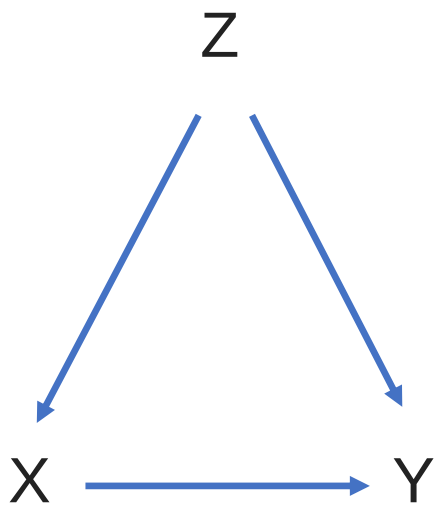
Complete Interpretation

$$X \rightarrow Z \rightarrow Y$$

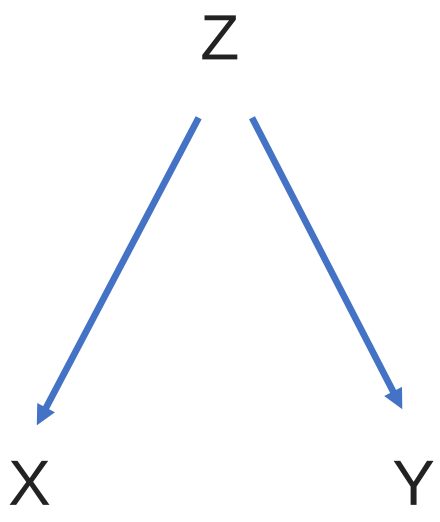
Partial Interpretation

$$\begin{tikzcd} X \arrow[r] \arrow[rrr, bend right] & Z \arrow[r] & Y \end{tikzcd}$$

Partial Explanation



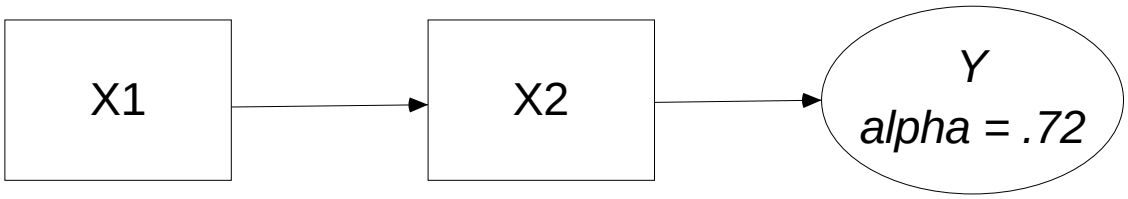
Complete Explanation



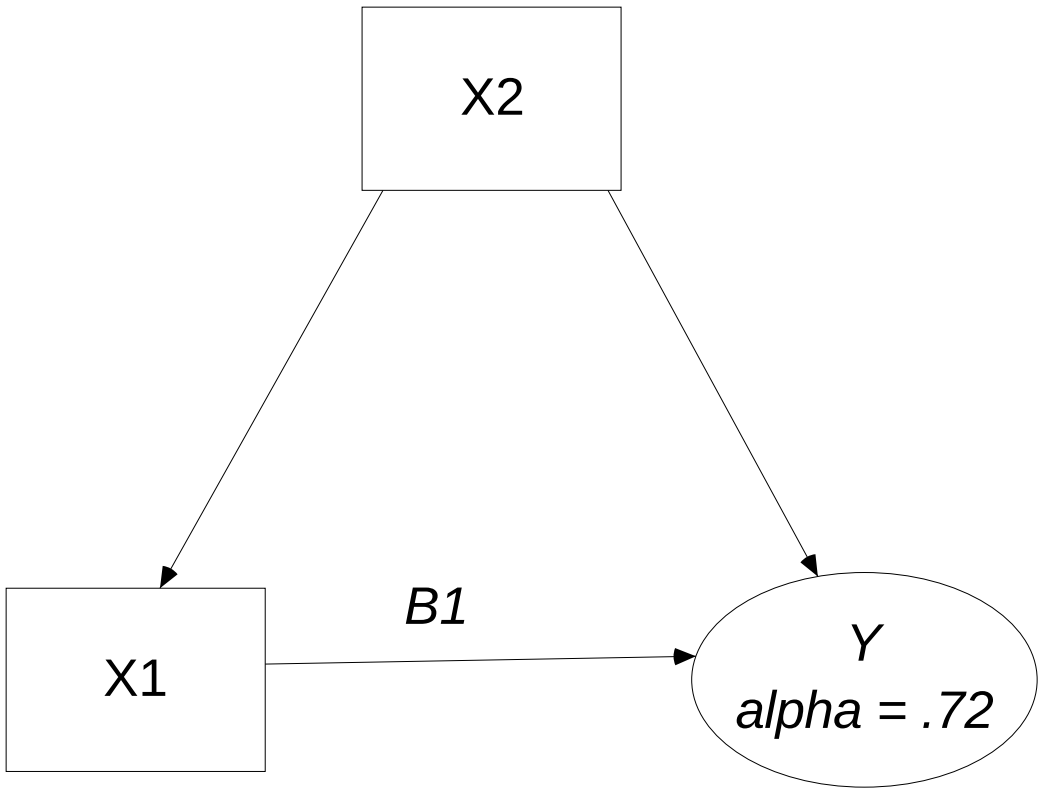
Summary Notes on Statistical Elaboration

