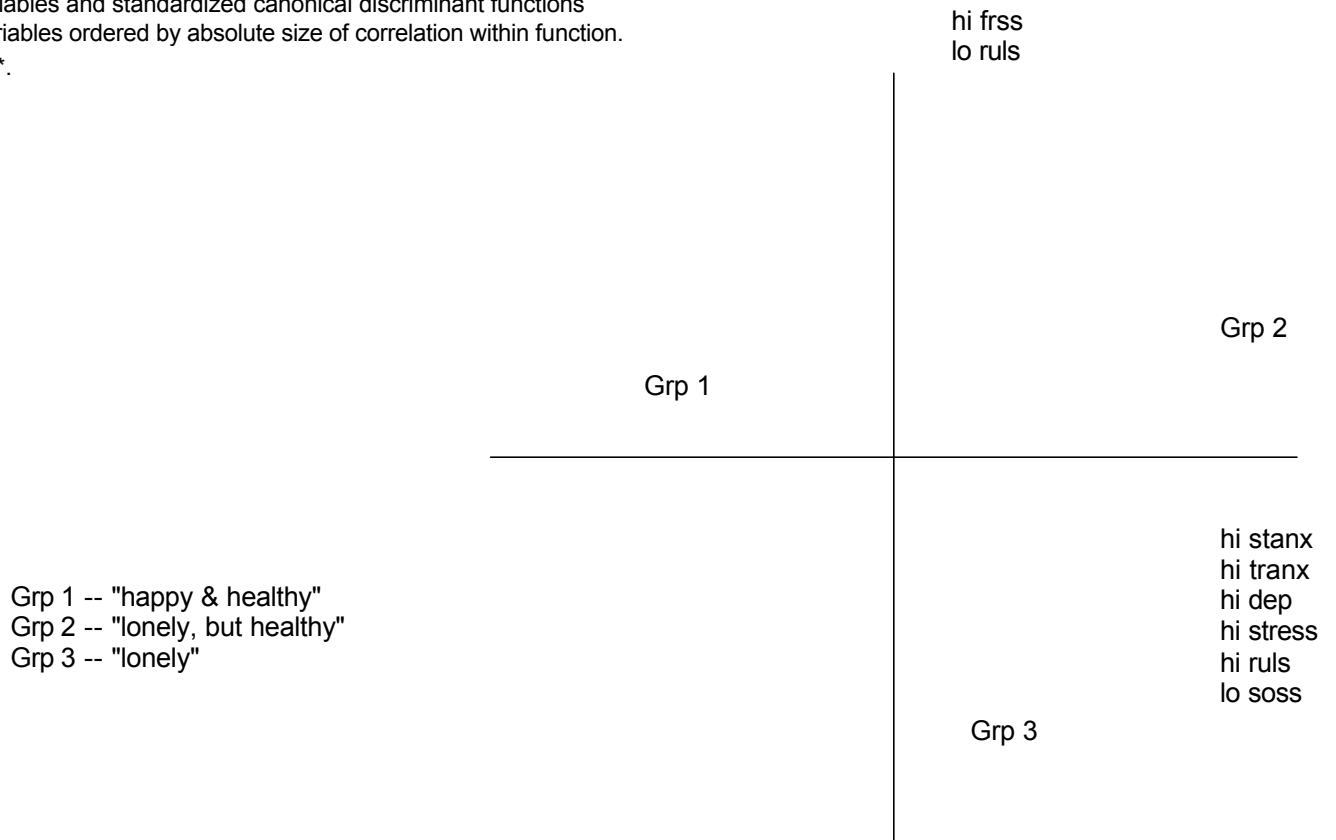
Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
 Variables ordered by absolute size of correlation within function.

