

Election data

March 5, 2012

```
> library(EffectStars)
> data(election)
```

Effect Stars for the multinomial logit model for the election data.

```
> star.nominal(Partychoice ~ Age + Religion + Democracy + Pol.Interest +
+ Unemployment + Highschool + Union + West + Gender, election, cex.cat = 1,
+ cex.labels = 1.2, lwd.circle = 1.5, dist.cov = 0.8)
```

\$odds

	(Intercept)	Age	Religioncatholic	Religionother religion	
CDU	4.0414158	1.3610161	1.4966911	0.6995757	
SPD	1.5990006	1.1593572	0.8217861	0.6516310	
FDP	0.7082679	0.8949610	1.0941385	1.3833039	
Greens	0.3340830	0.6717697	0.8806534	1.3315266	
Left Party	0.6539821	1.0541319	0.8437848	1.1909572	
	Democracynot satisfied	Pol.Interestless	interested		
CDU	0.4647253		1.2235442		
SPD	0.6981525		1.4007699		
FDP	1.0014343		0.7694186		
Greens	1.0089716		1.2356737		
Left Party	3.0503659		0.6136872		
	Unemploymentunemployed	Highschoolhighschool	Unionmember	Westwest	
CDU	0.5982192	1.1681632	0.6654959	0.7187890	
SPD	1.1349143	0.8022312	1.4926189	1.4746517	
FDP	0.5714917	1.0529720	0.6002911	1.0248899	
Greens	0.9302359	1.7567334	0.6772514	1.8973253	
Left Party	2.7705983	0.5768651	2.4762461	0.4851657	
	Gendermale				
CDU	0.7689529				
SPD	0.8261321				
FDP	1.2896875				
Greens	0.9805111				
Left Party	1.2448406				

\$coefficients

	(Intercept)	Age	Religioncatholic	Religionother religion	
CDU	1.3965951	0.30823152	0.4032568	-0.3572813	
SPD	0.4693788	0.14786573	-0.1962752	-0.4282769	
FDP	-0.3449328	-0.11097512	0.0899673	0.3244748	

Greens	-1.0963659	-0.39783976	-0.1270912	0.2863261
Left Party	-0.4246752	0.05271762	-0.1698577	0.1747573
	Democracy	not satisfied	Pol. Interestless	interested
CDU	-0.766308725		0.2017517	
SPD	-0.359317717		0.3370220	
FDP	0.001433271		-0.2621201	
Greens	0.008931611		0.2116163	
Left Party	1.115261560		-0.4882699	
	Unemployment	unemployed	Highschool	highschool
CDU	-0.51379796		Unionmember	Westwest
SPD	0.12655711			
FDP	-0.55950540			
Greens	-0.07231703			
Left Party	1.01906328			
	Gender	male		
CDU	-0.26272555			
SPD	-0.19100061			
FDP	0.25439996			
Greens	-0.01968128			
Left Party	0.21900748			
\$se				
	(Intercept)	Age	Religioncatholic	Religionother religion
CDU	0.2241870	0.06883778	0.1629128	0.1675213
SPD	0.2454879	0.07243803	0.1661371	0.1722206
FDP	0.3115688	0.09372915	0.2388946	0.2184835
Greens	0.3272034	0.09663685	0.2339585	0.2129134
Left Party	0.3132746	0.09447744	0.2328110	0.2049558
	Democracy	not satisfied	Pol. Interestless	interested
CDU	0.1388727		0.1467925	
SPD	0.1475205		0.1596902	
FDP	0.1944036		0.1906898	
Greens	0.1933154		0.2026862	
Left Party	0.2288390		0.1853461	
	Unemployment	unemployed	Highschool	highschool
CDU	0.3657289		Unionmember	Westwest
SPD	0.3140074			
FDP	0.4983006			
Greens	0.4216166			
Left Party	0.3014122			
	Gender	male		
CDU	0.1353626			
SPD	0.1423081			
FDP	0.1874642			
Greens	0.1840961			
Left Party	0.1805578			
\$pvalues				
	(Intercept)	Age	Religioncatholic	Religionother religion
CDU	2.338170e-10	3.773452e-06	0.006656363	0.016472574

