MANOVA
COM 631/731
Spring 2017
M. DANIELS

I. MODEL

From Jeffres & Neuendorf (2015) Film and TV Usage National Survey

INDEPENDENT VARIABLES	DEPENDENT VARIABLES
X1: "GENDER"	Q23a. I often watch a favorite film again and again.
	Q23d. I don't like to watch films at home that I've seen before in a theater.
X2: Q7. "How did you watch this movie 1"	Q23f. I watch TV programs with my family that we've seen before, often several times.
INTERACTION OF X1 AND X2:	Q23I. I like playing/listening to a movie I'm familiar with as background while I do other things.

Independent Variables:

Q7. How did you watch this movie 1? – Nominal (4 Categories) 1 = In a theater, 2 = On TV/cable, 3= DVD/Blu-ray, 4 = Online

Gender - Nominal (2 Categories) 1= Male, 2= Female

Dependent Variables:

(all measured on a 1-7 response scale, where 1=not like me at all and 7=very much like me)

Q23a. I often watch a favorite film again and again.

Q23d. I don't like to watch films at home that I've seen before in a theater.

Q23f. I watch TV programs with my family that we've seen before, often several times.

Q23I. I like playing/listening to a movie I'm familiar with as background while I do other things.

II. RUNNING SPSS

ANALYZE > GENERAL LINEAR MODEL > MULTIVARIATE

			Descriptive Statistics	15 E			5		-			
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207	Q29j	Numeric	Compare Means	ĸ	shows today are better than	they've been in years.	{1, 1-Compl		11	🗮 Right	💑 Nominal	2
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214	Q29q	Numeric	Neural Networks		ality of life in my community ve	ry high.	{1, 1-Compl	None	11	E Right	💰 Nominal	2
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	4										_	13
ata View	Variable View											_

> ADD DEPENDENT AND ("FIXED FACTOR") INDEPENDENT VARIABLES BY CLICKING THE ARROW

(from left boxes to right boxes)

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PLOTS > FACTORS > MOVE IV'S INTO RIGHT BOXES USING ARROW KEYS

- > $\sqrt{\text{HORIZONTAL AXIS}}$
- > $\sqrt{\text{SEPARATE LINES}}$

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213	Q29p	Nur		rst, what ar			Post Hoc.	1				1	Right Right	💑 Nominal	>
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> ONCE IV'S ARE IN THE BOXES, \checkmark ADD TO CREATE A GRAPH SHOWING THE INTERACTION OF THE IVS

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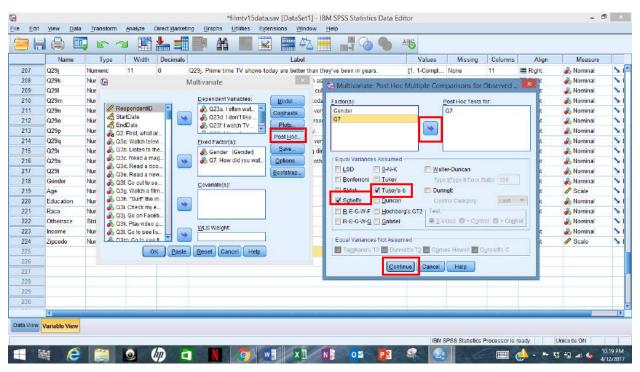
> MAKE SURE THE INTERACTION SHOWS IN THE PLOTS BOX AND THEN CLICK CONTINUE

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>POST HOC > MOVE OVER EDUCATION (Not gender because it has only two groups)

EQUAL VARIANCES ASSUMED

- √ SCHEFFE
- √ TUKEY'S-b
- \sqrt{ANY} OTHER POST HOC TESTS YOU WISH
- > CONTINUE



> OPTIONS

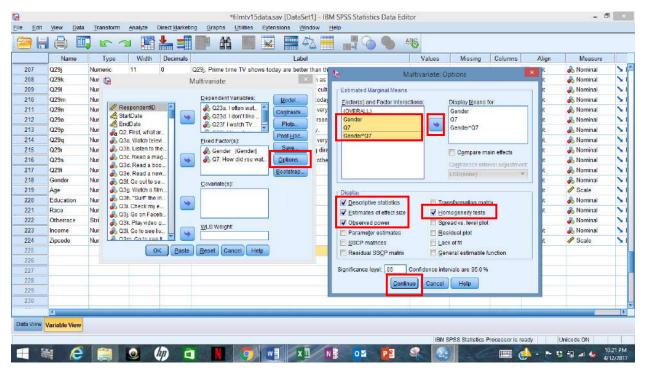
> HIGHLIGHT ALL IVs AND THE INTERACTION IN THE LEFT

 $\sqrt{\rm ARROW}$ TO MOVE IVs to the right box

DISPLAY

- $\sqrt{\text{DESCRIPTIVE STATISTICS}}$
- $\sqrt{\text{ESTIMATES OF EFFECT SIZE}}$
- $\sqrt{OBSERVED POWER}$

> CONTINUE



> CLICK OK TO RUN MANOVA!!! (OR PASTE TO SAVE SYNTAX AND THEN RUN)

	Name	T	vpe	Width	Decimals			Label		Values	Missing	Columns	Align	Measure	
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III. SPSS OUTPUT

CORRELATIONS /VARIABLES=Q23a Q23d Q23f Q23l /PRINT=TWOTAIL NOSIG /MISSING=PAIRWISE.

