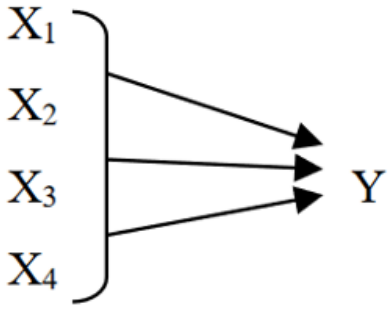
Discriminant Analysis Presentation~ REVISION

Marcy Saxton and Jenn Stoneking



COM 631/731--Multivariate Statistical Methods
Instructor: Prof. Kim Neuendorf (k.neuendorf@csuohio.edu)
Cleveland State University, Spring 2018
Presented on 2018-April-02

SECTION I. THE MODEL

Dataset

Film & TV Usage Survey 2015, National online survey via SurveyMonkey, administered via MTurk
Researchers: Drs. Leo W. Jeffres and Kimberly A. Neuendorf

Independent Variables (X_1 through X_{10})

Q3c. Read a magazine
Q13i. Film in a theater-A friend recommended the film.
Q22a. How important The genre of the film.
Q22c. How important The star(s) of the film.
Q22d. How important The recency of the film's release/how new the film is.
Q22e. How important The country the film is from.
Q28a. I often watch videos on my cell phone.
Q29b. I'm more a traditionalist, preferring to read physical copies of books, magazines and newspapers rather than digital versions.
Q29o. I generally think of myself as a happy person.
Q29s. I like to see films and TV programs from other countries.

DF_1

DF_2

DF_3

Dependent Variable (Y)

Q16. Coded for *Behavioral Response to Expectancy Violation*

1=Influencers set out to change others' opinions:
- "Annoyed, betrayed and tell other people how the film really was."
- "I turn it off before it ends and let others know it sucks!"

2=Reflectors takes lessons learned and applies it to their future decisions about other films, or was excited about change in expectation:
- "Upset, and I generally move away from that genre for a while."
- "I love it, I can't wait to buy it on Blu-Ray."

3=Changers dislikes it to the extent they stop watching at that time, and/or will not watch that film in the future:
- "I turn it off."
- "I just don't bother to watch that film again."

4=Flexibles took no action, go with the flow:
- "Let down… I groan."
- "Indifferent."

SECTION II. RUNNING SPSS

Discriminant Analysis in SPSS Instructions

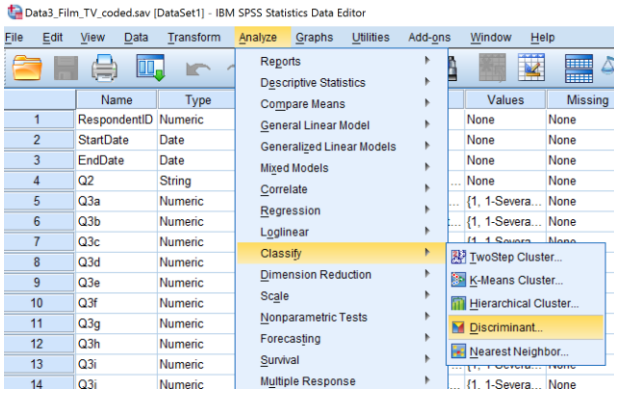
Screen Shots

Step 1. Open the Discriminant Analysis function in SPSS

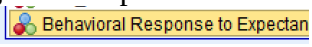
1.1 *Navigate* the menus:

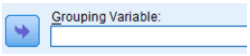
- Analyze
- Classify
- Discriminant

1.2 *Click* on Discriminant



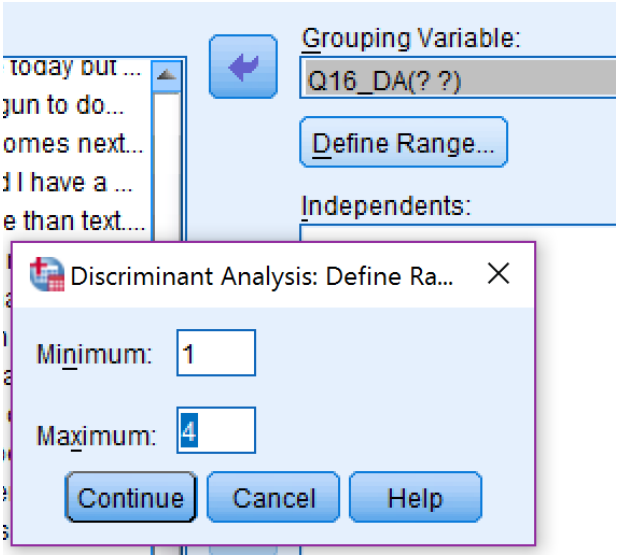
Step 2. Choose your Grouping (Dependent) Variable

2.1 *Pick*/highlight the Dependent Variable from the left column 

and then *click* on the arrow to add it to the Grouping Variable. 