Name of Effect	Symbolic Representation	Crosstab Results	Regression Results
Replication	Irrespective of Z X←→Y	Same results in control tables as in original table without controls	X predicts Y with and without Z being in equation
Interpretation (mediation)	X→Z→Y	All control tables show weaker relationship than original table	Entering Z into equation reduces or eliminates X's influence on Y
Explanation	Z X← /→Y	All control tables show weaker relationship than original table	Entering Z into equation reduces or eliminates X's influence on Y
Specification (moderation)	If Z = 1 X←→Y If Z ≠ 1 X←/→Y Or, preferably X Z → XZ → Y	Only one (or some) of control tables show relationship from original table	An interaction term of the form X*Z predicts Y
Suppression	Without control for Z: X←/→Y With control for Z X←→Y	Control tables reveal a relationship that was not evident in original table without controls	Entering Z into equation allows X to predict Y
Distortion	Another pattern of results	Control tables show complex pattern of results	Entering Z into equation produces complex pattern

Interpretation

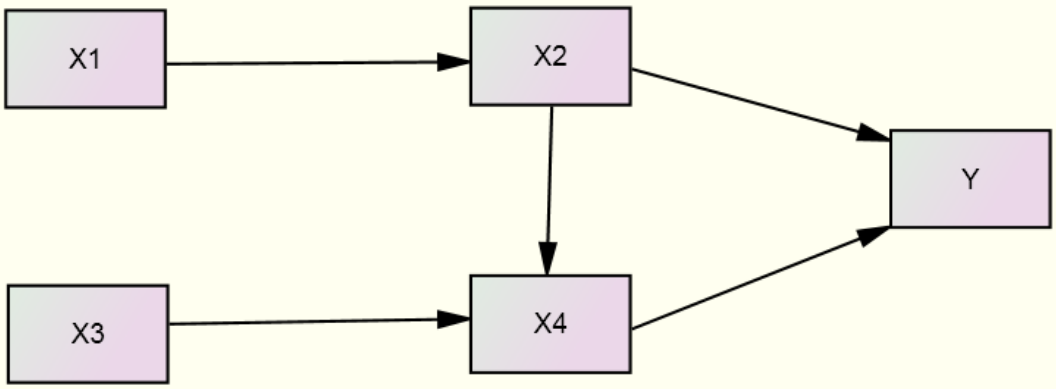


Explanation

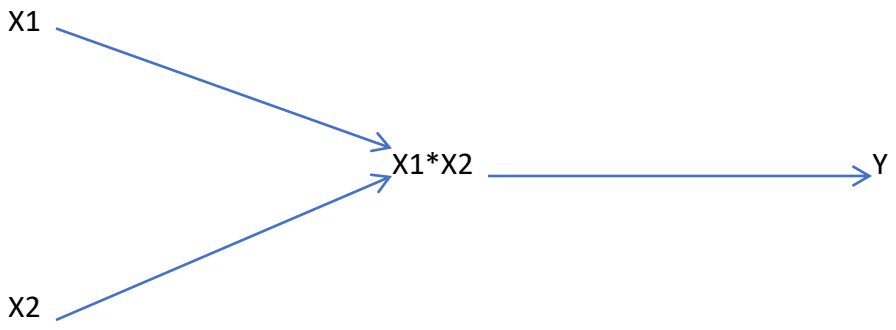


$$X1 \rightarrow X2 \rightarrow Y$$

$$X1 \rightarrow X2 \rightarrow Y$$


X1
X2
Y
X3
X4

Complete Specification



compute interact= (*x1* * *x2*).