Correlations

	Q23a. I often watch a favorite film again and again.	Q23d. I don't like to watch films at home that I've seen before in a theater.	Q23f. I watch TV programs with my family that we've seen before, often several times.	Q23I. I like playing/listeni ng to a movie I'm familiar with as background while I do other things.
Pearson Correlation	1	411**	.326**	.369**
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Pearson Correlation	411**	1	189	191**
Sig. (2-tailed)	.000		.000	.000
Ν	367	367	367	367
Pearson Correlation	.326**	189**	1	.355**
Sig. (2-tailed)	.000	.000		.000
Ν	367	367	367	367
Pearson Correlation	.369**	191**	.355**	1
Sig. (2-tailed)	.000	.000	.000	
Ν	367	367	367	367
	Sig. (2-tailed) N Pearson Correlation Sig. (2-tailed) N Pearson Correlation Sig. (2-tailed) N Pearson Correlation Sig. (2-tailed)	watch a favorite film again and again.Pearson Correlation1Sig. (2-tailed)367Pearson Correlation411**Sig. (2-tailed).000N367Pearson Correlation.326**Sig. (2-tailed).000N367Pearson Correlation.326**Sig. (2-tailed).000N367Pearson Correlation.326**Sig. (2-tailed).000N367Pearson Correlation.369**Sig. (2-tailed).000	Q23a. I often watch a favorite film again and again.like to watch films at home that I've seen before in a theater.Pearson Correlation1411**Sig. (2-tailed)000000N367367Pearson Correlation411**1Sig. (2-tailed)0.000000N367367Pearson Correlation411**1Sig. (2-tailed)0.0000.000N367367Pearson Correlation326**189**Sig. (2-tailed)0.000000N367367Pearson Correlation369**191**Sig. (2-tailed)0.000000N367367Pearson Correlation369**191**Sig. (2-tailed)0.000000N367367	Q23a. I often watch a favorite film again and again.Q23d. I don't like to watch films at home that I've seen before in a theater.TV programs with my family that we've seen before, often several times.Pearson Correlation1411**.326**Sig. (2-tailed)0.00.000.000N367367367Pearson Correlation411**1.189**Sig. (2-tailed)0.000.000.000N367367367Pearson Correlation.326**.189**1Sig. (2-tailed).000.000.000N367367367Pearson Correlation.326**.189**1Sig. (2-tailed).000.000.000N367367367Sig. (2-tailed).000.000.000N369**.191**.355**Sig. (2-tailed).000.000.000N367367367Sig. (2-tailed).000.000.000N369**.191**.355**Sig. (2-tailed).000.000.000N367367367Sig. (2-tailed).000.000.000N367367367

GLM Q23a Q23d Q23f Q231 BY Gender Q7	
/METHOD=SSTYPE(3)	
/INTERCEPT=INCLUDE	
/POSTHOC=Q7(BTUKEY SCHEFFE)	
/PLOT=PROFILE(Gender*Q7)	
/EMMEANS=TABLES(Gender)	
/EMMEANS=TABLES(Q7)	
/EMMEANS=TABLES(Gender*Q7)	
/PRINT=DESCRIPTIVE ETASQ OPOWER HOMOGENEITY	
/CRITERIA=ALPHA(.05)	
/DESIGN= Gender Q7 Gender*Q7.	

Between	-Subje	cts Factors	
		Value Label	Ν
Gender	1	1-Male	141
	2	2-Female	222
Q7. How did you watch	1	1-In theater	85
this movie 1	2	2-On TV/cable	84
	3	3-DVD or BluRay	90
	4	4-Online	104

		Descriptive Statistics			
	Gender	Q7. How did you watch this movie 1	Mean	Std. Deviation	N
Q23a. I often watch a	1-Male	1-In theater	4.29	1.954	42
favorite film again and again.		2-On TV/cable	5.58	1.539	19
agann		3-DVD or BluRay	4.85	1.955	33
		4-Online	4.74	1.916	47
		Total	4.29 1.954 5.58 1.539 ay 4.85 1.955 4.74 1.916 4.74 1.914 4.81 1.955 5.52 1.640 ay 5.70 1.546 ay 5.70 1.546 ay 5.712 1.937 5.33 1.781 1.609 ay 5.54 1.609 ay 5.39 1.746 4.95 1.928 1.928 5.10 1.853 3.07 ay 2.05 1.433 ay 2.70 1.928 ay 2.70 1.928 ay 2.91 1.880 ay 2.95 2.138 ay 2.32 1.947 ay 2.35 1.828 ay 2.35 1.828 ay 2.35 1.828	141	
	2-Female	1-In theater	4.81	1.955	43
		2-On TV/cable	5.52	1.640	65
		3-DVD or BluRay	5.70	1.546	57
		4-Online	5.12	1.937	57
		Total	5.33	1.781	222
	Total	1-In theater	4.55	1.961	85
		2-On TV/cable	5.54	1.609	84
		3-DVD or BluRay	5.39	1.746	90
		4-Online	4.95	1.928	104
		Total	5.10	1.853	363
Q23d. I don't like to watch	1-Male	1-in theater	3.07	1.772	42
films at home that I've seen before in a theater.		2-On TV/cable	2.05	1.433	19
seen pelore in a meater.		3-DVD or BluRay	2.70	1.928	33
		4-Online	3.28	2.018	47
		Total	2.91	1.880	141
	2-Female	1-In theater	2.95	2.138	43
		2-On TV/cable	2.06	1.657	65
		3-DVD or BluRay	2.32	1.947	57
		4-Online	2.25	1.562	57
		Total	2.35	1.828	222
	Total	1-In theater	3.01	1.955	85
		2-On TV/cable	2.06	1.601	84
		3-DVD or BluRay	2.46	1.938	90
		4-Online	2.71	1.847	104
		Total	2.57	1.866	363

