

California 2023 Moderation Model

The hypothesis is that ideology and interest interact in their effect on attitudes toward immigration.

In other words:

Predicting RawImm4 with liberal5, Interest and their Interaction

SPSS Syntax

compute libint = (liberal5*interest).

regression variables=RawImm4 Democrat5 liberal5 interest libint

/statistics anova coeff r tol

/descriptives = n corr

/dependent = RawImm4

/method = enter liberal5 interest

/method = enter libint.

SPSS Output

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.479 ^a	.229	.228	1.26819
2	.503 ^b	.253	.252	1.24866

a. Predictors: (Constant), interest, liberal5

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

Coefficients^a

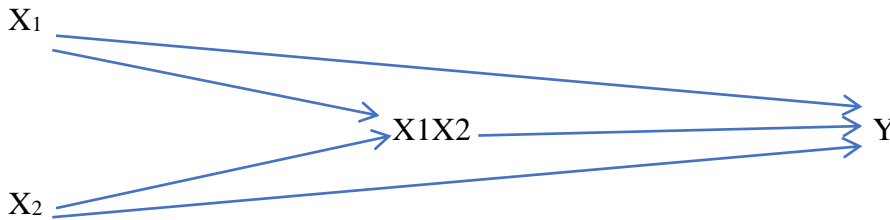
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.653	.086		19.243	<.001		
	liberal5	2.470	.118	.481	20.963	<.001	.989	1.011
	interest	-.336	.110	-.070	-3.064	.002	.989	1.011
2	(Constant)	2.393	.137		17.527	<.001		
	liberal5	1.055	.236	.205	4.476	<.001	.240	4.171
	interest	-1.621	.215	-.339	-7.533	<.001	.249	4.015
	libint	2.386	.346	.434	6.903	<.001	.128	7.816

a. Dependent Variable: RawImm4

The interaction is significant, meaning it predicts attitudes toward immigration.

The constituent (or parent) variable also remain significant. This suggests there are also direct effects of Democrat5 and interest on RawImm4. This suggests partial specification is likely.

Partial Specification



Note, however, that direct effects are not ruled out when the constituent variables become insignificant after the interaction term is entered into the equation.

Estimating these effects requires a mathematical transformation not attempted here. See Data Lab 19b for details on this approach. Instead, a graphic approach will be used.

Graphic Approach to Interaction Effects

This approach graphs the predicted values estimated by a model including the interaction.

With five categories for ideology and four for interest we have 5X4 or 20 possible versions of the equation, but we need only to plot the results using the extreme high and low values of the variables.

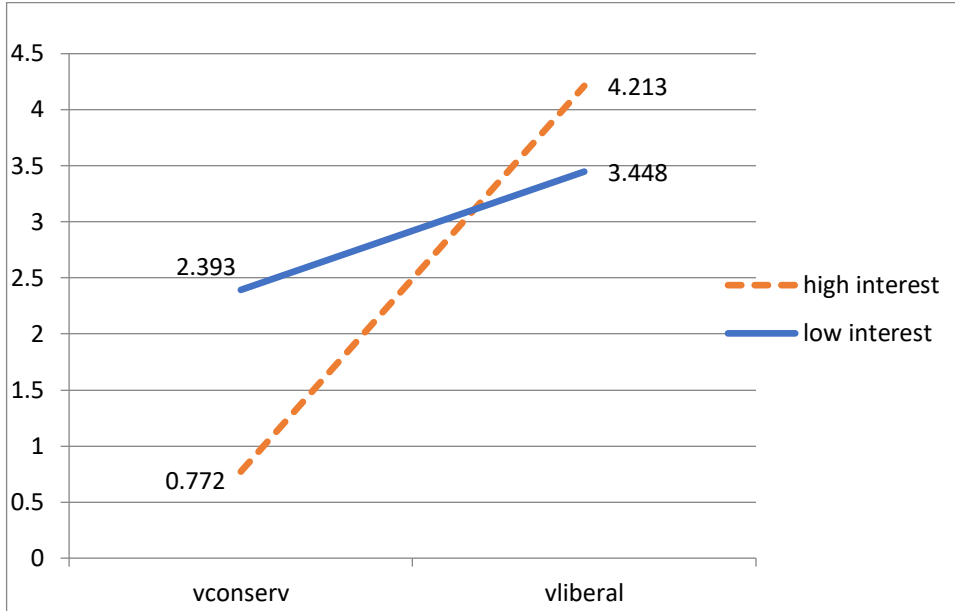
	constant + liberal5 + interest + libint	
RawMJ3 (vcons & none)	= 2.393 + 1.055 (0) - 1.621(0) + 2.386(0)	= 2.393
RawMJ3 (vcons & great)	= 2.393 + 1.055 (0) - 1.621 (1) + 2.386 (0)	= .772
RawMJ3 (vlib & none)	= 2.393 + 1.055 (1) - 1.621 (0) + 2.386 (0)	= 3.448
RawMJ3 (vlib & great)	= 2.393 + 1.055 (1) - 1.621 (1) + 2.386 (1)	= 4.213

These values can be plotted either by hand or using Excel or a similar program.