	Male (0)	Female (1)
Non-Hispanic (0)	0	0
Hispanic (1)	0	1

compute FemHisp = Female*Hisp.

Consider:

	(0)	(.5)	(1)
(0)	0	0	0
(.5)	0	.25	.5
(1)	0	.5	1

And:

	(1)	(2)	(3)
(1)	1	2	3
(2)	2	4	6
(3)	3	6	9

Both produce valid interaction terms.

However, be particularly careful not to use one dummy and an ordinal variable

	(0)	(1)
(0)	0	0
(.5)	0	.5
(1)	0	1

```
*create interaction terms*.
compute femhisp = (female * hisp).

regression variables=RawMJ3 female hisp femhisp
  /statistics anova coeff r tol
  /descriptives = n
  /dependent = RawMJ3
  /method = enter female hisp
  /method = enter femhisp.
```

Raw MJ3 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.216[a]	.047	.045	1.12824
2	.218[b]	.048	.046	1.12828

a. Predictors: (Constant), Hisp, female

b. Predictors: (Constant), Hisp, female, femhisp

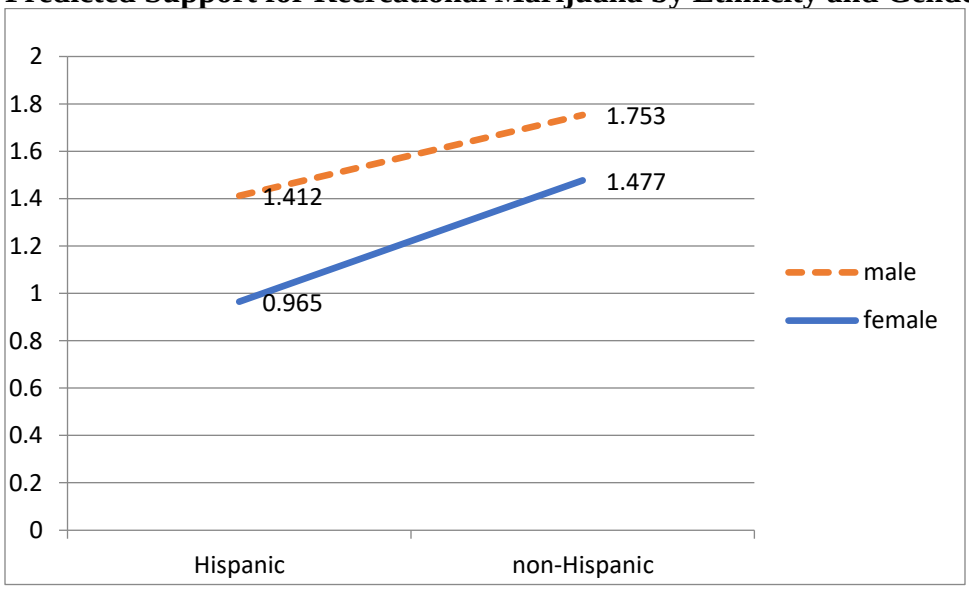
Model		b	Std. Error	Beta	t	Sig.	Tol
1	(Constant)	1.770	.053		33.548	.000	
	female	-.312	.072	-.135	-4.345	.000	.991
	Hisp	-.438	.088	-.156	-4.996	.000	.991
2	(Constant)	1.753	.056		31.539	.000	
	female	-.276	.081	-.120	-3.419	.001	.784
	Hisp	-.341	.133	-.121	-2.575	.010	.433
	femhisp	-.171	.177	-.049	-.970	.332	.373