Q23f. I watch TV	1-Male	1-In theater	3.48	1.941	42
programs with my family that we've seen before,		2-On TV/cable	4.32	1.916	19
often several times.		3-DVD or BluRay	3.73	1.842	33
		4-Online	2.81	1.569	47
		Total	3.43	1.849	141
	2-Female	1-In theater	3.86	2.088	43
		2-On TV/cable	4.32	1.937	65
		3-DVD or BluRay	4.58	1.963	57
		4-Online	4.14	1.959	57
		Total	4.25	1.982	222
	Total	1-In theater	3.67	2.014	85
		2-On TV/cable	4.32	1.921	84
		3-DVD or BluRay	4.27	1.953	90
		4-Online	3.54	1.905	104
		Total	3.93	1.970	363
Q23I. I like	1-Male	1-In theater	3.76	1.948	42
playing/listening to a movie I'm familiar with as		2-On TV/cable	4.42	2.009	19
background while I do		3-DVD or BluRay	3.27	2.020	33
other things.		4-Online	3.98	2.212	47
		Total	3.81	2.073	141
	2-Female	1-In theater	4.07	2.374	43
		2-On TV/cable	4.75	2.243	65
		3-DVD or BluRay	4.77	2.105	57
		4-Online	4.12	2.330	57
		Total	4.46	2.266	222
	Total	1-In theater	3.92	2.167	85
		2-On TV/cable	4.68	2.185	84
		3-DVD or BluRay	4.22	2.187	90
		4-Online	4.06	2.268	104
		Total	4.21	2.214	363

Box's Test of Equality of Covariance Matrices ^a								
Box's M 122.453								
F	1.674							
df1	70							
df2 68591.989								
Sig.	.000							
observed matrices	is that the covariance of the nt variables							
Gen	ign: rcept + der + Q7 ender *							

				Multivariate	Tests ^a				
Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^d
Intercept	Pillai's Trace	.940	1375.630 ^b	4.000	352.000	.000	.940	5502.520	1.000
	Wilks' Lambda	.060	1375.630 ^b	4.000	352.000	.000	.940	5502.520	1.000
	Hotelling's Trace	15.632	1375.630 ^b	4.000	352.000	.000	.940	5502.520	1.000
	Roy's Largest Root	15.632	1375.630 ^b	4.000	352.000	.000	.940	5502.520	1.000
Gender	Pillai's Trace	.035	3.204 ^b	4.000	352.000	.013	.035	12.816	.825
	Wilks' Lambda	.965	3.204 ^b	4.000	352.000	.013	.035	12.816	.825
	Hotelling's Trace	.036	3.204 ^b	4.000	352.000	.013	.035	12.816	.825
	Roy's Largest Root	.036	3.204 ^b	4.000	352.000	.013	.035	12.816	.825
Q7	Pillai's Trace	.069	2.073	12.000	1062.000	.016	.023	24.877	.938
	Wilks' Lambda	.932	2.087	12.000	931.596	.016	.023	22.052	.900
	Hotelling's Trace	.072	2.097	12.000	1052.000	.015	.023	25.164	.941
	Roy's Largest Root	.056	4.938°	4.000	354.000	.001	.053	19.752	.959
Gender * Q7	Pillai's Trace	.049	1.483	12.000	1062.000	.124	.016	17.799	.808
	Wilks' Lambda	.951	1.485	12.000	931.596	.124	.017	15.698	.743
	Hotelling's Trace	.051	1.485	12.000	1052.000	.123	.017	17.822	.809
	Roy's Largest Root	.035	3.132°	4.000	354.000	.015	.034	12.530	.816

a. Design: Intercept + Gender + Q7 + Gender * Q7

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

d. Computed using alpha = .05

Levene's Test of Equality of Error Variances ^a								
	F	df1	df2	Sig.				
Q23a. I often watch a favorite film again and again.	1.320	7	355	.239				
Q23d. I don't like to watch films at home that I've seen before in a theater.	2.836	7	355	.007				
Q23f. I watch TV programs with my family that we've seen before, often several times.	1.095	7	355	.366				
Q23I. I like playing/listening to a movie I'm familiar with as background while I do other things.	1.407	7	355	.201				
Tests the null hypothesis the is equal across groups.	at the error v	ariance of th	e dependent	variable				
a. Design: Intercept + Ge	nder + Q7 +	Gender * Q7						

		ie		tween-Subje	cis Enecis				
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power ^e
Corrected Model	Q23a. I often watch a favorite film again and again.	76.050 ^a	7	10.864	3.304	.002	.061	23.131	.958
	Q23d. I don't like to watch films at home that I've seen before in a theater.	72.451 ^b	7	10.350	3.091	.004	.057	21.638	.943
	Q23f. I watch TV programs with my family that we've seen before, often several times.	108.725°	7	15.532	4.253	.000	.077	29.769	.990
	Q23I. I like playing/listening to a movie I'm familiar with as background while I do other things.	79.286 ^d	7	11.327	2.372	.022	.045	16.607	.856
Intercept	Q23a. I often watch a favorite film again and again.	8178.173	1	8178.173	2487.409	.000	.875	2487.409	1.000
	Q23d. I don't like to watch films at home that I've seen before in a theater.	2118.557	1	2118.557	632.727	.000	.641	632.727	1.000
	Q23f. I watch TV programs with my family that we've seen before, often several times.	4834.478	1	4834.478	1323.694	.000	.789	1323.694	1.000
	Q23I. I like playing/listening to a movie I'm familiar with as background while I do other things.	5447.889	1	5447.889	1141.136	.000	.763	1141.136	1.000
Gender	Q23a. I often watch a favorite film again and again.	14.388	1	14.388	4.376	.037	.012	4.376	.550
	Q23d. I don't like to watch films at home that I've seen before in a theater.	11.470	1	11.470	3.426	.065	.010	3.426	.455
	Q23f. I watch TV programs with my family that we've seen before, often several times.	32.868	1	32.868	8.999	.003	.025	8.999	.849
	Q23I. I like playing/listening to a movie I'm familiar with as background while I do other things.	25.856	1	25.856	5.416	.021	.015	5.416	.641
Q7	Q23a. I often watch a favorite film again and again.	41.536	3	13.845	4.211	.006	.034	12.633	.856
	Q23d. I don't like to watch films at home that I've seen before in a theater.	34.771	3	11.590	3.462	.017	.028	10.385	.773
	Q23f. I watch TV programs with my family that we've seen before, often several times.	37.975	3	12.658	3.466	.016	.028	10.398	.774
	Q23I. I like playing/listening to a movie I'm familiar with as background while I do other things.	17.604	3	5.868	1.229	.299	.010	3.687	.329