SPD	2.793653e-02	2.061189e-02	0.118720953	0.006445038
FDP	1.341288e-01	1.182070e-01	0.353236077	0.068755637
Greens	4.030131e-04	1.920399e-05	0.293488859	0.089344799
Left Party	8.761314e-02	2.884250e-01	0.232818896	0.196924269
	Democracy	not satisfied	Pol. Interest	less interested
CDU	1.713767e-08		0.084658676	
SPD	7.431218e-03		0.017408771	
FDP	4.970588e-01		0.084629447	
Greens	4.815745e-01		0.148229118	
Left Party	5.480134e-07		0.004214692	
	Unemployment	unemployed	High school	high school
CDU	0.0800314563		Union member	
SPD	0.3434599079		0.17912780	2.730234e-02
FDP	0.1307554699		0.12171913	1.458031e-02
Greens	0.4319061897		0.40631705	3.880923e-02
Left Party	0.0003611626		0.00339938	7.677503e-02
	West	west	Gender	male
CDU	0.0171065991	0.02613505		
SPD	0.0120656445	0.08977159		
FDP	0.4527545016	0.08738123		
Greens	0.0019703929	0.45743114		
Left Party	0.0000982047	0.11257452		

\$p_rel

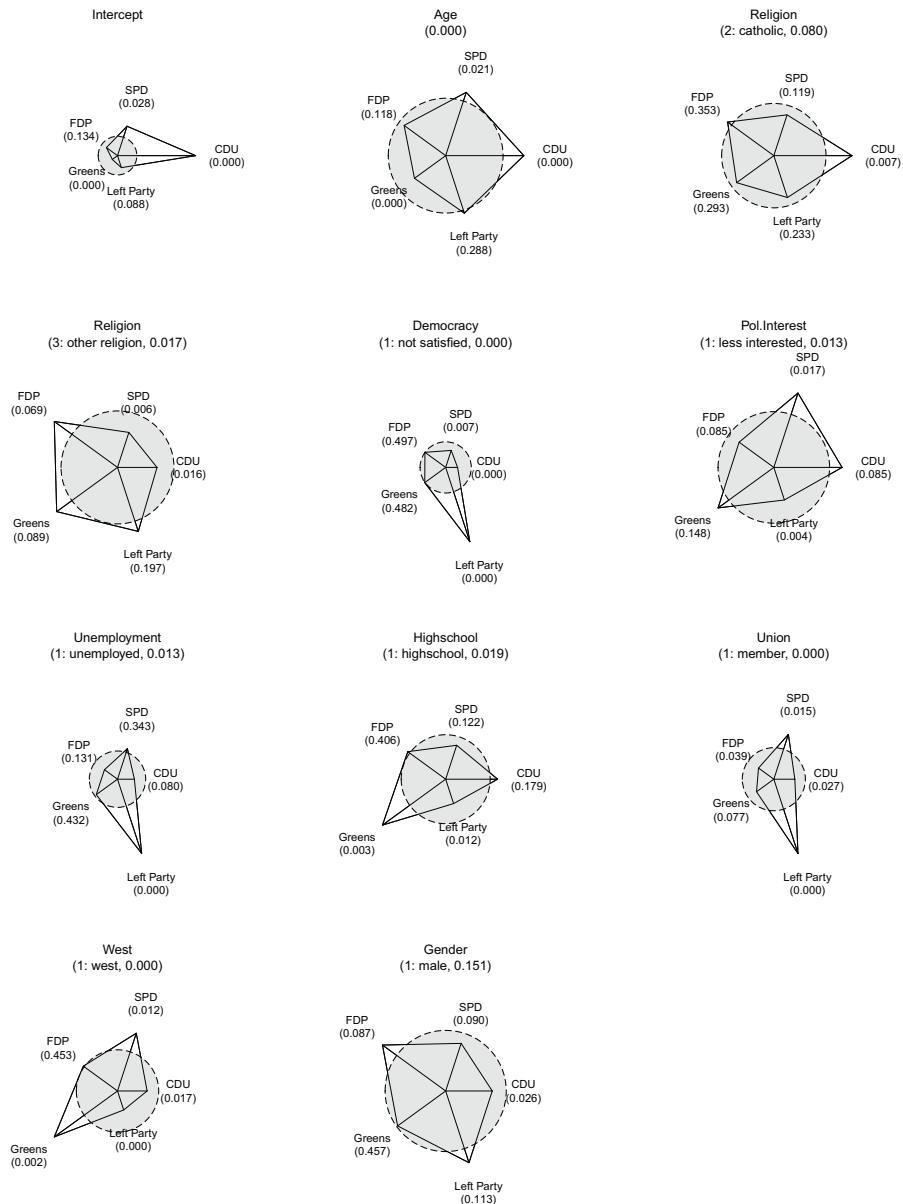
	Age	Religion	catholic	Religion	other	religion
[1,]	5.625482e-07	0.08015606		0.01694874		
	Democracy	not satisfied	Pol. Interest	less interested	Unemployment	unemployed
[1,]	2.955651e-10			0.01335832		0.01308379
	High school	high school	Union member	West	west	Gender male
[1,]	0.01862473	3.281531e-05	1.548773e-05	0.1509492		