2.2 *Click* Define Range, and choose the appropriate range (1 and 4 in our case)

2.3 *Click* Continue

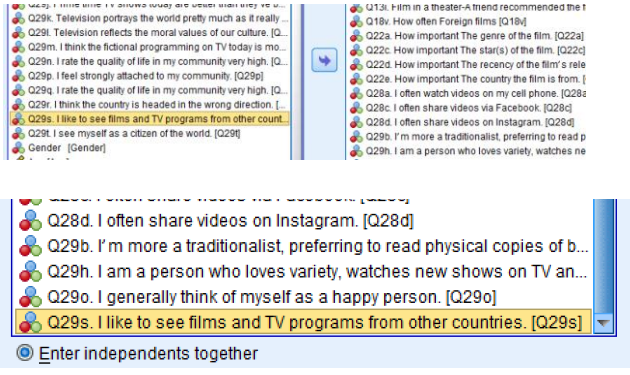


Step 3. Choose your Independent Variables

Note: *holding 'Ctrl' allows you to pick more than one variable at a time.*

3.1 *Pick*/highlight the Independent Variables from the left column and then *click* on the arrow to add them to the Independents (repeat as necessary).

3.2 Confirm that 'Enter independents together' is active.



Discriminant Analysis in SPSS Instructions, cont. **Screen Shots**

Step 4. Statistics Settings

4.1 *Click* the Statistics button

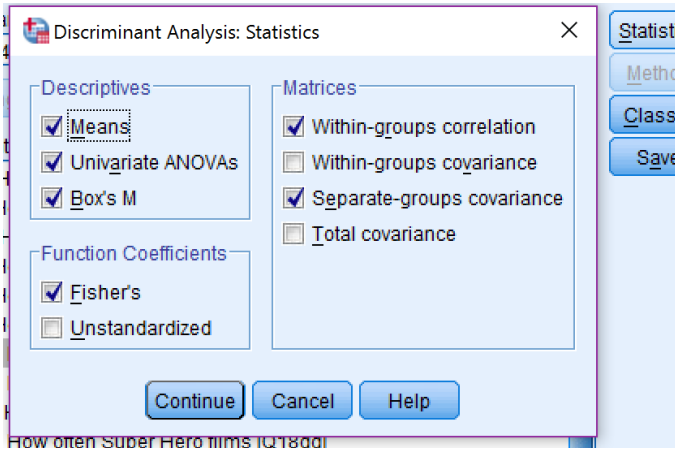
4.2 Choose the following settings:

Descriptives
- Means
- Univariate ANOVA
- Box's M

Function coefficients
- Fisher's

Matrices
- Within-groups correlation
- Separate-groups covariance

4.3 *Click* the Continue button



Step 5. Classify Settings

5.1 *Click* the Classify button

5.2 Choose the following settings:

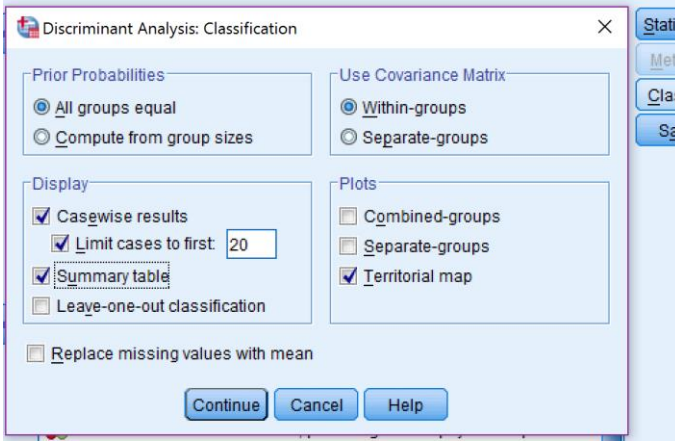
Prior Probabilities
- All groups equal

Display
- Casewise results
  - -Limit cases to first 20
- Summary table

Use Covariance Matrix
- Within-groups

Plots
- Territorial map

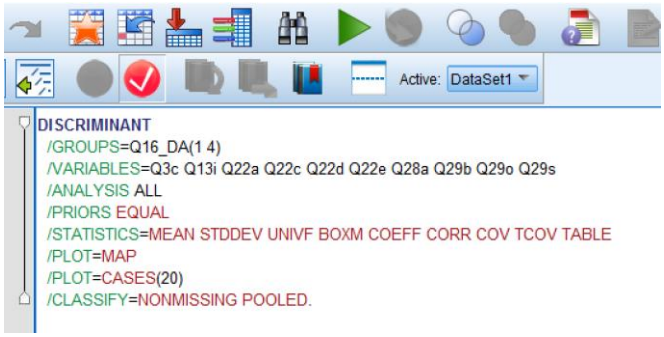
5.3 *Click* the Continue button



Step 6. Paste / Run the Analysis

6.1 *Click* the Paste button

6.2 *Run* the code from your syntax file



SECTION III. SPSS OUTPUT

```
DISCRIMINANT
  /GROUPS=Q16_DA(1 4)
  /VARIABLES=Q3c Q13i Q22a Q22c Q22d Q22e Q28a Q29b Q29o Q29s
  /ANALYSIS ALL
  /PRIORS EQUAL
  /STATISTICS=MEAN STDDEV UNIVF BOXM COEFF CORR COV TCOV TABLE
  /PLOT=MAP
  /PLOT=CASES(20)
  /CLASSIFY=NONMISSING POOLED.
```