Gender * Q7	Q23a. I often watch a favorite film again and again.	7.417	3	2.472	.752	.522	.006	2.256	.211
	Q23d. I don't like to watch films at home that I've seen before in a theater.	14.232	3	4.744	1.417	.238	.012	4.251	.376
	Q23f. I watch TV programs with my family that we've seen before, often several times.	19.859	3	6.620	1.812	.145	.015	5.437	.470
	Q231. I like playing/listening to a movie I'm familiar with as background while I do other things.	25.001	3	8.334	1.746	.157	.015	5.237	.455
Error	Q23a. I often watch a favorite film again and again.	1167.179	355	3.288					
	Q23d. I don't like to watch films at home that I've seen before in a theater.	1188.645	355	3.348					
	Q23f. I watch TV programs with my family that we've seen before, often several times.	1296.554	355	3.652					
Fotal	Q23I. I like playing/listening to a movie I'm familiar with as background while I do other things.	1694.802	355	4.774					
Fotal	Q23a. I often watch a favorite film again and again.	10692.000	363						
	Q23d, I don't like to watch films at home that I've seen before in a theater.	3654.000	363						
	Q23f. I watch TV programs with my family that we've seen before, often several times.	7015.000	363						
	Q231. I like playing/listening to a movie I'm familiar with as background while I do other things.	8206.000	363						
Corrected Total	Q23a. I often watch a favorite film again and again.	1243.229	362						
	Q23d. I don't like to watch films at home that I've seen before in a theater.	1261.096	362						
	Q23f. I watch TV programs with my family that we've seen before, often several times.	1405.278	362						
	Q23I. I like playing/listening to a movie I'm familiar with as background while I do	1774.088	362						

Estimated Marginal Means

		1. Gende	er				
				95% Confidence Interval			
Dependent Variable	Gender	Mean	Std. Error	Lower Bound	Upper Bound		
Q23a. I often watch a favorite film again and	1-Male	4.864	.162	4.545	5.183		
favorite film again and again.	2-Female	5.290	.123	5.048	5.532		
Q23d. I don't like to watch	1-Male	2.774	.164	2.453	3.096		
films at home that I've seen before in a theater.	2-Female	2.394	.124	2.150	2.638		
Q23f. I watch TV programs with my family	1-Male	3.582	.171	3.246	3.918		
that we've seen before, often several times.	2-Female	4.226	.130	3.971	4.481		
Q23I. I like playing/listening to a movie I'm familiar with as	1-Male	3.859	.195	3.474	4.243		
background while I do other things.	2-Female	4.430	.148	4.138	4.721		

	2. Q7. How did you	ı watch thi	s movie 1			
	Q7. How did you watch			95% Confidence Interval		
Dependent Variable	this movie 1	Mean	Std. Error	Lower Bound	Upper Bound	
Q23a. I often watch a	1-In theater	4.550	.197	4.163	4.937	
favorite film again and again.	2-On TV/cable	5.551	.236	5.086	6.016	
agam.	3-DVD or BluRay	5.275	.198	4.885	5.665	
	4-Online	4.934	.179	4.582	5.285	
Q23d. I don't like to watch films at home that I've seen before in a theater.	1-In theater	3.012	.198	2.622	3.403	
	2-On TV/cable	2.057	.239	1.588	2.526	
	3-DVD or BluRay	2.506	.200	2.113	2.900	
	4-Online	2.761	.180	2.407	3.116	
Q23f. I watch TV	1-In theater	3.668	.207	3.261	4.076	
programs with my family that we've seen before,	2-On TV/cable	4.319	.249	3.829	4.810	
often several times.	3-DVD or BluRay	4.153	.209	3.742	4.564	
	4-Online	3.474	.188	3.104	3.845	
Q23I. I like	1-In theater	3.916	.237	3.450	4.382	
playing/listening to a movie I'm familiar with as	2-On TV/cable	4.587	.285	4.027	5.148	
background while I do	3-DVD or BluRay	4.022	.239	3.552	4.492	
other things.	4-Online	4.051	.215	3.627	4.474	