\$xlim

[1] 10.50768 57.38810

\$ylim

[1] 10.06313 72.58383



Effect Stars for the multinomial logit model for the election data including confidence intervals.

```
> star.nominal(Partychoice ~ Age + Religion + Democracy + Pol.Interest +
+ Unemployment + Highschool + Union + West + Gender, election, cex.cat = 1,
+ cex.labels = 1.2, conf.int = TRUE, dist.cov = 0.7, lwd.circle = 0.01,
+ lty.circle = "solid", col.circle = "gray90")
```

\$odds

	(Intercept)	Age	Religioncatholic	Religionother religion	
CDU	4.0414158	1.3610161	1.4966911	0.6995757	
SPD	1.5990006	1.1593572	0.8217861	0.6516310	
FDP	0.7082679	0.8949610	1.0941385	1.3833039	
Greens	0.3340830	0.6717697	0.8806534	1.3315266	
Left Party	0.6539821	1.0541319	0.8437848	1.1909572	
	Democracy	not satisfied	Pol.Interestless	interested	
CDU		0.4647253		1.2235442	
SPD		0.6981525		1.4007699	
FDP		1.0014343		0.7694186	
Greens		1.0089716		1.2356737	
Left Party		3.0503659		0.6136872	
	Unemployment	unemployed	Highschool	highschool	
CDU		0.5982192	1.1681632	0.6654959	0.7187890
SPD		1.1349143	0.8022312	1.4926189	1.4746517
FDP		0.5714917	1.0529720	0.6002911	1.0248899
Greens		0.9302359	1.7567334	0.6772514	1.8973253
Left Party		2.7705983	0.5768651	2.4762461	0.4851657
	Gender	male			
CDU		0.7689529			
SPD		0.8261321			
FDP		1.2896875			
Greens		0.9805111			
Left Party		1.2448406			

\$coefficients

	(Intercept)	Age	Religioncatholic	Religionother religion	
CDU	1.3965951	0.30823152	0.4032568	-0.3572813	
SPD	0.4693788	0.14786573	-0.1962752	-0.4282769	
FDP	-0.3449328	-0.11097512	0.0899673	0.3244748	
Greens	-1.0963659	-0.39783976	-0.1270912	0.2863261	
Left Party	-0.4246752	0.05271762	-0.1698577	0.1747573	
	Democracy	not satisfied	Pol.Interestless	interested	
CDU		-0.766308725		0.2017517	
SPD		-0.359317717		0.3370220	
FDP		0.001433271		-0.2621201	
Greens		0.008931611		0.2116163	
Left Party		1.115261560		-0.4882699	
	Unemployment	unemployed	Highschool	highschool	
CDU		-0.51379796	0.15543258	-0.4072227	-0.33018737
SPD		0.12655711	-0.22035841	0.4005322	0.38842183