RawMJ3 = Constant + female + hisp + femhisp

constant + female + hisp + femhisp

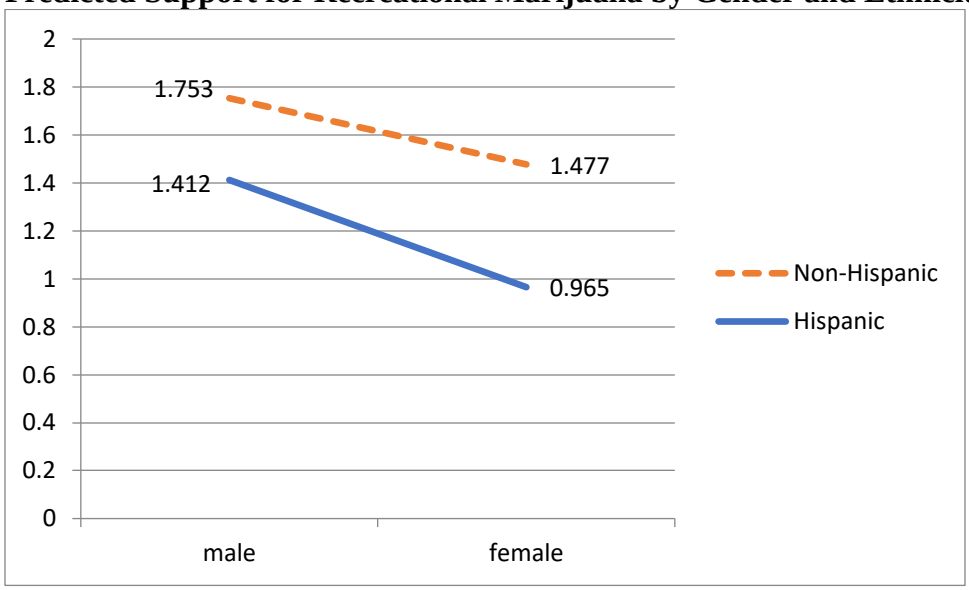
RawMJ3 (Female & Hisp)	=	1.753 – .276(1) - .341(1) - .171(1)	=	.965
RawMJ3 (Female & nonHisp)	=	1.753. - .276(1) - .341 (0) -.171(0)	=	1.477
RawMJ3 (Male & Hisp)	=	1.753 - .276(0) - .341(1) - .171(0)	=	1.412
RawMJ3 (Male & nonHisp)	=	1.753 - .276(0) - .341(0) -.171(0)	=	1.753

Predicted Support for Recreational Marijuana by Ethnicity and Gender



Source: PPIC October 2016

Predicted Support for Recreational Marijuana by Gender and Ethnicity



Source: PPIC October 2016

Raw MJ3 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.386[a]	.149	.147	1.06531
2	.397[b]	.158	.155	1.06050

a. Predictors: (Constant), interest, liberal5

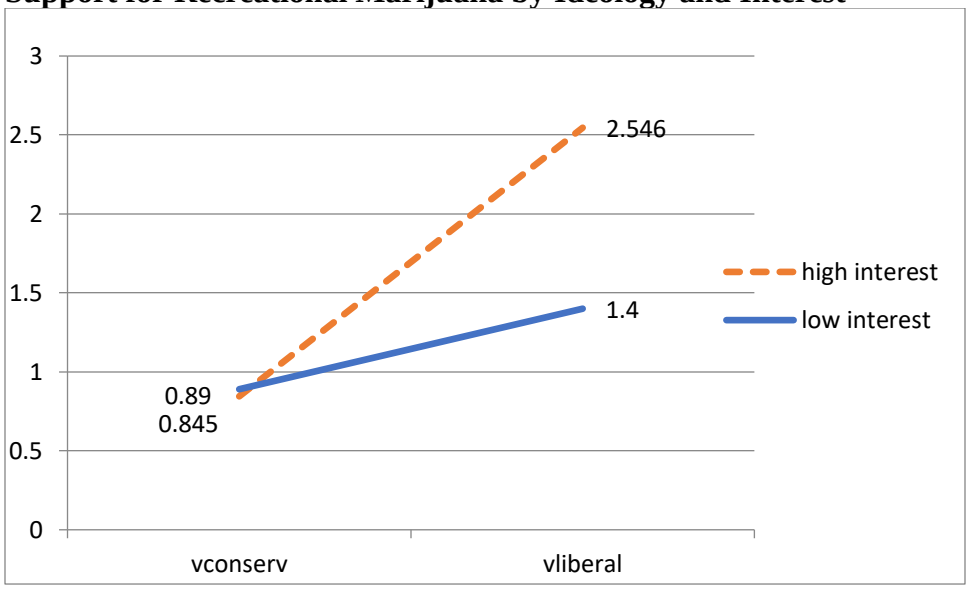
b. Predictors: (Constant), interest, liberal5, libint

