Modelling value variables on the basis of practice type and area

Analysis

Two statistical models were fitted; the first modelled the four composite value measures simultaneously on the basis of practice type and practice area. The second modelled the full ten values measures simultaneously, again on the basis of practice type and practice area. In both cases, multivariate response models were fitted, with each value measure assumed to be normally distributed. Multivariate response models were used since each value measure was calculated for each respondent, with models implemented using MLwiN (Rasbash et al., 2009).[1]

For the first model, composite value measures (dependent variables) included openness, self-enhancement, self-transcendence and conservation. For the second model, the full set of ten value measures was made up of conformity, tradition, benevolence, universalism, self-direction, stimulation, hedonism, achievement, power and security.

In both models, practice type and practice area were included as independent variables. Practice type was made up of two categories (solicitors compared to barristers[2]), while practice variable was made up of four individual practice area variables for family, civil, criminal and in house practice respectively.[3]

Results

Model 1 – Four Composite Value Measures

Table 1 shows the results of the multivariate response model, modelling the four composite value measures on the basis of practice area and practice type. Table 2

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[1] This is a common method of modelling multivariate responses, specifying a separate regression equation for each response and allowing for correlation between individual-level residuals across the responses. Multivariate response data are conveniently incorporated into multilevel models (i.e. using MLwiN) by creating an extra level "below" the original level 1 units to define the multivariate structure (i.e. value scores within individuals) (Rasbash et al., 2014). This type of model also allows exploration of the correlation between responses.

[2] With a small number of legal executives excluded from analysis.

[3] Four individual variables were included since respondents could practice in more than one area. Six respondents specifying 'CPS in house' were included as criminal practice.

presents the associated respondent level variance/covariance matrix, as well as showing correlations between value measures. Figure 1 shows value scores for solicitors and barristers on each of the four composite value measures, simulated from the statistical model and controlling for other variables. Figure 2 shows value scores for each practice area, again controlling for other variables.

Table 1. Multivariate response model of the four composite value measures on the basis of practice area and practice type. Statistically significant terms in bold (p < 0.05).

Variable	Level	Openness		Self-enhancement		Self-transcendence		Conservation	
		Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
	Constant	**0.277**	**0.081**	0.035	0.082	**0.449**	**0.069**	**-0.639**	**0.075**
Practice area	Family	-0.136	0.105	-0.026	0.106	-0.032	0.089	0.163	0.097
	Civil	0.014	0.080	**-0.157**	**0.081**	0.006	0.068	0.130	0.074
	Criminal	0.117	0.088	-0.100	0.088	0.019	0.074	0.009	0.081
	In house	0.016	0.098	**-0.269**	**0.099**	0.031	0.083	**0.182**	**0.090**
Practice type	Barrister	0.000	-	0.000	-	0.000	-	0.000	-
	Solicitor	-0.032	0.083	-0.141	0.084	0.046	0.070	0.092	0.077

Table 2. Respondent level variance/covariance matrix for the model in table 1, as well as correlations between value measures

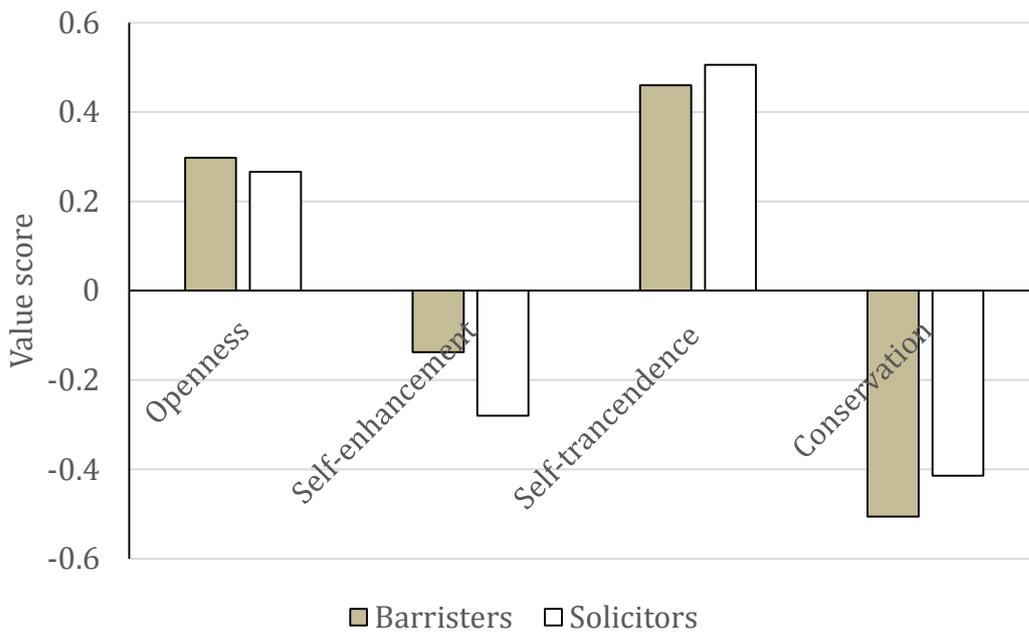| Value measure	Openness			Self-enhancement			Self-transcendence			Conservation		
	Cov.	SE	*Corr.*	Cov.	SE	*Corr.*	Cov.	SE	*Corr.*	Cov.	SE	*Corr.*
Openness	0.35	0.03	*1*									
Self-enhancement	0.02	0.02	*0.07*	0.36	0.03	*1*						
Self-transcendence	0.01	0.02	*0.03*	-0.16	0.02	*-0.53*	0.25	0.02	*1*			
Conservation	-0.21	0.02	*-0.64*	-0.17	0.02	*-0.52*	-0.07	0.02	*-0.25*	0.30	0.02	*1*