FDP	-0.55950540	0.05161669	-0.5103405	0.02458516
Greens	-0.07231703	0.56345605	-0.3897127	0.64044515
Left Party	1.01906328	-0.55014691	0.9067438	-0.72326476
	Gendermale			
CDU	-0.26272555			
SPD	-0.19100061			
FDP	0.25439996			
Greens	-0.01968128			
Left Party	0.21900748			
\$se				
	(Intercept)	Age Religioncatholic Religionother religion		
CDU	0.2241870	0.06883778	0.1629128	0.1675213
SPD	0.2454879	0.07243803	0.1661371	0.1722206
FDP	0.3115688	0.09372915	0.2388946	0.2184835
Greens	0.3272034	0.09663685	0.2339585	0.2129134
Left Party	0.3132746	0.09447744	0.2328110	0.2049558
	Democracynot satisfied	Pol. Interestless interested		
CDU	0.1388727		0.1467925	
SPD	0.1475205		0.1596902	
FDP	0.1944036		0.1906898	
Greens	0.1933154		0.2026862	
Left Party	0.2288390		0.1853461	
	Unemploymentunemployed	Highschoolhighschool Unionmember Westwest		
CDU	0.3657289	0.1691886	0.2118735	0.1559290
SPD	0.3140074	0.1889160	0.1836202	0.1722467
FDP	0.4983006	0.2177650	0.2891981	0.2071113
Greens	0.4216166	0.2081829	0.2730795	0.2221559
Left Party	0.3014122	0.2425590	0.2163638	0.1942385
	Gendermale			
CDU	0.1353626			
SPD	0.1423081			
FDP	0.1874642			
Greens	0.1840961			
Left Party	0.1805578			
\$pvalues				
	(Intercept)	Age Religioncatholic Religionother religion		
CDU	2.338170e-10	3.773452e-06	0.006656363	0.016472574
SPD	2.793653e-02	2.061189e-02	0.118720953	0.006445038
FDP	1.341288e-01	1.182070e-01	0.353236077	0.068755637
Greens	4.030131e-04	1.920399e-05	0.293488859	0.089344799
Left Party	8.761314e-02	2.884250e-01	0.232818896	0.196924269
	Democracynot satisfied	Pol. Interestless interested		
CDU	1.713767e-08		0.084658676	
SPD	7.431218e-03		0.017408771	
FDP	4.970588e-01		0.084629447	
Greens	4.815745e-01		0.148229118	
Left Party	5.480134e-07		0.004214692	
	Unemploymentunemployed	Highschoolhighschool Unionmember		

CDU	0.0800314563	0.17912780	2.730234e-02
SPD	0.3434599079	0.12171913	1.458031e-02
FDP	0.1307554699	0.40631705	3.880923e-02
Greens	0.4319061897	0.00339938	7.677503e-02
Left Party	0.0003611626	0.01166171	1.389682e-05
	Westwest Gendermale		
CDU	0.0171065991	0.02613505	
SPD	0.0120656445	0.08977159	
FDP	0.4527545016	0.08738123	
Greens	0.0019703929	0.45743114	
Left Party	0.0000982047	0.11257452	

\$p_rel

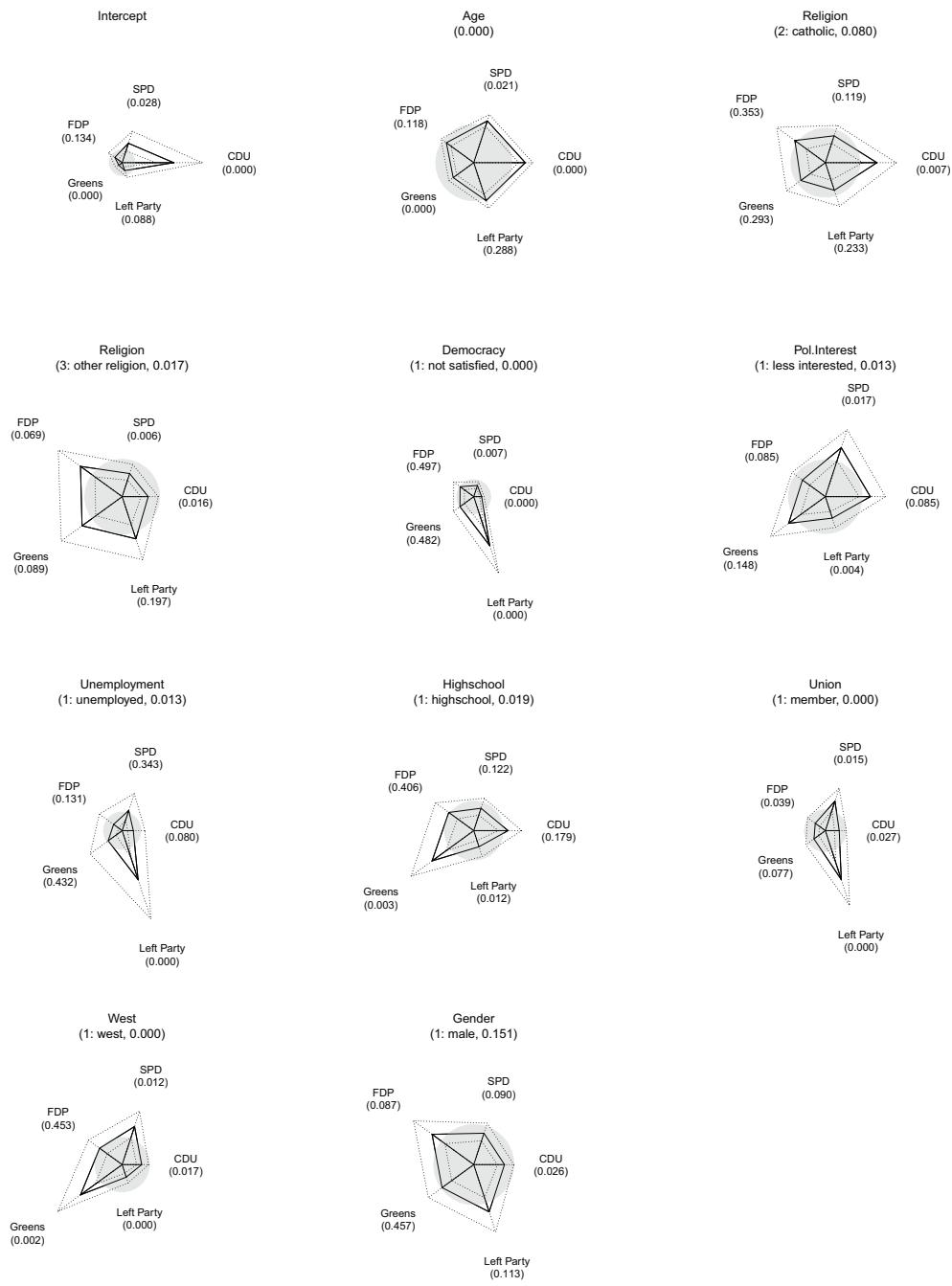
	Age	Religion	catholic	Religion	other	religion
[1,]	5.625482e-07		0.08015606		0.01694874	
	Democracy	not satisfied	Pol.	Interestless	interested	Unemployment
[1,]			2.955651e-10		0.01335832	0.01308379
	Highschool	highschool	Unionmember		Westwest	Gendermale
[1,]			0.01862473	3.281531e-05	1.548773e-05	0.1509492