Discriminant

Analysis Case Processing Summary

Unweighted Cases		N	Percent
Valid		321	59.1
Excluded	Missing or out-of-range group codes	5	.9
	At least one missing discriminating variable	46	8.5
	Both missing or out-of-range group codes and at least one missing discriminating variable	171	31.5
	Total	222	40.9
Total		543	100.0

Group Statistics (Influencers)

Behavioral Response to Expectancy Violation		Mean	Std. Deviation	Valid N (listwise) Unweighted	Valid N (listwise) Weighted
Influencers	Q3c. Read a magazine	5.14	1.727	66	66.000
	Q13i. Film in a theater-A friend recommended the film.	1.94	.820	66	66.000
	Q22a. How important The genre of the film.	5.97	1.498	66	66.000
	Q22c. How important The star(s) of the film.	4.88	1.669	66	66.000
	Q22d. How important The recency of the film's release/how new the film is.	3.38	1.936	66	66.000
	Q22e. How important The country the film is from.	3.30	2.045	66	66.000
	Q28a. I often watch videos on my cell phone.	2.91	2.066	66	66.000
	Q29b. I'm more a traditionalist, preferring to read physical copies of books, magazines and newspapers rather than digital versions.	3.70	1.897	66	66.000
	Q29o. I generally think of myself as a happy person.	5.59	1.358	66	66.000
	Q29s. I like to see films and TV programs from other countries.	3.88	2.079	66	66.000

Group Statistics (Reflectors)

Behavioral Response to Expectancy Violation		Mean	Std. Deviation	Valid N (listwise) Unweighted	Valid N (listwise) Weighted
Reflectors	Q3c. Read a magazine	5.13	1.806	55	55.000
	Q13i. Film in a theater-A friend recommended the film.	2.29	.762	55	55.000
	Q22a. How important The genre of the film.	5.64	1.495	55	55.000
	Q22c. How important The star(s) of the film.	4.42	1.629	55	55.000
	Q22d. How important The recency of the film's release/how new the film is.	2.71	1.833	55	55.000
	Q22e. How important The country the film is from.	3.13	1.667	55	55.000
	Q28a. I often watch videos on my cell phone.	2.44	1.941	55	55.000
	Q29b. I'm more a traditionalist, preferring to read physical copies of books, magazines and newspapers rather than digital versions.	4.47	2.080	55	55.000
	Q29o. I generally think of myself as a happy person.	4.96	1.503	55	55.000
	Q29s. I like to see films and TV programs from other countries.	4.78	1.883	55	55.000

Group Statistics (Changers)

Behavioral Response to Expectancy Violation		Mean	Std. Deviation	Valid N (listwise) Unweighted	Valid N (listwise) Weighted
Changers	Q3c. Read a magazine	5.95	1.703	62	62.000
	Q13i. Film in a theater-A friend recommended the film.	2.27	.926	62	62.000
	Q22a. How important The genre of the film.	5.90	1.376	62	62.000
	Q22c. How important The star(s) of the film.	4.60	1.760	62	62.000
	Q22d. How important The recency of the film's release/how new the film is.	3.23	1.841	62	62.000
	Q22e. How important The country the film is from.	3.56	2.178	62	62.000
	Q28a. I often watch videos on my cell phone.	3.52	2.474	62	62.000
	Q29b. I'm more a traditionalist, preferring to read physical copies of books, magazines and newspapers rather than digital versions.	3.65	2.057	62	62.000
	Q29o. I generally think of myself as a happy person.	5.26	1.736	62	62.000
	Q29s. I like to see films and TV programs from other countries.	3.71	1.832	62	62.000

Group Statistics (Flexibles)

Behavioral Response to Expectancy Violation		Mean	Std. Deviation	Valid N (listwise) Unweighted	Valid N (listwise) Weighted
Flexibles	Q3c. Read a magazine	4.83	1.808	138	138.000
	Q13i. Film in a theater-A friend recommended the film.	2.14	.839	138	138.000
	Q22a. How important The genre of the film.	5.42	1.542	138	138.000
	Q22c. How important The star(s) of the film.	4.66	1.452	138	138.000
	Q22d. How important The recency of the film's release/how new the film is.	3.69	1.851	138	138.000
	Q22e. How important The country the film is from.	3.59	1.939	138	138.000
	Q28a. I often watch videos on my cell phone.	3.15	2.050	138	138.000
	Q29b. I'm more a traditionalist, preferring to read physical copies of books, magazines and newspapers rather than digital versions.	4.25	2.000	138	138.000
	Q29o. I generally think of myself as a happy person.	5.17	1.573	138	138.000
	Q29s. I like to see films and TV programs from other countries.	4.20	1.915	138	138.000

Group Statistics (Total)