*

Functions at Group Centroids

Ward Method	Function	
	1	2
1	-1.593	.469
2	3.029	.601
3	.187	-1.848

Unstandardized canonical discriminant functions evaluated at group means



"External" Idf

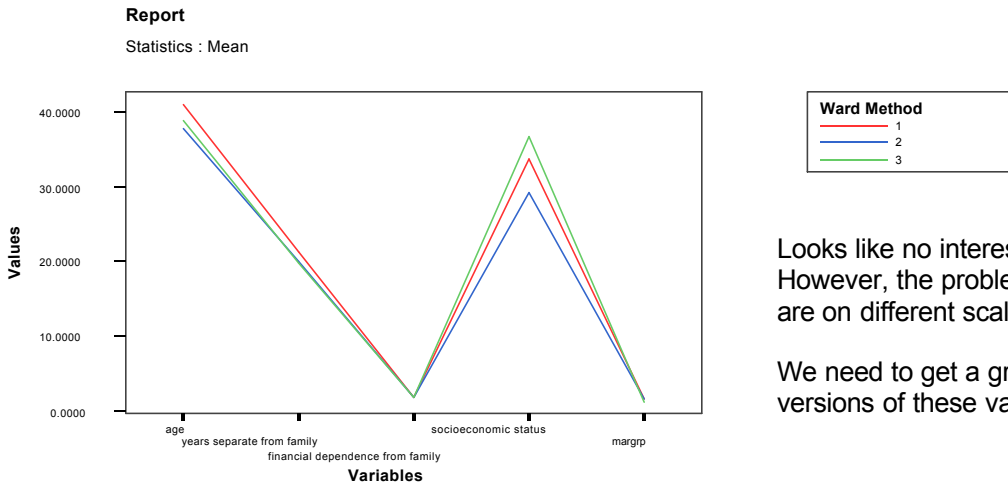
The purpose of these analyses is to examine how the clusters are similar and different -- based on variables that were not part of the clustering.

A good place to start is the graph of the cluster differences on the selected variables. But we have to be careful when we get this graph!

Here's the "obvious" graph to get...

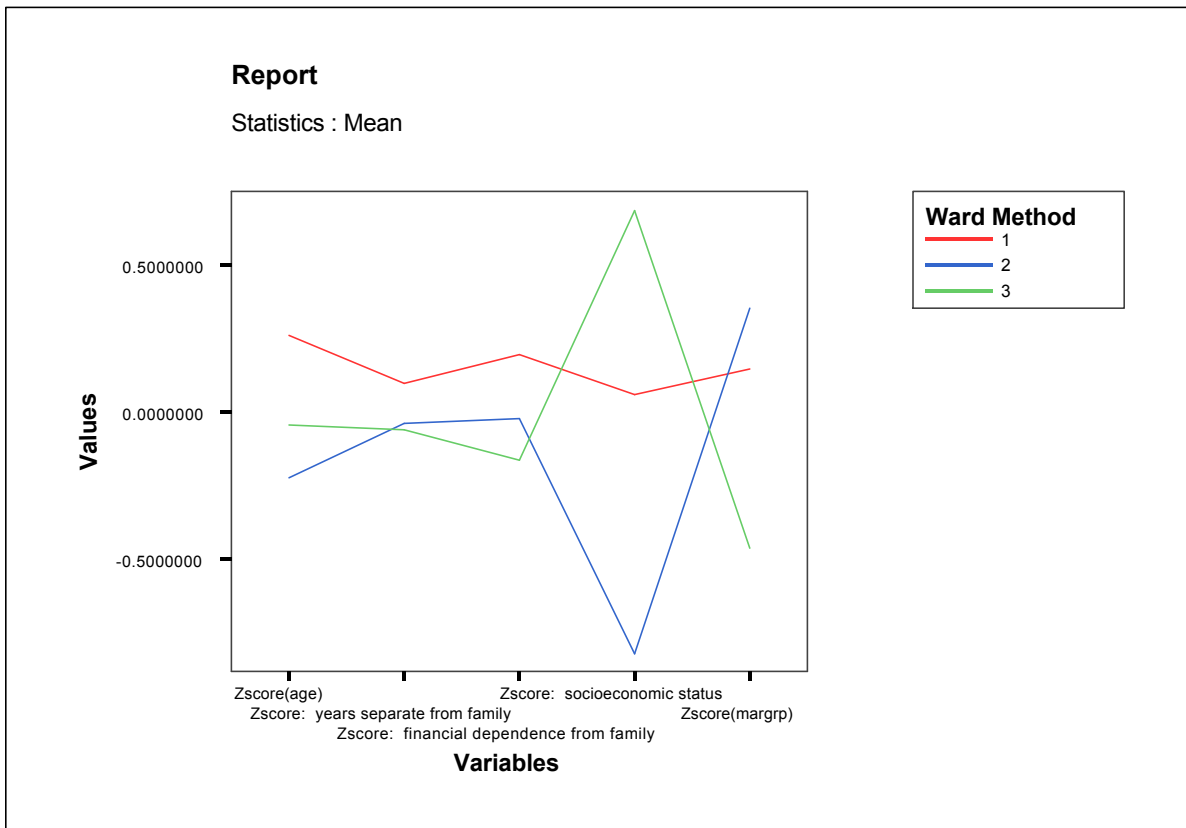
Grp 1 -- "happy & healthy"
 Grp 2 -- "lonely, but healthy"
 Grp 3 -- "lonely"

For "margrp" 1 = married
 2 = all others



Looks like no interesting group differences. However, the problem is that the different variables are on different scales.

We need to get a graph based on the standardized versions of these variables, like below.



When we use the standardized values of the variables, we not only see group differences, but we can notice that those differences are not ordinal – we can expect a diffuse discriminant structure for these groups on these variables.