\$xlim

```
[1] 21.11333 89.20505
```

\$ylim

```
[1] 15.25633 119.39484
```



Effect Stars for the multinomial logit model for the election data with reference category "FDP". Leaving away the p-values can sometimes increase clarity.

```
> star.nominal(Partychoice ~ Age + Religion + Democracy + Pol.Interest +
+ Unemployment + Highschool + Union + West + Gender, election, cex.cat = 1,
+ cex.labels = 1.2, lwd.circle = 1.5, refLevel = 3, symmetric = FALSE,
+ dist.cov = 0.8, printpvalues = FALSE)

$odds
            (Intercept)      Age Religioncatholic Religionother religion
CDU          5.7060549 1.5207546      1.3679174                  0.5057281
SPD          2.2576211 1.2954276      0.7510805                  0.4710685
FDP          1.0000000 1.0000000      1.0000000                  1.0000000
Greens       0.4716901 0.7506133      0.8048829                  0.9625698
Left Party   0.9233541 1.1778524      0.7711865                  0.8609512

            Democracynot satisfied Pol.Interestless interested
CDU          0.4640597                   1.5902192
SPD          0.6971526                   1.8205564
FDP          1.0000000                   1.0000000
Greens       1.0075265                   1.6059837
Left Party   3.0459971                   0.7975986

            Unemploymentunemployed Highschoolhighschool Unionmember Westwest
CDU          1.046768                   1.1093962      1.108622 0.7013330
SPD          1.985881                   0.7618732      2.486492 1.4388392
FDP          1.0000000                   1.0000000      1.0000000 1.0000000
Greens       1.627733                   1.6683571      1.128205 1.8512480
Left Party   4.848012                   0.5478446      4.125075 0.4733833

            Gendermale
CDU          0.5962319
SPD          0.6405676
FDP          1.0000000
Greens       0.7602703
Left Party   0.9652265

$ccoefficients
            (Intercept)      Age Religioncatholic Religionother religion
CDU          1.74152788 0.4192066      0.3132895                 -0.68175613
SPD          0.81431163 0.2588409      -0.2862425                 -0.75275168
FDP          0.00000000 0.0000000      0.0000000                  0.00000000
Greens       -0.75143306 -0.2868646     -0.2170585                 -0.03814868
Left Party   -0.07974242 0.1636927     -0.2598250                 -0.14971745