Behavioral Response to Expectancy Violation		Mean	Std. Deviation	Valid N (listwise)	
				Unweighted	Weighted
Total	Q3c. Read a magazine	5.16	1.810	321	321.000
	Q13i. Film in a theater-A friend recommended the film.	2.15	.846	321	321.000
	Q22a. How important The genre of the film.	5.66	1.506	321	321.000
	Q22c. How important The star(s) of the film.	4.65	1.590	321	321.000
	Q22d. How important The recency of the film's release/how new the film is.	3.37	1.888	321	321.000
	Q22e. How important The country the film is from.	3.45	1.966	321	321.000
	Q28a. I often watch videos on my cell phone.	3.05	2.141	321	321.000
	Q29b. I'm more a traditionalist, preferring to read physical copies of books, magazines and newspapers rather than digital versions.	4.06	2.022	321	321.000
	Q29o. I generally think of myself as a happy person.	5.24	1.559	321	321.000
	Q29s. I like to see films and TV programs from other countries.	4.14	1.952	321	321.000

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
Q3c. Read a magazine	.948	5.773	3	317	.001
Q13i. Film in a theater-A friend recommended the film.	.978	2.359	3	317	.072
Q22a. How important The genre of the film.	.975	2.681	3	317	.047
Q22c. How important The star(s) of the film.	.992	.869	3	317	.457
Q22d. How important The recency of the film's release/how new the film is.	.966	3.771	3	317	.011
Q22e. How important The country the film is from.	.991	.934	3	317	.425
Q28a. I often watch videos on my cell phone.	.975	2.729	3	317	.044
Q29b. I'm more a traditionalist, preferring to read physical copies of books, magazines and newspapers rather than digital versions.	.974	2.813	3	317	.039
Q29o. I generally think of myself as a happy person.	.983	1.808	3	317	.146
Q29s. I like to see films and TV programs from other countries.	.968	3.511	3	317	.016

Pooled Within-Groups Matrices[a]

		Q3c. Read a magazine	Q13i. Film in a theater-A friend recommended the film.	Q22a. How important The genre of the film.	Q22c. How important The star(s) of the film.	Q22d. How important The recency of the film's release/how new the film is.	Q22e. How important The country the film is from.	Q28a. I often watch videos on my cell phone.	Q29b. I'm more a traditionalist, preferring to read physical copies of books, magazines and newspapers rather than digital versions.	Q29o. I generally think of myself as a happy person.	Q29s. I like to see films and TV programs from other countries.
Covariance	Q3c	3.137	.153	.150	-.108	-.146	-.340	-.047	-.570	-.184	-.213
	Q13i.	.153	.706	.017	-.176	-.078	-.128	-.170	.052	-.166	-.012
	Q22a.	.150	.017	2.233	.613	.418	.675	.028	.139	.200	.135
	Q22c.	-.108	-.176	.613	2.531	1.018	.835	.301	.230	.353	.036
	Q22d.	-.146	-.078	.418	1.018	3.474	1.366	.576	-.205	.004	-.075
	Q22e	-.340	-.128	.675	.835	1.366	3.869	-.021	.266	.188	-.781
	Q28a.	-.047	-.170	.028	.301	.576	-.021	4.512	.063	.109	.264
	Q29b.	-.570	.052	.139	.230	-.205	.266	.063	4.019	-.083	.324
	Q29o.	-.184	-.166	.200	.353	.004	.188	.109	-.083	2.413	-.226
	Q29s	-.213	-.012	.135	.036	-.075	-.781	.264	.324	-.226	3.721
Correlation	Q3c.	1.000	.103	.057	-.038	-.044	-.097	-.013	-.160	-.067	-.062
	Q13i.	.103	1.000	.013	-.132	-.050	-.078	-.095	.031	-.127	-.008
	Q22a.	.057	.013	1.000	.258	.150	.230	.009	.046	.086	.047
	Q22c.	-.038	-.132	.258	1.000	.343	.267	.089	.072	.143	.012
	Q22d.	-.044	-.050	.150	.343	1.000	.373	.145	-.055	.001	-.021
	Q22e.	-.097	-.078	.230	.267	.373	1.000	-.005	.067	.062	-.206
	Q28a.	-.013	-.095	.009	.089	.145	-.005	1.000	.015	.033	.064
	Q29b..	-.160	.031	.046	.072	-.055	.067	.015	1.000	-.027	.084
	Q29o.	-.067	-.127	.086	.143	.001	.062	.033	-.027	1.000	-.076
	Q29s.	-.062	-.008	.047	.012	-.021	-.206	.064	.084	-.076	1.000

a. The covariance matrix has 317 degrees of freedom.

Covariance Matrices[a]

Behavioral Response to Expectancy Violation		Q3c. Read a magazine	Q13i. Film in a theater-A friend recommended the film.	Q22a. How important The genre of the film.	Q22c. How important The star(s) of the film.	Q22d. How important The recency of the film's release/how new the film is.	Q22e. How important The country the film is from.	Q28a. I often watch videos on my cell phone.	Q29b. I'm more a traditionalist, preferring to read physical copies of books, magazines and newspapers rather than digital versions.	Q29o. I generally think of myself as a happy person.	Q29s. I like to see films and TV programs from other countries.
Total	Q3c.	3.278	.173	.219	-.116	-.209	-.337	.014	-.656	-.169	-.288
	Q13i.	.173	.715	.010	-.191	-.099	-.127	-.167	.066	-.186	.004
	Q22a.	.219	.010	2.268	.620	.377	.651	.032	.073	.230	.088
	Q22c.	-.116	-.191	.620	2.528	1.038	.832	.311	.199	.377	.002
	Q22d.	-.209	-.099	.377	1.038	3.564	1.406	.641	-.212	.025	-.127
	Q22e.	-.337	-.127	.651	.832	1.406	3.867	.034	.255	.187	-.807
	Q28a.	.014	-.167	.032	.311	.641	.034	4.585	.000	.126	.165
	Q29b..	-.656	.066	.073	.199	-.212	.255	.000	4.087	-.136	.426
	Q29o.	-.169	-.186	.230	.377	.025	.187	.126	-.136	2.431	-.277
	Q29s.	-.288	.004	.088	.002	-.127	-.807	.165	.426	-.277	3.808

a. The total covariance matrix has 320 degrees of freedom.