Model		b	Std. Error	Beta	t	Sig.	Tol
1	(Constant)	.440	.107		4.130	.000	
	liberal5	1.371	.111	.366	12.392	.000	.998
	interest	.572	.121	.139	4.711	.000	.998
2	(Constant)	.890	.178		4.998	.000	
	liberal5	.510	.295	.136	1.731	.084	.139
	interest	-.045	.230	-.011	-.194	.846	.275
	libint	1.191	.379	.285	3.145	.002	.105

constant + liberal + interest + libint

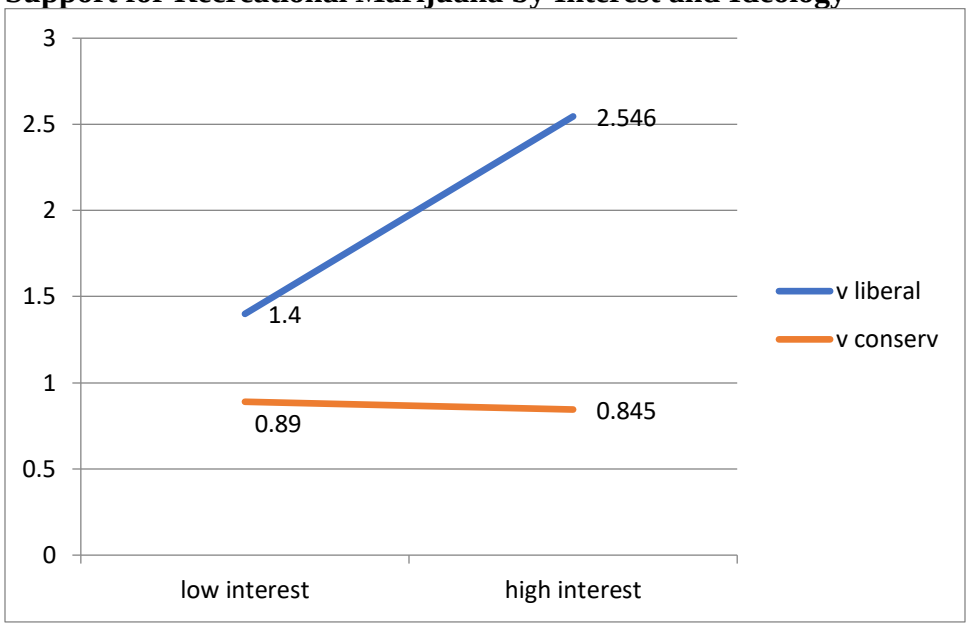
RawMJ3 (vcons & none)	=	.890 + .510(0) - .045(0) + 1.191(0)	=	.890
RawMJ3 (vcons & great)	=	.890 + .510(0) - .045(1) + 1.191(0)	=	.845
RawMJ3 (vlib & none)	=	.890 + .510(1) - .045(0) + 1.191(0)	=	1.4
RawMJ3 (vlib & great)	=	.890 + .510(1) - .045(1) + 1.191(1)	=	2.546

Support for Recreational Marijuana by Ideology and Interest



Source: PPIC October 2016

Support for Recreational Marijuana by Interest and Ideology

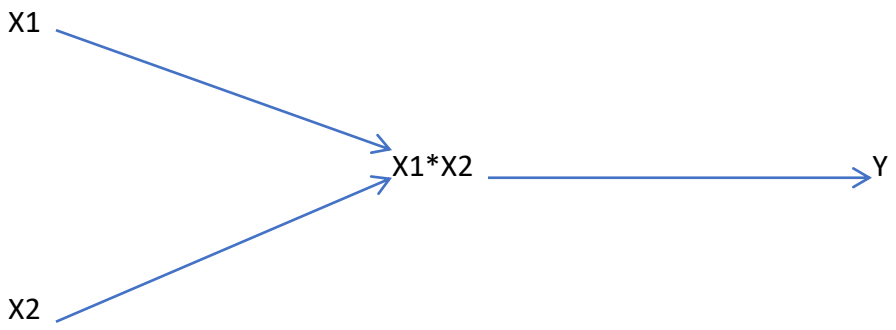


Source: PPIC October 2016

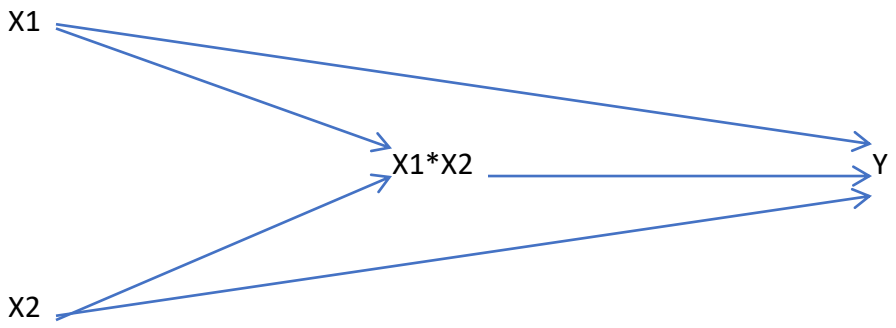
Predicting Attitudes toward RawMJ3 using interaction (Unstandardized coefficients)