            Democracynot satisfied Pol.Interestless interested
CDU          -0.76774200                   0.4638719
SPD          -0.36075099                   0.5991422
FDP          0.00000000                   0.0000000
Greens       0.00749834                   0.4737365
Left Party   1.11382829                   -0.2261498

            Unemploymentunemployed Highschoolhighschool Unionmember Westwest
CDU          0.04570744                   0.1038159      0.1031178 -0.3547725
SPD          0.68606251                   -0.2719751      0.9108727 0.3638367
```

```

FDP          0.00000000  0.0000000  0.0000000  0.0000000
Greens       0.48718838  0.5118394  0.1206278  0.6158600
Left Party   1.57856868 -0.6017636  1.4170843 -0.7478499

      Gendermale
CDU        -0.51712551
SPD        -0.44540057
FDP          0.00000000
Greens      -0.27408124
Left Party -0.03539248

$se
      (Intercept)    Age Religioncatholic Religionother religion
CDU        0.4221328  0.1284995  0.3203722  0.3074730
SPD        0.4442698  0.1327443  0.3263157  0.3141545
FDP          0.0000000  0.0000000  0.0000000  0.0000000
Greens      0.5159550  0.1543796  0.3848794  0.3480935
Left Party  0.5063563  0.1516420  0.3850338  0.3421559

      Democracynot satisfied Pol.Interestless interested
CDU        0.2600887  0.2661171
SPD        0.2699519  0.2800941
FDP          0.0000000  0.0000000
Greens      0.3083424  0.3181750
Left Party  0.3492097  0.3002552

      Unemploymentunemployed Highschoolhighschool Unionmember Westwest
CDU        0.7168346  0.3031167  0.4094231  0.2863042
SPD        0.6775919  0.3242640  0.3875045  0.3039587
FDP          0.0000000  0.0000000  0.0000000  0.0000000
Greens      0.7594319  0.3391805  0.4639223  0.3477697
Left Party  0.6641306  0.3727579  0.4108462  0.3211392

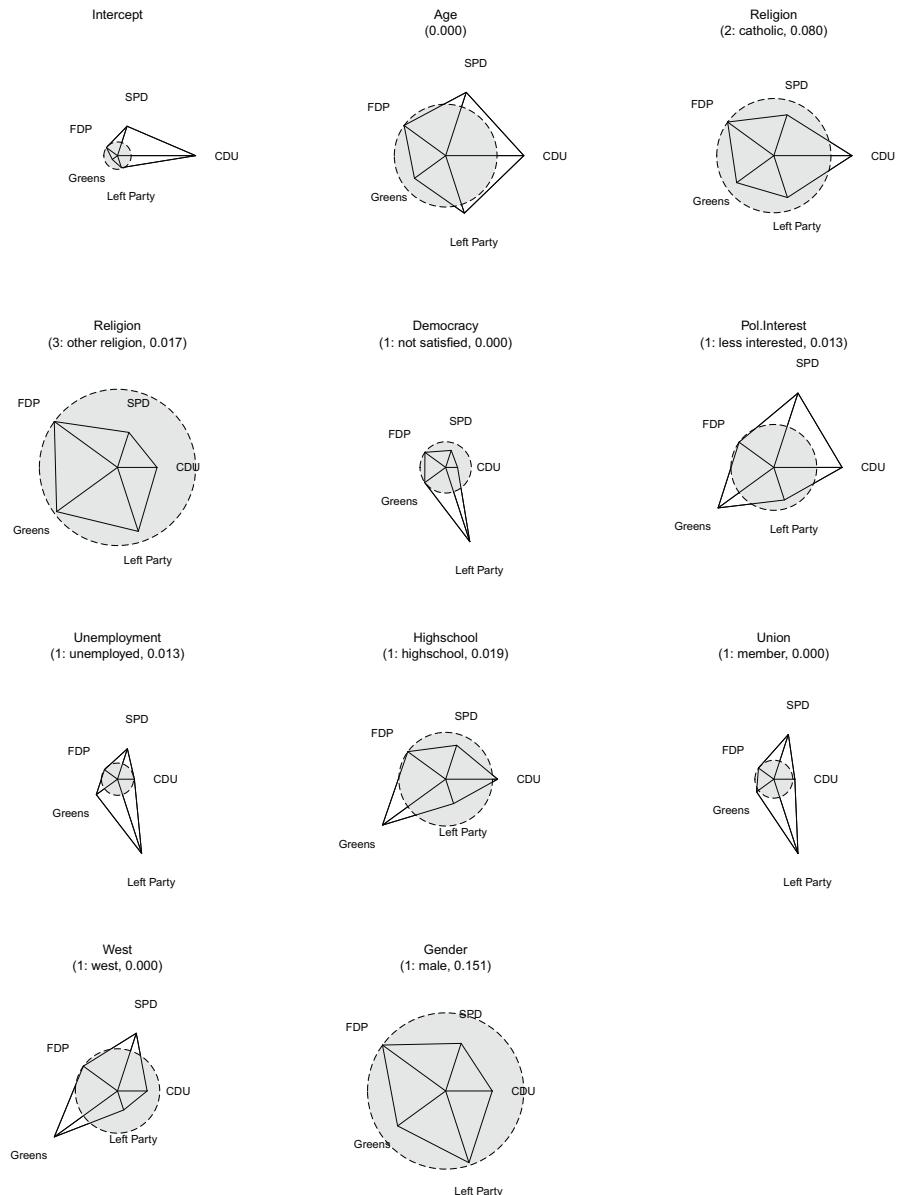
      Gendermale
CDU        0.2570587
SPD        0.2654992
FDP          0.0000000
Greens      0.3006965
Left Party  0.2982224

$p_rel
      Age Religioncatholic Religionother religion
[1,] 5.625482e-07  0.08015606  0.01694874
      Democracynot satisfied Pol.Interestless interested Unemploymentunemployed
[1,] 2.955651e-10  0.01335832  0.01308379
      Highschoolhighschool Unionmember Westwest Gendermale
[1,] 0.01862473  3.281531e-05  1.548773e-05  0.1509492

$xlim
[1] 14.83574 81.02598

$ylim
[1] 14.20808 102.48075