		Q7. How did you watch			95% Confidence Interval		
Dependent Variable	Gender	this movie 1	Mean	Std. Error	Lower Bound	Upper Bound	
Q23a. I often watch a	1-Male	1-In theater	4.286	.280	3.735	4.836	
favorite film again and again.		2-On TV/cable	5.579	.416	4.761	6.397	
		3-DVD or BluRay	4.848	.316	4.228	5.469	
		4-Online	4.745	.264	4.225	5.265	
	2-Female	1-In theater	4.814	.277	4.270	5.358	
		2-On TV/cable	5.523	.225	5.081	5.965	
		3-DVD or BluRay	5.702	.240	5.229	6.174	
		4-Online	5.123	.240	4.650	5.595	
Q23d. I don't like to watch	1-Male	1-In theater	3.071	.282	2.516	3.627	
films at home that I've seen before in a theater.		2-On TV/cable	2.053	.420	1.227	2.878	
		3-DVD or BluRay	2.697	.319	2.071	3.323	
		4-Online	3.277	.267	2.752	3.802	
	2-Female	1-In theater	2.953	.279	2.405	3.502	
		2-On TV/cable	2.062	.227	1.615	2.508	
		3-DVD or BluRay	2.316	.242	1.839	2.792	
		4-Online	2.246	.242	1.769	2.722	
Q23f. I watch TV	1-Male	1-In theater	3.476	.295	2.896	4.056	
programs with my family that we've seen before,		2-On TV/cable	4.316	.438	3.454	5.178	
often several times.		3-DVD or BluRay	3.727	.333	3.073	4.382	
		4-Online	2.809	.279	2.260	3.357	
	2-Female	1-In theater	3.860	.291	3.287	4.434	
		2-On TV/cable	4.323	.237	3.857	4.789	
		3-DVD or BluRay	4.579	.253	4.081	5.077	
		4-Online	4.140	.253	3.643	4.638	
Q23I. I like	1-Male	1-In theater	3.762	.337	3.099	4.425	
playing/listening to a movie I'm familiar with as		2-On TV/cable	4.421	.501	3.435	5.407	
background while I do		3-DVD or BluRay	3.273	.380	2.525	4.021	
other things.		4-Online	3.979	.319	3.352	4.606	
	2-Female	1-In theater	4.070	.333	3.414	4.725	
		2-On TV/cable	4.754	.271	4.221	5.287	
		3-DVD or BluRay	4.772	.289	4.203	5.341	
		4-Online	4.123	.289	3.554	4.692	

3. Gender * Q7. How did you watch this movie 1

Post Hoc Tests

Q7. How did you watch this movie 1

			Multiple Compariso	15				
			21 AT 11.10710-000	Mean Difference (I			95% Confid	ence Interval
Dependent Variable		(I) Q7. How did you watch this movie 1	(J) Q7. How did you watch this movie 1	Difference (I- J)	Std. Error	Sig.	Lower Bound	Upper Boun
23a. I often watch a	Scheffe	1-In theater	2-On TV/cable	98	.279	.007	-1.77	2
avorite film again and again.			3-DVD or BluRay	84	.274	.027	-1.61	0
gun.			4-Online	40	.265	.520	-1.14	.3
		2-On TV/cable	1-In theater	.98	.279	.007	.20	1.7
			3-DVD or BluRay	.15	.275	.963	63	.9
			4-Online	.58	.266	.188	16	1.3
		3-DVD or BluRay	1-In theater	.84	.274	.027	.07	1.6
			2-On TV/cable	15	.275	.963	92	.6
			4-Online	.44	.261	.424	30	1.1
		4-Online	1-In theater	.40	.265	.520	35	1.1
			2-On TV/cable	58	.266	.188	-1.33	.1
			3-DVD or BluRay	44	.261	.424	-1.17	.3
23d. I don't like to watch	Scheffe	1-In theater	2-On TV/cable	.95	.282	.010	.16	1.7
ilms at home that I've	oundito	, in medici	3-DVD or BluRav	.56	.202	.259	22	1.7
een before in a theater.					1000		1000	
		2-On TV/cable	4-Online 1-In theater	.30 95	.268	.739	45	1.0
		2-On Tv/cable		2012035	082052	VIRODES	0000000	9025
			3-DVD or BluRay	40	.278	.566	-1.18	.3
			4-Online	65	.268	.119	-1.41	.1
		3-DVD or BluRay	1-In theater	56	.277	.259	-1.33	.2
			2-On TV/cable	.40	.278	.566	38	1.1
			4-Online	26	.263	.815	-1.00	.4
		4-Online	1-In theater	30	.268	.739	-1.05	.4
			2-On TV/cable	.65	.268	.119	10	1.4
			3-DVD or BluRay	.26	.263	.815	48	1.0
Q23f. I watch TV programs with my family	Scheffe	1-In theater	2-On TV/cable	65	.294	.181	-1.48	.1
hat we've seen before,			3-DVD or BluRay	60	.289	.237	-1.41	.2
often several times.			4-Online	.13	.279	.974	65	.9
		2-On TV/cable	1-In theater	.65	.294	.181	18	1.4
			3-DVD or BluRay	.05	.290	.998	76	.8
			4-Online	.78	.280	.052	.00	1.5
		3-DVD or BluRay	1-In theater	.60	.289	.237	22	1.4
			2-On TV/cable	05	.290	.998	87	.7
			4-Online	.73	.275	.074	04	1.5
		4-Online	1-In theater	13	.279	.974	92	.6
			2-On TV/cable	78	.280	.052	-1.57	.0
			3-DVD or BluRay	73	.275	.074	-1.50	.0
2231. Elike	Scheffe	1-In theater	2-On TV/cable	76	.336	.165	-1.71	.1
novie I'm familiar with as			3-DVD or BluRay	30	.330	.838	-1.23	.6
ackground while I do			4-Online	14	.319	.979	-1.04	.7
other things.		2-On TV/cable	1-In theater	.76	.336	.165	18	1.7
			3-DVD or BluRay	.46	.331	.595	47	1.3
			4-Online	.62	.321	.291	28	1.5
		3-DVD or BluRay	1-In theater	.30	.330	.838	62	1.2
			2-On TV/cable	46	.331	.595	-1.39	.4
			4-Online	.16	.315	.965	72	1.0
		4-Online	1-In theater	.14	.319	.979	76	1.0
			2-On TV/cable	62	.321	.291	-1.52	.2
			3-DVD or BluRay	16	.315	.965	-1.05	.7

*. The mean difference is significant at the .05 level.