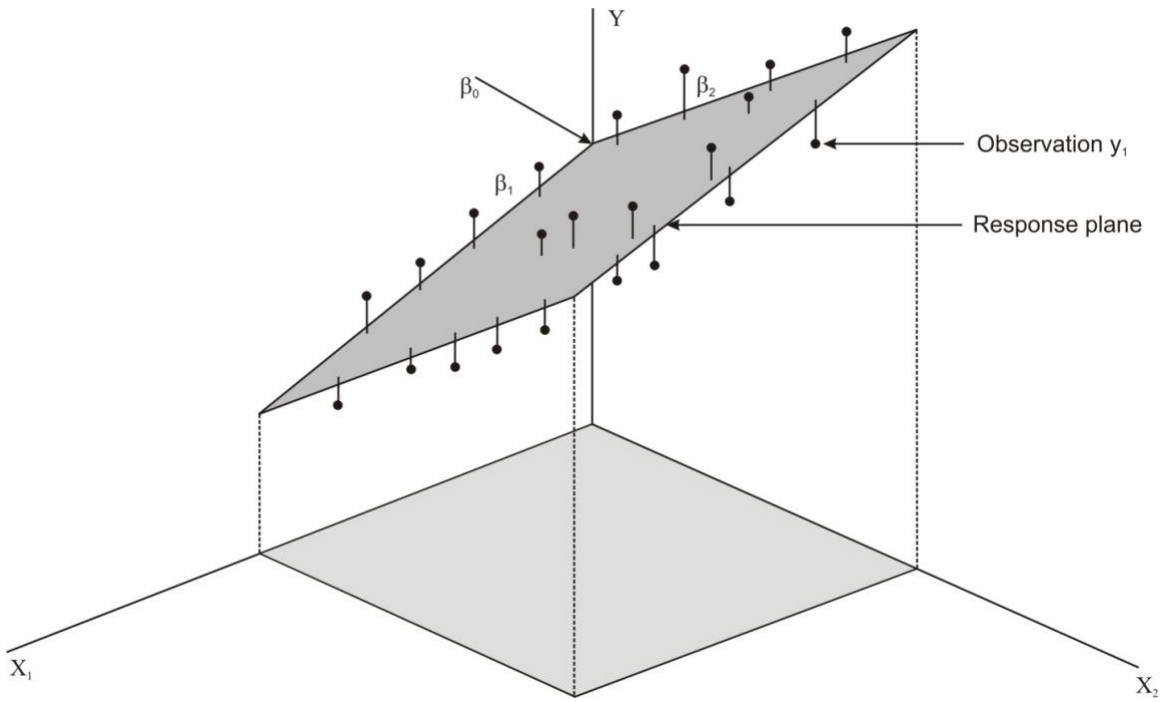
		Model 1	Model 2	Model 3	Model 4
	(Constant)	1.106	.797	.404	.793
	Democrat5	.747***	.194	.213	.146
	liberal5		1.210***	1.216***	.546
	interest			.569***	.059
	lib*int				.981**
Adj R^2		.045	.124	.143	.149
N =		(949)	(949)	(949)	(949)

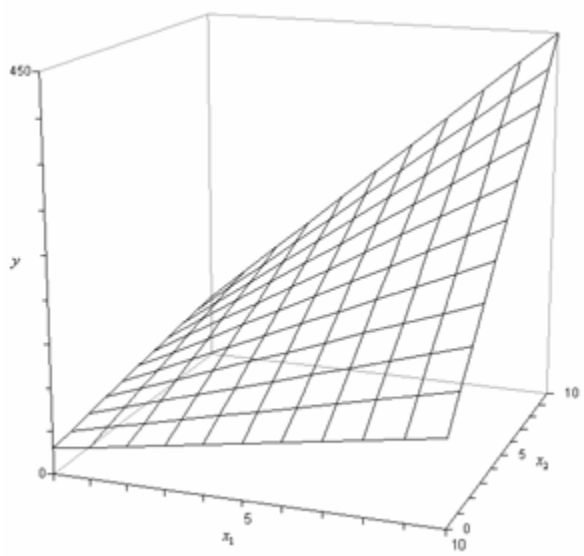
Complete Specification



Partial Specification




Y
β_0
β_2
β_1
Observation y_1
Response plane
X_1
X_2


450
y
0
5
x_1
10
0
5
x_2
10