the Cultural Cognition Project at Yale Law School

Some preliminary-analysis regression models for the CRT-motivated cogniton study

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Ordered logit estimates                           Number of obs   =       1700
                                                  LR chi2(1)      =       9.73
                                                  Prob > chi2     =     0.0018
Log likelihood = -1804.1615                       Pseudo R2       =     0.0027
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crt	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
dem_repub	.0673146	.0216044	3.12	0.002	.0249708	.1096584
_cut1	.7219973	.0981374	(Ancillary parameters)			
_cut2	1.639566	.1052953				
_cut3	2.870942	.1294138				

Regression model used to estimate impact of partisan self-identification on CRT score. “Dem_repub” is standard 7-point measure of party affiliation.

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Ordered logit estimates                           Number of obs   =       1750
                                                  LR chi2(1)      =      27.24
                                                  Prob > chi2     =     0.0000
Log likelihood = -1837.7757                       Pseudo R2       =     0.0074
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crt	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Zreligiosity	-.2492808	.0477889	-5.22	0.000	-.3429454	-.1556163
_cut1	.4859958	.0495981	(Ancillary parameters)			
_cut2	1.412115	.0604305				
_cut3	2.637241	.0951115				

Regression model used to estimate impact of religiosity on CRT score. Zreligiosity is a composite Likert measure formed by aggregaton of church attednance, importance of God, and importance of prayer.

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. ologit crtbias z_conservrepub skeptic_biased nonskeptic_biased

Iteration 0:   log likelihood = -2693.4327
Iteration 1:   log likelihood = -2685.7451
Iteration 2:   log likelihood = -2685.7417
Iteration 3:   log likelihood = -2685.7417

Ordered logistic regression                     Number of obs   =       1577
                                                LR chi2(3)      =      15.38
                                                Prob > chi2     =     0.0015
Log likelihood = -2685.7417                     Pseudo R2       =     0.0029

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     crtbias |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
z_conservr~b |  -.1636118   .0451196    -3.63   0.000    -.2520445   -.075179
skeptic_bi~d |   -.075998   .1092246    -0.70   0.487    -.2900742   .1380782
nonskeptic~d |  -.1682204   .1087078    -1.55   0.122    -.3812837   .0448429
-------------+----------------------------------------------------------------
       /cut1 |  -1.001437   .0841236                     -1.166316   -.8365575
       /cut2 |  -.3772476   .0802391                     -.5345134   -.2199819
       /cut3 |   .3846447   .0802916                      .2272761   .5420133
       /cut4 |   1.417287   .0892982                      1.242281   1.592292
       /cut5 |   2.480202   .1122788                      2.259994   2.700409
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. est store M1

. ologit crtbias z_conservrepub skeptic_biased nonskeptic_biased z_conservrep
> ub_x_skeptic z_conservrepub_x_nonskeptic

Iteration 0:   log likelihood = -2693.4327
Iteration 1:   log likelihood = -2648.1754
Iteration 2:   log likelihood = -2648.0475
Iteration 3:   log likelihood = -2648.0474

Ordered logistic regression                     Number of obs   =       1577
                                                LR chi2(5)      =      90.77
                                                Prob > chi2     =     0.0000
Log likelihood = -2648.0474                     Pseudo R2       =     0.0169

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     crtbias |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
z_conservr~b |  -.1304747   .0797148    -1.64   0.102    -.2867127    .0257634
skeptic_bi~d |  -.0855652   .1098194    -0.78   0.436    -.3008972    .1296768
nonskeptic~d |  -.1587811   .1098117    -1.44   0.150    -.3740481    .0568779
z_conservr.. |  -.5452478   .1128249    -4.83   0.000    -.7663805   -.3241115
z_conservr.. |   .4119097   .1107427     3.72   0.000     .1948579    .6289615
-------------+----------------------------------------------------------------
       /cut1 |  -1.039484   .0858675                     -1.208214   -.8707552
       /cut2 |  -.3937902   .0808726                     -.5522975   -.2352828
       /cut3 |   .3967532   .0809382                      .2381172   .5553891
       /cut4 |    1.46266   .0895793                      1.286128   1.639192
       /cut5 |   2.468436   .1138269                      2.24384    2.693033
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. est store M2