Homogeneous Subsets

I

Q23a. I often watch a favorite film again and again.							
	Q7. How did you watch		Subs	et			
	this movie 1	N	1	2			
Tukey B ^{a,b,c}	1-In theater	85	4.55				
	4-Online	104	4.95	4.95			
	3-DVD or BluRay	90		5.39			
	2-On TV/cable	84		5.54			
Scheffe ^{a,b,c}	1-In theater	85	4.55				
	4-Online	104	4.95	4.95			
	3-DVD or BluRay	90		5.39			
	2-On TV/cable	84		5.54			
	Sig.		.536	.200			
Based on ob	ups in homogeneous subsets served means. n is Mean Square(Error) = 3.2		ed.				
a. Uses Ha	armonic Mean Sample Size = 9	90.098.					
-	up sizes are unequal. The harı Type I error levels are not gua		of the group s	izes			
c. Alpha = .	05.						

	Q7. How did you watch		Subs	et
	this movie 1	Ν	1	2
Tukey B ^{a,b,c}	2-On TV/cable	84	2.06	
	3-DVD or BluRay	90	2.46	2.46
	4-Online	104	2.71	2.71
	1-In theater	85		3.01
Scheffe ^{a,b,c}	2-On TV/cable	84	2.06	
	3-DVD or BluRay	90	2.46	2.46
	4-Online	104	2.71	2.71
	1-In theater	85		3.01
	Sig.		.128	.246
Based on obs	ups in homogeneous subset: served means. n is Mean Square(Error) = 3.3		d.	

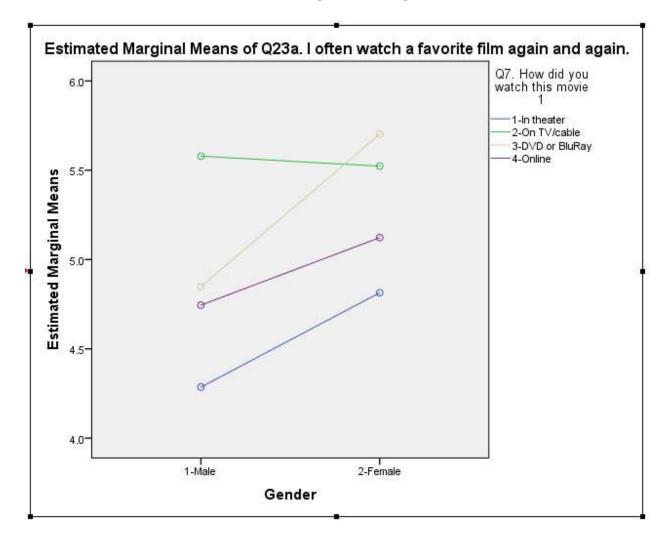
c. Alpha = .05.

N 104 85 Ray 90 84 104 85	1 3.54 3.67 3.54 3.54 3.67	2 3.67 4.27 4.32
85 Ray 90 84 104	3.67	4.27
Ray 90 84 104	3.54	4.27
84		
104		4.32
85	3.67	
Ray 90	4.27	
84	4.32	
	.058	
e(Error) = 3.652.	ed.	
ample Size = 90.098.		
	eous subsets are display e(Error) = 3.652. ample Size = 90.098.	.058 eous subsets are displayed. e(Error) = 3.652. ample Size = 90.098. qual. The harmonic mean of the group s

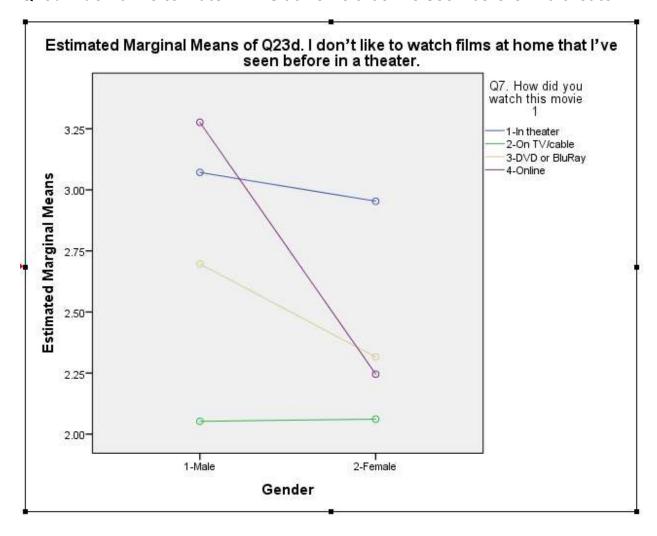
	Q7. How did you watch		Subset					
	this movie 1	N	1					
Tukey B ^{a,b,c}	1-In theater	85	3.92					
	4-Online	104	4.06					
	3-DVD or BluRay	90	4.22					
	2-On TV/cable	84	4.68					
Scheffe ^{a,b,c}	1-In theater	85	3.92					
	4-Online	104	4.06					
	3-DVD or BluRay	90	4.22					
	2-On TV/cable	84	4.68					
	Sig.							
Based on ob	ups in homogeneous subset served means. n is Mean Square(Error) = 4.7		ed.					
a. Uses Ha	armonic Mean Sample Size =	90.098.						
	up sizes are unequal. The har zes is used. Type I error level eed.		of the					

Q23I. I like playing/listening to a movie I'm familiar with as background while I do other things.