In Excel enter:

	Conservative	Liberal
low interest	2.393	3.448
high interest	.772	4.213

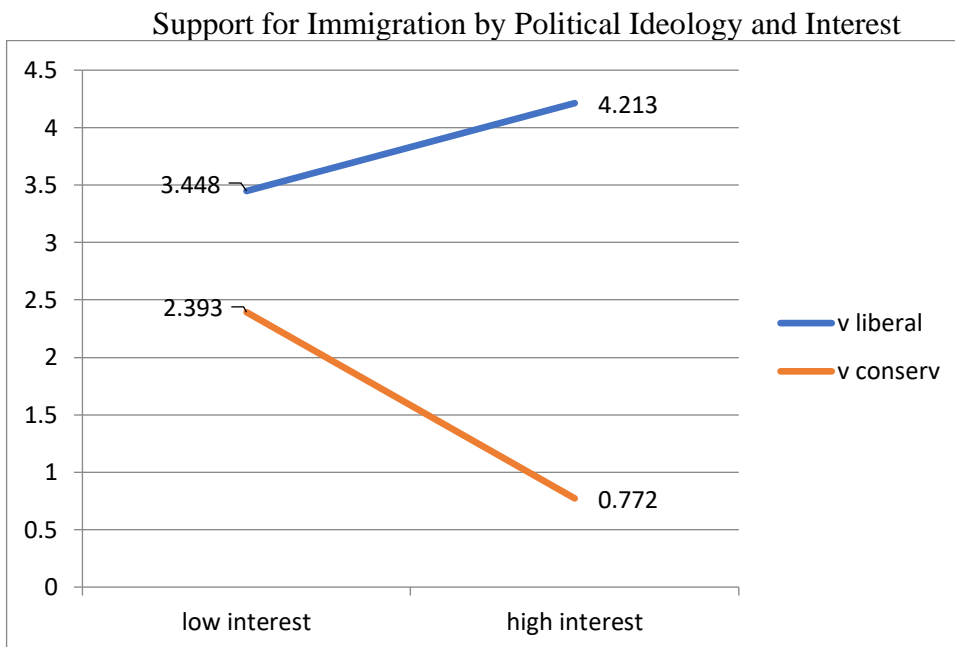
Excel Results



The lines are obviously not parallel. This is the signature of an interaction.

Note slope for high interest is steeper than that for low interest.

However, I think that reversing the axes offers a clearer picture.



Data Source PPIC June 2023 survey

Slope for very conservative greater than for very liberal.

Slopes for intermediate ideology scores can be calculated and plotted.

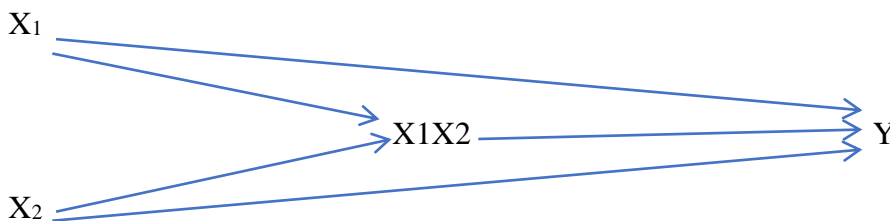
Both these graphics depict specification or interaction, also called moderation by psychologists.

Interest in Politics accentuates an ideological divide among Californians in their attitudes toward immigration. Uninterested liberals and conservatives have substantially different views concerning immigration. Among California liberals political interest increases support for immigration from 3.5 to over 4 whereas among conservatives, political interest has the opposite effect by decreasing support for immigration from 2.4 to roughly .8. This graphic presentation of the effects of interest clarifies the negative coefficient for interest in our previous multiple regression analysis. This graphic presentation of the effects of interest clarifies the negative coefficient for interest in our previous multiple regression analysis. Political interest decreases support for conservatives by approximately 1.6 units but increases it by .77 units for liberals.

This is evidently an instance of specification insofar as the graphic shows one must be both very liberal and very interested in politics to exhibit the highest levels of support for immigration. And conversely one must be very conservative and very interested to have the lowest level of support for immigration.

Moreover, since the effects of ideology (liberal5) and political interest remain significant after including the interaction term (libint) in the equation this is clearly an instance of partial rather than complete specification. This is to say the both liberal5 and political interest directly influence attitudes toward immigration as well as indirectly via their interaction

Partial Specification



To provide estimates of the direct effects displayed in such a model requires a more mathematical approach to interaction (specification). This approach is briefly covered in the images for week 9b available on the Labs page of the DataArt.ca website.

This approach would enable us to make sense of the b or Beta coefficients for the constituent variables. Due to changes in our schedule this year, consideration of this topic will remain for another course. The same must be said for integrating interaction terms into path analysis more generally.