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
age	.961	2.449	2	120	.091
years separate from family	.995	.300	2	120	.741
financial dependence from family	.978	1.363	2	120	.260
socioeconomic status	.617	37.235	2	120	.000
margrp	.877	8.390	2	120	.000

ANOVAs using these variables show the expected differences among the groups (we would probably want to use LSD follow-ups to specify the group difference patterns on each of the significant variables).

Discriminant function analysis will give a more complete, multivariate picture of how these cluster differ from each other

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 2	.502	81.390	10	.000
2	.911	10.969	4	.027

There is a diffuse structure among these groups for these variables, as suggested by the non-ordinal differences in the graph above

Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	.816 ^a	89.3	89.3	.670
2	.097 ^a	10.7	100.0	.298

Both functions have substantial canonical correlations.

Notice that the first function is a considerably stronger group discriminator than the second (based on the % of Variance statistics)

a. First 2 canonical discriminant functions were used in the analysis.

Structure Matrix

	Function	
	1	2
socioeconomic status	.869*	.208
margrp	-.397*	.343
age	.079	.605*
financial dependence from family	-.067	.443*
years separate from family	-.011	.224*

Notice that the 1st function is made up of the two variables with significant bivariate differences among the groups.

While the second function includes contributions from two of the nonsignificant variables (age and years separate)

*

Classification Results^a

			Predicted Group Membership			Total
			1	2	3	
Original	Count	1	20	11	10	41
		2	6	27	6	39
		3	9	3	31	43
%		1	48.8	26.8	24.4	100.0
		2	15.4	69.2	15.4	100.0
		3	20.9	7.0	72.1	100.0

a. 63.4% of original grouped cases correctly classified.

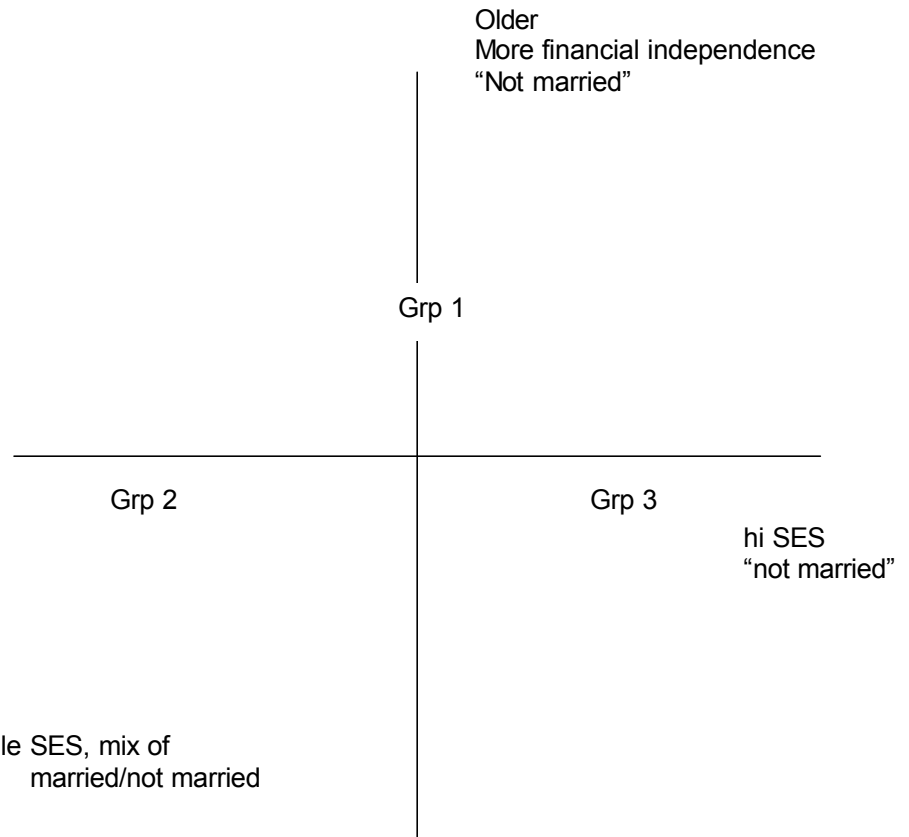
Good separation among the groups – about twice as good as chance!

Functions at Group Centroids

Ward Method	Function	
	1	2
1	-.018	.436
2	-1.138	-.224
3	1.050	-.213

Unstandardized canonical discriminant functions evaluated at group means

The group centroids, along with the structure weights allow us to give a multivariate interpretation to the differences among these clusters.



- Grp 1 -- "happy & healthy"
→ older, more independent, middle SES, mix of married/not married
- Grp 2 -- "lonely, but healthy"
→ younger, less independent, lower SES, married
- Grp 3 -- "lonely"
→ younger, less independent, higher SES, not married