```



Effect Stars for the multinomial logit model for the election data with four category-specific covariates.

```
> election[,13:16] <- election[,13:16] - election[,12]
> election[,18:21] <- election[,18:21] - election[,17]
> election[,23:26] <- election[,23:26] - election[,22]
> election[,28:31] <- election[,28:31] - election[,27]
> election$Social <- election$Social_SPD
> election$Immigration <- election$Immigration_SPD
> election$Nuclear <- election$Nuclear_SPD
> election$Left_Right <- election$Left_Right_SPD
> star.nominal(Partychoice ~ Social + Immigration + Nuclear + Left_Right + Age +
+ Religion + Democracy + Pol.Interest + Unemployment + Highschool + Union + West +
+ Gender, data = election,
+ xij = list(Social ~ Social_SPD + Social_FDP + Social_Greens + Social_Left,
+ Immigration ~ Immigration_SPD + Immigration_FDP + Immigration_Greens + Immigration_Left,
+ Nuclear ~ Nuclear_SPD + Nuclear_FDP + Nuclear_Greens + Nuclear_Left,
+ Left_Right ~ Left_Right_SPD + Left_Right_FDP + Left_Right_Greens + Left_Right_Left),
+ cex.cat = 1, cex.labels = 1.4, lwd.circle = 1.5, dist.cov = 0.8)
```

	Social	Immigration	Nuclear	Left_Right
[1,]	-0.1630662	-0.1194577	-0.1848822	-0.6269847

\$odds

	(Intercept)	Age	Religion	catholic	Religion	other religion
CDU	3.8011447	1.3612851		1.7116679		0.9270493
SPD	1.2689668	1.1631240		0.8119858		0.7070553
FDP	0.6002334	0.9448420		1.3554629		1.7608286
Greens	0.4484616	0.7078829		0.9066765		1.0931248
Left Party	0.7701760	0.9442876		0.5854530		0.7926053

	Democracy	not satisfied	Pol.Interest	less interested
CDU	0.4898356		1.1705339	
SPD	0.7386462		1.3192603	
FDP	1.1961609		0.7482434	
Greens	0.8630963		1.1128787	
Left Party	2.6770981		0.7776690	

	Unemployment	unemployed	Highschool	highschool	Union	member	West	west
CDU	0.9584716		1.3080832		0.6214195		0.5773750	
SPD	1.0117595		0.8614084		1.4443515		1.6367666	
FDP	0.8997789		1.3046584		0.7169625		0.7455735	
Greens	0.7956908		1.4416545		0.6326797		1.7707552	
Left Party	1.4403343		0.4718430		2.4561892		0.8015050	

	Gender	male
CDU	0.8015079	
SPD	0.7659470	
FDP	1.0759390	
Greens	1.0678932	
Left Party	1.4176792	