. lrtest M1 M2

Likelihood-ratio test                           LR chi2(2)  =     75.39
(Assumption: M1 nested in M2)                   Prob > chi2 =    0.0000

. ologit crtbias z_conservrepub skeptic_biased nonskeptic_biased z_conservrep
> ub_x_skeptic z_conservrepub_x_nonskeptic z_crt z_conservrepub_x_z_crt z_crt_x_skep z_crt_x_nonskept
> ic/*
>                */ z_conservrepub_x_z_crt_x_skep z_conservrepub_x_z_crt_x_non

Iteration 0:   log likelihood = -2693.4327
Iteration 1:   log likelihood =  -2641.709
Iteration 2:   log likelihood = -2641.5437
Iteration 3:   log likelihood = -2641.5437

Ordered logistic regression                     Number of obs   =       1577
                                                LR chi2(11)     =     103.78
                                                Prob > chi2     =     0.0000
Log likelihood = -2641.5437                     Pseudo R2       =     0.0193

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     crtbias |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
z_conservr~b |  -.1277481   .0802154    -1.59   0.111    -.2849673    .0294711
skeptic_bi~d |  -.0839939   .1102833    -0.76   0.446    -.3001186    .1321183
nonskeptic~d |  -.1418857   .1004285    -1.39   0.105    -.3586818    .0726792
z_conservr.. |  -.5477638   .1135018    -4.83   0.000    -.7702231   -.3253044
z_conservr.. |   .3873037   .1113971     3.48   0.001     .1689604    .6056381
       z_crt |   .0435798   .0738484     0.59   0.555    -.1011457    .1883053
z_cons~z_crt |  -.0506985   .0728756    -0.69   0.488    -.1934141    .0922531
z_crt_x_sk~c |  -.0356234    .108357    -0.33   0.742    -.2479993    .1767525
z_crt_x_no~c |  -.0333892   .1068518    -0.32   0.752    -.2428549    .1740766
z_conservr.. |   .0167562    .107618     0.16   0.876    -.1941713    .2276836
~z_crt_x_non |   .3961852   .1043125     2.94   0.003     .1917364    .600634
-------------+----------------------------------------------------------------
       /cut1 |  -1.04389   .0854218                     -1.211313   -.8764659
       /cut2 |  -.3963584   .0812744                     -.5556452   -.2370656
       /cut3 |   .3984146   .0813438                      .2389838   .5578455
       /cut4 |   1.47189   .0919539                      1.293428   1.650353
       /cut5 |  2.481672   .1143849                      2.257521   2.705823
------------------------------------------------------------------------------

. est store M4

. lrtest M3 M4

Likelihood-ratio test                           LR chi2(2)  =     10.62
(Assumption: M3 nested in M4)                   Prob > chi2 =    0.0049
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Regression model used to test experimental hypotheses and estimate graphically presented experimental effects. Variables are entered in stages. In the first, Zconserv_repub (a composite Likert scale formed by combining the 5-point liberal-conservative ideology measure and the 7-point party-self-identification measure) is shown to predict disagreement with the proposition that CRT is a valid measure controlling for experimental condition (i.e., as subjects become more Republican and more conservative, they are more likely to disagree). In model 2, cross-product interaction terms are added. The show that the impact of being Republican and conservative predicts greater likelihood of disagreement, and being Democrat and liberal greater likelihood of agreement, in the "skeptic-biased" condition relative to the control; and that those effects are reversed ni the "non-skpetic biased" condition. (Note Chris Mooney & friends: the model assumes the impact of the experimental assignment is linear with respect to ideology/party affiliation; you can't tell from the model—you have to test a polynomial fit to figure out if there is aysmmetry! I haven't seen that done in the literature. I'll do it in next post w/ this data in next post!). Model 3 adds CRT and also CRT x experimental treatment interaction terms; CRT score does not predict the dispositoin to see the CRT test as a valid measure of reflection and open-mindedness—in any of the conditions—independently of ideology. But there is a CRT-ideology/party interaction. That's what model 4 shows by adding 3-way interactions for party/ideology, CRT, and experimental treatment. There is a significant 3-way interaction effect – you can see that by looking at the Likelihood Ratio test (G-statistic), which confirms that the addition of the variables in model 4 added a statistically significant increment of explanatory power. But 3-way interactions are hard to interpret w/o graphic data illustration—which I supply in the post.