Analysis 1
Box's Test of Equality of Covariance Matrices

Log Determinants

Behavioral Response to Expectancy Violation	Rank	Log Determinant
Influencers	10	8.988
Reflectors	10	8.328
Changers	10	9.877
Flexibles	10	8.915
Pooled within-groups	10	9.554

The ranks and natural logarithms of determinants printed are those of the group covariance matrices.

Test Results

Box's M		170.909
F	Approx.	.969
	df1	165
	df2	120526.281
	Sig.	.597

Tests null hypothesis of equal population covariance matrices.

Summary of Canonical Discriminant Functions

Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	.112[a]	48.6	48.6	.318
2	.069[a]	29.7	78.2	.253
3	.050[a]	21.8	100.0	.219

a. First 3 canonical discriminant functions were used in the analysis.

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 3	.801	69.384	30	.000
2 through 3	.891	36.094	18	.007
3	.952	15.354	8	.053

Standardized Canonical Discriminant Function Coefficients

	Function		
	1	2	3
Q3c. Read a magazine	.500	.359	.290
Q13i. Film in a theater-A friend recommended the film.	-.042	.306	.460
Q22a. How important The genre of the film.	.422	.188	-.424
Q22c. How important The star(s) of the film.	.057	-.043	-.222
Q22d. How important The recency of the film’s release/how new the film is.	-.187	-.675	.171
Q22e. How important The country the film is from.	-.041	.126	.477
Q28a. I often watch videos on my cell phone.	.318	-.182	.536
Q29b. I’m more a traditionalist, preferring to read physical copies of books, magazines and newspapers rather than digital versions.	-.380	.114	.138
Q29o. I generally think of myself as a happy person.	.176	-.195	-.219
Q29s. I like to see films and TV programs from other countries.	-.439	.373	-.018

Structure Matrix

	Function		
	1	2	3
Q3c. Read a magazine	.602*	.394	.255
Q29b. I'm more a traditionalist, preferring to read physical copies of books, magazines and newspapers rather than digital versions.	-.467*	.151	.105
Q29s. I like to see films and TV programs from other countries.	-.462*	.357	-.101
Q22a. How important The genre of the film.	.407*	.134	-.332
Q22d. How important The recency of the film's release/how new the film is.	-.063	-.686*	.243
Q22c. How important The star(s) of the film.	.098	-.278*	-.192
Q28a. I often watch videos on my cell phone.	.270	-.297	.481*
Q13i. Film in a theater-A friend recommended the film.	-.041	.418	.449*
Q29o. I generally think of myself as a happy person.	.243	-.278	-.320*
Q22e. How important The country the film is from.	.030	-.233	.316*

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

Functions at Group Centroids

Behavioral Response to Expectancy Violation	Function		
	1	2	3
Influencers	.248	-.166	-.380
Reflectors	-.307	.500	-.119
Changers	.544	.147	.243
Flexibles	-.241	-.186	.120

Unstandardized canonical discriminant functions evaluated at group means

Classification Statistics

Classification Processing Summary

Processed		543
Excluded	Missing or out-of-range group codes	0
	At least one missing discriminating variable	217
Used in Output		326