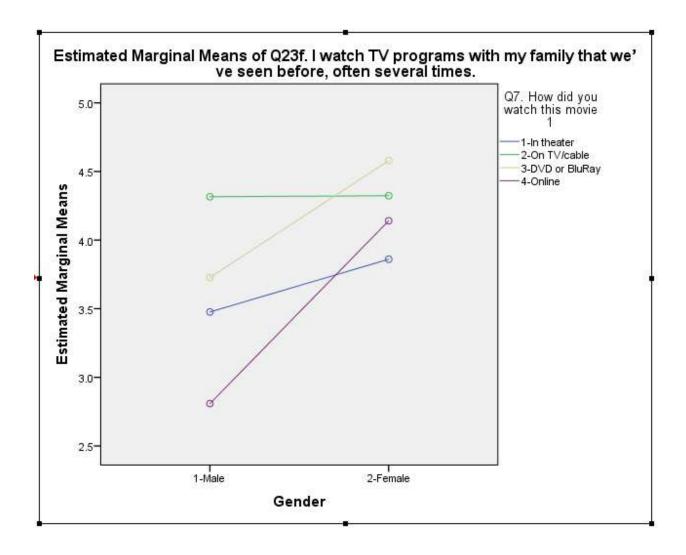
Profile Plots



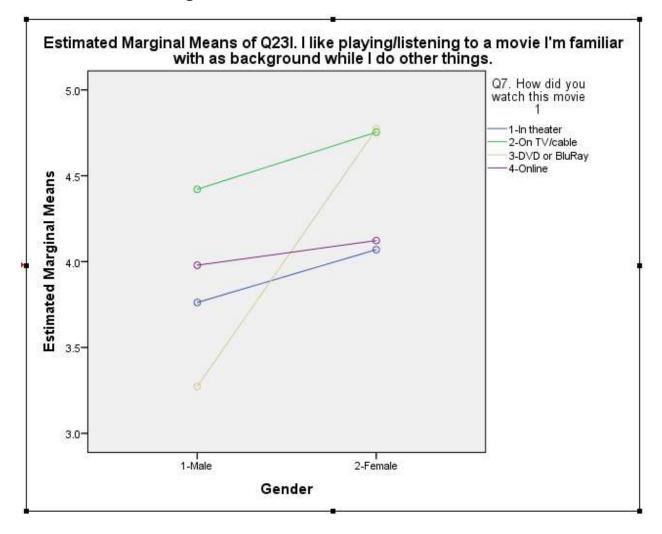
Q23a. I often watch a favorite film again and again.



Q23d. I don't like to watch films at home that I've seen before in a theater.



Q23f. I watch TV programs with my family that we've seen before, often several times.



Q23I. I like playing/listening to a movie I'm familiar with as background while I do other things.

IV. TABLING

Table 1: Multivariate Statistics for MANOVA	
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		Value	F-Value	Sig.	Observed Power
Main Effect:	Pillai's Trace	.035	3.204 ^b	.013	.825
Gender	Wilks' Lambda	.965	3.204 ^b	.013	.825
	Hotelling's Trace	.036	3.204 ^b	.013	.825
	Roy's Largest Root	.036	3.204 ^b	.013	.825
Main Effect:	Pillai's Trace	.069	2.073	.016	.938
Q7. "How did you	Wilks' Lambda	.932	2.087	.016	.900
watch this Hotelling's movie 1?" Trace		.072	2.097	.015	.941
	Roy's Largest Root	.056	4.938 ^c	.001	.959
Interaction:	Pillai's Trace	.049	1.483	.124	.808
Gender X	Wilks' Lambda	.951	1.485	.124	.743
Q7. "How did you	Hotelling's Trace	.051	1.485	.123	.809
watch this movie 1?"	Roy's Largest Root	.035	3.132 ^c	.015	.816

c. The statistic is an upper bound on F that yields a lower bound on the significance level.
d. Computed using alpha = .05

	Mean	n	Sum of Squares	df	Mean Square	F	Sig.	Partial eta ²
Main Effect: Gender			14.388	1	14.388	4.376	.037	.012
2-Female	5.33	222						
1-Male	4.74	141						
Main Effect: Q7. "How did you watch this movie 1?"			41.536	3	13.845	4.211	.006	.034
1- In theater	4.55	85						
2- On TV/cable	5.54	84						
3- DVD or Blu-ray	5.39	90						
4- Online	4.95	104						
Interaction: Gender X Q7. "How did you watch this movie 1?"			7.417	3	2.472	.752	.522	.006
F			4407 470	055	0.000			
Error			1167.179	355	3.288			

Table 2. Two-factor ANOVA Predicting Q23a. "I often watch a favorite film again and again" From Gender and Q7. "How did you watch this movie 1?"

	Mean	n	Sum of Squares	df	Mean Square	F	Sig.	Partial eta ²
Main Effect: Gender			11.470	1	11.470	3.426	.065	.010
2-Female	2.35	222						
1-Male	2.91	141						
Main Effect: Q7. "How did you watch this movie 1?"			34.771	3	11.590	3.462	.017	.028
1- In theater	3.01	85						
2- On TV/cable	2.06	84						
3- DVD or Blu- ray	2.46	90						
4- Online	2.71	104						
Interaction: Gender X Q7. "How did you watch this movie 1?"			14.232	3	4.744	1.417	.238	.012
Error			1188.645	355	3.348			

Table 3. Two-factor ANOVA predicting Q23d. "I don't like to watch films at home that I've seen before in a theater" From Gender and Q7. "How did you watch this movie 1?"