\$coefficients

	(Intercept)	Age	Religion	catholic	Religion	other religion
CDU	0.8015079					

CDU	1.3353023	0.30842916	0.53746829	-0.07574850
SPD	0.2382030	0.15110952	-0.20827246	-0.34664642
FDP	-0.5104367	-0.05673755	0.30414302	0.56578447
Greens	-0.8019323	-0.34547661	-0.09796952	0.08904038
Left Party	-0.2611363	-0.05732452	-0.53536933	-0.23242993
	Democracy not satisfied Pol. Interest less interested			
CDU	-0.7136854		0.1574600	
SPD	-0.3029363		0.2770712	
FDP	0.1791172		-0.2900269	
Greens	-0.1472290		0.1069501	
Left Party	0.9847334		-0.2514543	
	Unemployment unemployed High school high school Union member West west			
CDU	-0.04241539	0.2685628	-0.4757488	-0.5492632
SPD	0.01169086	-0.1491866	0.3676605	0.4927227
FDP	-0.10560618	0.2659413	-0.3327317	-0.2936015
Greens	-0.22854455	0.3657914	-0.4577910	0.5714061
Left Party	0.36487527	-0.7511089	0.8986110	-0.2212641
	Gender male			
CDU	-0.22126042			
SPD	-0.26664233			
FDP	0.07319380			
Greens	0.06568778			
Left Party	0.34902117			
\$se				
	(Intercept) Age Religion catholic Religion other religion			
CDU	0.2981722	0.08679121	0.2127910	0.2131650
SPD	0.2780505	0.08018670	0.1883308	0.1920546
FDP	0.3552321	0.10436419	0.2664386	0.2458249
Greens	0.3588036	0.10644737	0.2543597	0.2385184
Left Party	0.3877065	0.11781620	0.2877358	0.2560869
	Democracy not satisfied Pol. Interest less interested			
CDU	0.1805016		0.1917790	
SPD	0.1660231		0.1801202	
FDP	0.2187023		0.2170315	
Greens	0.2143911		0.2290519	
Left Party	0.2820579		0.2327036	
	Unemployment unemployed High school high school Union member West west			
CDU	0.4350242	0.2204325	0.2741820	0.2029215
SPD	0.3651699	0.2110732	0.2120310	0.1931098
FDP	0.5596199	0.2476985	0.3197829	0.2347514
Greens	0.4718760	0.2372396	0.2999115	0.2481622
Left Party	0.4071883	0.2986892	0.2749185	0.2431232
	Gender male			
CDU	0.1737192			
SPD	0.1584829			
FDP	0.2080704			
Greens	0.2018792			
Left Party	0.2212970			

```

$pvalues
              (Intercept)          Age Religioncatholic Religionother religion
CDU      3.762140e-06 0.0001899324 0.005771707 0.36116316
SPD      1.958082e-01 0.0297506330 0.134387873 0.03554228
FDP      7.537170e-02 0.2933413168 0.126828299 0.01067956
Greens   1.270811e-02 0.0005861909 0.350058922 0.35446029
Left Party 2.503016e-01 0.3132854738 0.031398355 0.18203913
              Democracynot satisfied Pol.Interestless interested
CDU      3.844375e-05 0.20580920
SPD      3.402594e-02 0.06199291
FDP      2.063931e-01 0.09071977
Greens   2.461261e-01 0.32027674
Left Party 2.403870e-04 0.13994256
              Unemploymentunemployed Highschoolhighschool Unionmember Westwest
CDU      0.4611642 0.111546473 0.0413564862 0.003396988
SPD      0.4872301 0.239845328 0.0414595647 0.005362773
FDP      0.4251598 0.141490031 0.1490555557 0.105523625
Greens   0.3140752 0.061553232 0.0634526468 0.010652055
Left Party 0.1851037 0.005956953 0.0005403181 0.181387442
              Gendermale
CDU      0.10139068
SPD      0.04623915
FDP      0.36250380
Greens   0.37244615
Left Party 0.05737912

$catspec
      Social Immigration Nuclear Left_Right
[1,] -0.1630662 -0.1194577 -0.1848822 -0.6269847

$catspecse
      Social Immigration Nuclear Left_Right
[1,] 0.03313544 0.03170079 0.02960555 0.04180896

$p_rel
      Social Immigration Nuclear Left_Right Age
[1,] 5.117136e-07 0.0001397863 1.107482e-10 0 0.000175962
      Religioncatholic Religionother religion Democracynot satisfied
[1,] 0.0606889 0.1014177 3.01792e-05
      Pol.Interestless interested Unemploymentunemployed Highschoolhighschool
[1,] 0.2696232 0.9151604 0.04863854
      Unionmember Westwest Gendermale
[1,] 0.002959962 0.001123774 0.2346133

$xlim
[1] 9.882976 53.976255

$ylim
[1] 9.46485 68.26856

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