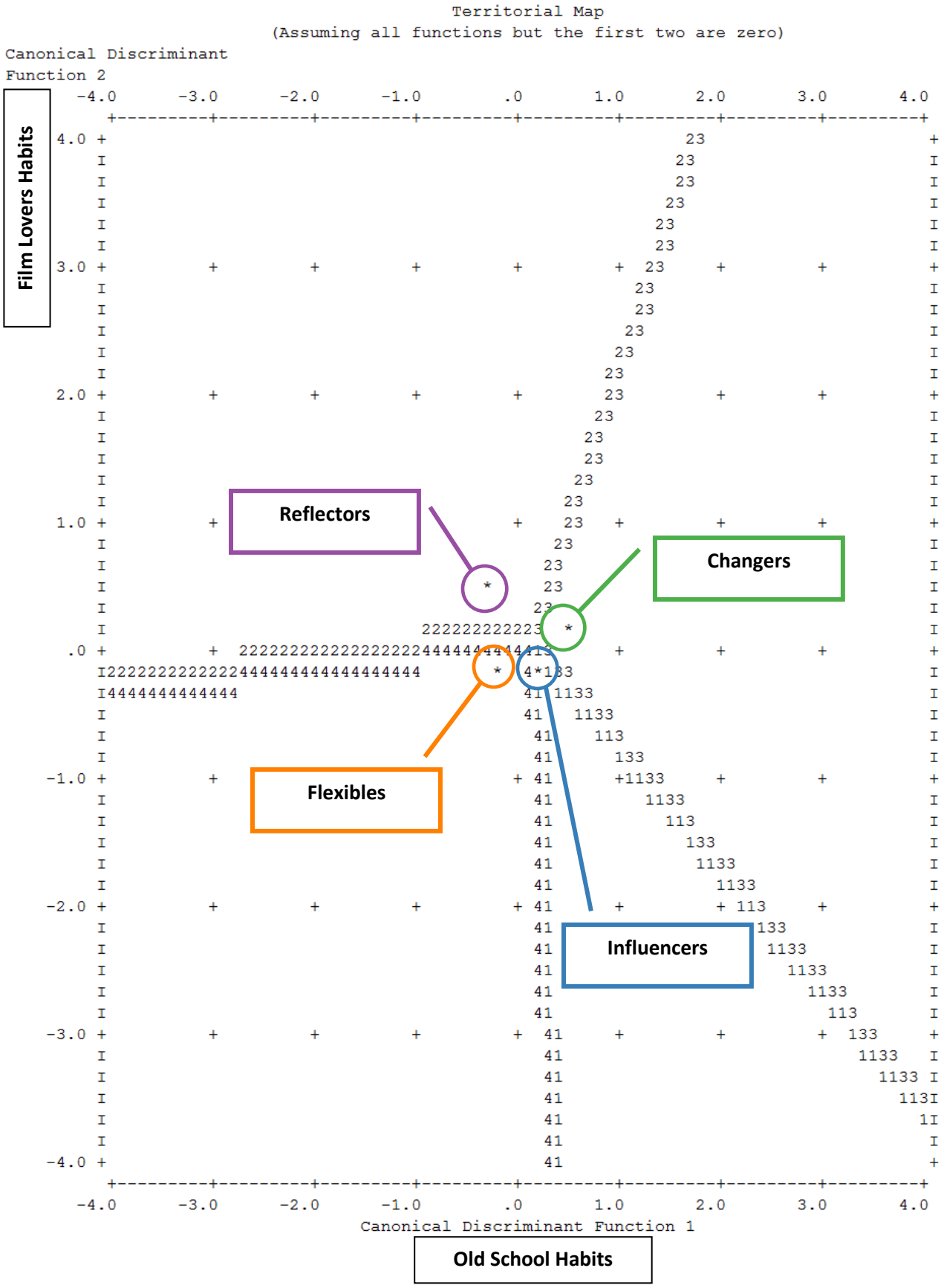
Prior Probabilities for Groups

Behavioral Response to Expectancy Violation	Prior	Cases Used in Analysis	
		Unweighted	Weighted
Influencers	.250	66	66.000
Reflectors	.250	55	55.000
Changers	.250	62	62.000
Flexibles	.250	138	138.000
Total	1.000	321	321.000

Classification Function Coefficients

	Behavioral Response to Expectancy Violation			
	Influencers	Reflectors	Changers	Flexibles
Q3c. Read a magazine	1.922	1.944	2.171	1.862
Q13i. Film in a theater-A friend recommended the film.	3.344	3.758	3.785	3.635
Q22a. How important The genre of the film.	1.638	1.491	1.584	1.356
Q22c. How important The star(s) of the film.	.978	.904	.893	.891
Q22d. How important The recency of the film's release/how new the film is.	.422	.260	.336	.524
Q22e. How important The country the film is from.	.555	.672	.720	.685
Q28a. I often watch videos on my cell phone.	.518	.443	.692	.572
Q29b. I'm more a traditionalist, preferring to read physical copies of books, magazines and newspapers rather than digital versions.	.964	1.125	.969	1.090
Q29o. I generally think of myself as a happy person.	2.498	2.315	2.404	2.375
Q29s. I like to see films and TV programs from other countries.	1.251	1.503	1.238	1.353
(Constant)	-30.415	-30.672	-32.306	-29.912

Fisher's linear discriminant functions


Territorial Map
(Assuming all functions but the first two are zero)
Canonical Discriminant
Function 2
Film Lovers Habits
Reflectors
Changers
Flexibles
Influencers
Canonical Discriminant Function 1
Old School Habits

Symbols used in territorial map

Symbol	Group	Label
1	1	Influencers
2	2	Reflectors
3	3	Changers
4	4	Flexibles
*		Indicates a group centroid