	Mean	n	Sum of Squares	df	Mean Square	F	Sig.	Partial eta ²
Main Effect: Gender			32.868	1	32.868	8.999	.003	.025
2-Female	4.25	222						
1-Male	3.43	141						
Main Effect: Q7. "How did you watch this movie 1?"			37.975	3	12.658	3.466	.016	.028
1- In theater	3.67	85						
2- On TV/cable	4.32	84						
3- DVD or Blu- ray	4.27	90						
4- Online	3.54	104						
Interaction: Gender X Q7. "How did you watch this movie 1?"			19.859	3	6.620	1.812	.145	.015
F			4000 554	055	0.050			
Error			1296.554	355	3.652			

Table 4. Two-factor ANOVA predicting Q23f. "I watch TV programs with my family that we've seen before, often several times" from Gender and Q7. "How did you watch this movie 1?"

	Mean	n	Sum of Squares	df	Mean Square	F	Sig.	Partial eta ²
Main Effect: Gender			25.856	1	25.856	5.416	.021	.015
2-Female	4.46	222						
1-Male	3.81	141						
Main Effect: Q7. "How did you watch this movie 1?"			17.604	3	5.868	1.229	.299	.010
1- In theater	3.92	85						
2- On TV/cable	4.68	84						
3- DVD or Blu- ray	4.22	90						
4- Online	4.06	104						
Interaction: Gender X Q7. "How did you watch this movie 1?"			25.001	3	8.334	1.746	.157	.015
Error			1694.802	355	4.774			

Table 5. Two-factor ANOVA predicting Q23I. "I like playing/listening to a movie I'm familiar with as background while I do other things" from Gender and Q7. "How did you watch this movie 1?"

V. WRITEUP OF RESULTS

Writeup of MANOVA

Four dependent variables were selected from the Jeffres and Neuendorf (2015) Film and TV Usage National Survey, all of which have significant intercorrelations at p < .001. The variables are as follows, with all measured using a 1-7 response scale (1="not like me at all"; 7="very much like me"):

Q23a. "I often watch a favorite film again and again."

Q23d. "I don't like to watch films at home that I've seen before in a theater."

Q23f. "I watch TV programs with my family that we've seen before, often several times."

Q23I. "I like playing/listening to a movie I'm familiar with as background while I do other things."

Independent variables chosen were Gender and Q7. "How did you watch this movie 1?" (1 = In a theater, 2 = On TV/Cable, 3 = DVD/Blu-ray, 4 = Online). The factorial design is 2×4 .

Assumptions

Box's M tested for homoscedasticity. It specifically tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups. It is ideal for Box's M to be non-significant to reject the null. For this set of variables Box's M is significant, p < .001.

Multivariate Tests

The multivariate tests in Table 1 indicate that the variable Gender has a significant main effect on the set of dependent variables; Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root are all p < .05. Table 1 also shows that Q7. "How did you watch this movie 1?" has a significant main effect on the set of dependent variables; Pillai's Trace, Wilks'

Lambda, Hotelling's Trace, and Roy's Largest Root are all p < .05. The interaction effect test only indicates a significant result with Roy's Largest Root at p < .05. A series of four ANOVAs were conducted to further examine the significance of the main effects and interaction effect for each of the four dependent variables individually.

ANOVAS

Table 2 shows the ANOVA predicting Q23a. "I often watch a favorite film again and again." The table indicates both main effects of Gender and Q7. "How did you watch this movie 1?" are significant at p < .05. The interaction is not significant. The main effect of Gender shows that females are higher in watching a favorite film again and again than males. The main effect of Q7. "How did you watch this movie 1?" shows people who prefer to watch films on TV/cable are the highest on watching a favorite film again and again, with those who prefer to watch via DVD/BluRay second highest. Post hocs indicate that these two groups' means are significantly higher than the means for the other two groups.

Table 3 shows the ANOVA predicting Q23d. "I don't like to watch films at home that I've seen before in a theater." The table indicates that the main effect for Q7. "How did you watch this movie 1?" is significant at p < .05. The main effect for Gender and the interaction are both non-significant. The main effect of Q7. "How did you watch this movie 1?" shows people who responded "In a theater" are highest in disfavor of watching a film at home that they have seen before in a theater. Post hocs indicate that this group's mean is significantly higher than the mean for the group that prefers to watch films on TV/cable.

Table 4 shows the ANOVA predicting Q23f. "I watch TV programs with my family that we've seen before, often several times." The table indicates both main effects of Gender and Q7. "How did you watch this movie 1?" are significant at p < .05. The interaction is not significant. The main effect of Gender shows that females are higher in watching TV programs

with their family that they have seen before, often several times than males. The main effect of Q7. "How did you watch this movie 1?" shows people who responded "On TV/cable" are highest in repeatedly watching TV programs that they have seen before with their family. However, post hocs indicate that this group's mean is not significantly higher than any other single group.

Tables 5 shows the ANOVA predicting Q23I. "I like playing/listening to a movie I'm familiar with as background while I do other things." The table indicates that the main effect of Gender is significant at p < .05. The main effect of Q7. "How did you watch this movie 1?" and the interaction effect are both non-significant. The main effect of Gender shows that males are higher in favor of playing/listening to a movie they are familiar with as background while they do things than females.