Casewise Statistics

	Case Number	Actual Group	Highest Group: Predicted Group	Highest Group: P(D>d | G=g) p	Highest Group: P(D>d | G=g) df	Highest Group: P(G=g | D=d)	Highest Group: Squared Mahalanobis Distance to Centroid	Second Highest Group: Group	Second Highest Group: P(G=g | D=d)	Second Highest Group: Squared Mahalanobis Distance to Centroid	Discriminant Scores: Function 1	Discriminant Scores: Function 2	Discriminant Scores: Function 3
Original	24	ungrouped	2	.502	3	.462	2.355	1	.236	3.701	-.037	1.546	-1.209
	94	ungrouped	4	.335	3	.521	3.395	1	.233	5.003	-.980	-1.842	.449
	111	ungrouped	1	.464	3	.464	2.565	4	.234	3.939	.911	-1.593	-.675
	120	ungrouped	1	.962	3	.375	.290	3	.244	1.144	.581	-.541	-.576
	149	ungrouped	2	.836	3	.320	.855	3	.263	1.245	.393	.988	-.475
	177	1	2**	.120	3	.439	5.839	3	.344	6.329	.062	2.303	1.447
	178	1	4**	.790	3	.431	1.047	1	.194	2.642	-.645	-.831	.804
	179	1	4**	.099	3	.441	6.279	1	.386	6.545	-.765	-2.492	-.710
	180	1	4**	.479	3	.446	2.481	2	.239	3.732	-1.509	-.994	-.349
	181	1	2**	.256	3	.410	4.052	1	.338	4.436	-.184	1.033	-2.057
	182	1	4**	.993	3	.277	.087	1	.253	.269	-.134	.007	-.075
	183	1	2**	.320	3	.511	3.510	1	.222	5.177	-1.377	.833	-1.621
	184	1	1	.920	3	.376	.496	3	.271	1.152	.836	-.094	-.761
	185	1	2**	.529	3	.346	2.214	1	.339	2.258	-.431	.393	-1.598
	187	1	2**	.459	3	.451	2.589	4	.341	3.151	-1.910	.367	-.118
	188	1	1	.582	3	.465	1.953	4	.210	3.540	.020	-.505	-1.716
	189	1	1	.970	3	.274	.243	2	.259	.357	.224	.324	-.330
	190	1	1	.346	3	.576	3.311	4	.165	5.811	.808	-1.030	-1.880
	191	1	3**	.983	3	.314	.162	1	.285	.354	.624	-.212	.080
	192	1	1	.805	3	.359	.982	4	.304	1.312	.224	-1.152	-.285

**. Misclassified case

Classification Results[a]

Behavioral Response to Expectancy Violation			Predicted Group Membership				
			Influencers	Reflectors	Changers	Flexibles	Total
Original	Count	Influencers	27	13	14	12	66
		Reflectors	8	29	9	9	55
		Changers	12	10	30	10	62
		Flexibles	28	29	29	52	138
		Ungrouped cases	2	2	0	1	5
	%	Influencers	40.9	19.7	21.2	18.2	100.0
		Reflectors	14.5	52.7	16.4	16.4	100.0
		Changers	19.4	16.1	48.4	16.1	100.0
		Flexibles	20.3	21.0	21.0	37.7	100.0
		Ungrouped cases	40.0	40.0	.0	20.0	100.0

a. 43.0% of original grouped cases correctly classified.

SECTION IV. TABLING RESULTS

Table 1. Discriminant Functions

	Standardized canonical coefficients			Structure Coefficients / Discriminant Loadings		
	"Old School Habits"	"Film Lovers Habits"	"Millennial Habits"	"Old School Habits"	"Film Lovers Habits"	"Millennial Habits"
Independent Variables	1	2	3	1	2	3
Q3c. Read a magazine	0.500	0.359	0.290	**.602***	.394	.255
Q29b. I'm more a traditionalist, preferring to read physical copies of books, magazines and newspapers rather than digital versions.	-0.380	0.114	0.138	**-.467***	.151	.105
Q29s. I like to see films and TV programs from other countries.	-0.439	0.373	-0.018	**-.462***	.357	-.101
Q22a. How important The genre of the film.	0.422	0.188	-0.424	**.407***	.134	-.332
Q22d. How important The recency of the film's release/how new the film is.	-0.187	-0.675	0.171	-.063	**-.686***	.243
Q22c. How important The star(s) of the film.	0.057	-0.043	-0.222	.098	**-.278***	-.192
Q28a. I often watch videos on my cell phone.	0.318	-0.182	0.536	.270	-.297	**.481***
Q13i. Film in a theater-A friend recommended the film.	-0.042	0.306	0.460	-.041	.418	**.449***
Q29o. I generally think of myself as a happy person.	0.176	-0.195	-0.219	.243	-.278	**-.320***
Q22e. How important The country the film is from.	-0.041	0.126	0.477	.030	-.233	**.316***

Table 2. Group Statistics

	"Old School Habits"	"Film Lovers Habits"	"Millennial Habits"
	1	2	3
Influencers	.248	-.166	-.380
Reflectors	-.307	.500	-.119
Changers	.544	.147	.243
Flexibles	-.241	-.186	.120
Wilks' Lambda	.801	.891	.952
Chi-square	69.384	36.094	15.354
Significance	.000	.007	.053
Eigenvalue	.112[a]	.069[a]	.050[a]
Canonical Correlation	.318	.253	.219

a. First 3 canonical discriminant functions were used in the analysis.

Table 3. Classification Results

Classification Results[a]

Observed Group	Size	Predicted Group Membership			
		Influencers	Reflectors	Changers	Flexibles
Influencers	66	**27**	13	14	12
Reflectors	55	8	**29**	9	9
Changers	62	12	10	**30**	10
Flexibles	138	28	29	29	**52**
Ungrouped	5	2	2	0	1
Totals	326	77	83	82	84

a. 43.0% of original grouped cases correctly classified.

Press's Q calculation

$$\text{Press's Q} = \frac{[N-(nK)]^2}{N(K-1)}$$

where: N Sample size
K Number of groups
n number of observations correctly classified

N 321
K 4
n 138

$$\frac{[321-(138*4)]^2}{321(4-1)}$$

Press's Q = 55.41

SECTION V. WRITE UP OF RESULTS

A discriminant function analysis was applied to assess the tendency of one's behavioral response to expectancy violations of film genres. The 2015 data set of Drs. Jeffres and Neuendorf for Film & TV Usage was used for analysis. For the dependent variable, Question 16 was coded from open-ended answers using content analysis. Question 16 asks "*When you watch a film and it does not meet your expectations for the genre it is supposed to represent, how do you feel? And how do you respond?"* The answers for responses were categorized in the following four ways (N = 321):

1. Influencers: Tries to influence others' behaviors (n = 66).
2. Reflectors: Take lesson learned and excitedly applies it to their own future decisions or has no expectations at all (n = 55).
3. Changers: Dislikes it to the extent it changes the respondents current behavior, and /or state they will not watch the same genre in the future (n = 62).
4. Flexibles: Moderate annoyance / ambivalence, but watched the whole film, and would possibly watch again (n = 138).

The 10 discriminating independent variables using a variety of Likert scales from the data set include:

- Q3c. Read a magazine
- Q13i. Film in a theater-A friend recommended the film.
- Q22a. How important The genre of the film.
- Q22c. How important The star(s) of the film.
- Q22d. How important The recency of the film's release/how new the film is.
- Q22e. How important The country the film is from.
- Q28a. I often watch videos on my cell phone.
- Q29b. I'm more a traditionalist, preferring to read physical copies of books, magazines and newspapers rather than digital versions.
- Q29o. I generally think of myself as a happy person.
- Q29s. I like to see films and TV programs from other countries.

This analysis produced three discriminant functions; two of the three functions were found to be significant at the .05 level, and the third was near-significant. The Wilks' Lambda, which examines how much the discriminant functions differ on the set of independent variables, is .801 ($p < .001$) before the

first discriminant function is derived and increases to .891 (p = .007) after the first function is derived, but before the second function is derived. After the second discriminant function is derived, the lambda rises to .952, at which point is still nearly significant (p = .053).

The first discriminant function was labeled "Old School Habits" because the four variables that loaded highly on this function were thought to represent Baby Boomers to Generation-Xers aged tendencies based on technology usage, media engagement and interpersonal communication behaviors: activity of reading a magazine (.60); not feeling more of a media traditionalist preferring to read physical copies of books, magazines and newspapers rather than digital versions (this is the only of the four that does not clearly fit the "old school" label) (-.46); not liking to see films and TV programs from other countries (-.46); and the importance of genre of the film (.40). The second discriminant function was labeled "Classic Film Lover Habits" because the two variables that loaded highly on this function were thought to represent tendencies based on the behaviors of generally watching and enjoying films that may not be new or trendy: The (un)importance of film recency or release date (-.68) and the (un)importance of the star(s) of the film (-.27). Lastly, the third discriminant function was labeled "Millennial Habits" because three of the four variables that loaded highly on this function were thought to represent millennial aged tendencies based on technology usage, media engagement and interpersonal communication behaviors: Watching videos on cell phone often (.48); a friend recommending a film in the theater (.45); and generally thinking on oneself as an unhappy person (-.32). The fourth high loader did not seem to fit the pattern well: The importance of the country the film is from (.31).

In the group statistics table Functions at Group Centroids, the mean scores for each of the four dependent variable groups are reflected. Surprisingly, group #3 Changers had the highest means on both DF1 (.54) and DF3 (.24), encompassing tendencies in both Millennial and Old School Habits. Group #2

Reflectors was much higher than any other group on DF2, Classic Film Lover Habits (.50), and were very low (the lowest group) on both DF1, Old School Habits and DF3, Millennial Habits. Group #1 Influencers was the second strongest group in DF1 (.24) while low scores for both DF2 and DF3. Group #4 Flexibles were low on two of the three functions, while being the second to highest in DF3, Millennial Habits (.12). Thus, Discriminant Function 1, Old School Habits, is characterized by high scores for Changers and low scores for Reflectors; Discriminant Function 2, Classic Film Lover Habits, shows high scores for Reflectors with low scores for Flexibles; and Discriminant Function 3, Millennial Habits, reports high scores for Changers and the lowest of all scores (-.38) for Influencers.

From this discriminant analysis, we found that a total of 43% of cases could be correctly classified into the four behavioral response groups of the DV (138 cases correctly classified). The Press' Q was calculated at 55.41, which is bigger than the critical value of 10.83 (df =1, $p < .001$), indicating that using the IVs that we chose to predict behavioral responses to expectation violation of genres produces a prediction that is significantly better than by chance. This analysis can be used for future research.

Note: The Box's M Test of Equality of Covariance Matrices is 170.90, which is not significant ($p = .597$), indicating that the dependent variable groups are not substantially different in how the independent variables interrelate (i.e., the four IV variance/covariance matrices are not significantly different). This shows that there is no violation of the homoscedasticity assumption of discriminant analysis.