Figure 1. Value scores for solicitors and barristers on each of the four composite value measures, simulated from the statistical model and controlling for other variables
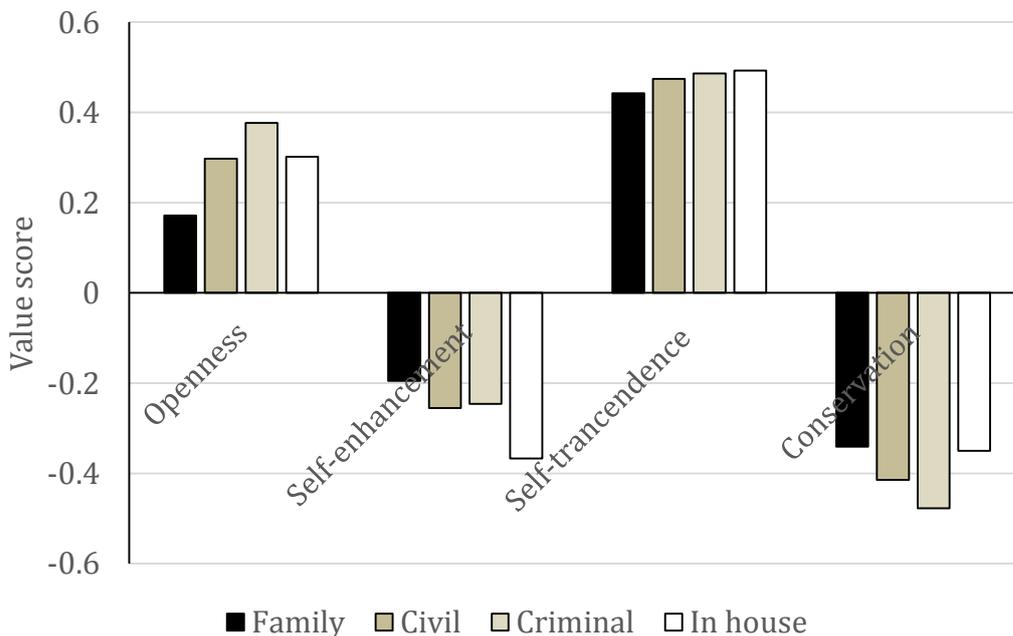

Figure 2. Value scores for each practice area on each of the four composite value measures, simulated from the statistical model and controlling for other variables

Respondents in family practice tended to have somewhat lower openness scores, with slightly higher scores for those in criminal practice. While neither term was significant

on its own, there were differences if criminal and family practitioners were compared directly,[4] as can be seen in Figure 2. There was no evidence of differences in openness between solicitors and barristers.

As shown in Figure 2, 'in house' practice in particular was associated with significantly lower self-enhancement scores.[5] While solicitors had slightly lower self-enhancement scores than barristers (as can be seen in Figure 1), the difference fell short of statistical significance.[6]

There was little evidence of variations in self-transcendence by practice type or by practice area.

There was some evidence of variation in conservation scores by practice area, with particularly low scores for criminal practitioners and higher scores for family and in house practitioners.[7] There was little difference in conservation score by practice type.

Referring to table 2, there was least variation in value scores for the self-transcendence measure, particularly when contrasted with openness and self-enhancement. Looking at the relationship between value measures, there was a negative relationship between openness and conservation, with a high score on one tending to be accompanied by a lower score on the other. There were also negative relationships between self-enhancement and both self-transcendence and conservation. There was also a weaker, though still significant negative relationship between conservation and self-transcendence value scores.

Model 2 – All Ten Value Measures

Table 3 shows the results of the multivariate response model, modelling the full ten value measures on the basis of practice area and practice type. Table 4 presents the associated respondent level variance/covariance matrix, as well as showing correlations between value measures. Figure 3 shows value scores for solicitors and barristers on each of the four composite value measures, simulated from the statistical

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[4] Comparing family to criminal practitioners; χ^2_1 = 4.27, p = 0.039.
[5] Testing the 'in house' term; χ^2_1 = 7.42, p = 0.006.
[6] χ^2_1 = 2.84, p = 0.092.
[7] With the 'in house' term just reaching statistical significance; χ^2_1 = 4.08, p = 0.043.

model and controlling for other variables. Figure 4 shows value scores for each practice area, again controlling for other variables.

Table 3. Multivariate response model of the full ten value measures on the basis of practice area and practice type. Statistically significant terms in bold (p < 0.05)

Variable	Level	Conformity		Tradition		Benevolence		Universalism		Self-direction	
		Est	SE	Est	SE	Est	SE	Est	SE	Est	SE
	Constant	**-0.408**	**0.113**	**-1.312**	**0.110**	**0.558**	**0.083**	**0.340**	**0.083**	**0.876**	**0.077**
Practice area	Family	0.207	0.146	0.197	0.142	0.136	0.107	-0.199	0.107	-0.179	0.099
	Civil	0.208	0.111	0.118	0.108	0.016	0.081	-0.005	0.082	-0.002	0.075
	Criminal	0.068	0.121	0.003	0.118	-0.055	0.089	0.093	0.089	0.009	0.083
	In house	**0.271**	**0.135**	0.035	0.132	0.003	0.099	0.059	0.100	-0.013	0.092
Practice type	Barrister	0.000	-	0.000	-	0.000	-	0.000	-	0.000	-
	Solicitor	0.078	0.115	0.096	0.112	0.018	0.084	0.074	0.085	-0.081	0.078
Variable	Level	Stimulation		Hedonism		Achievement		Power		Security	
		Est	SE	Est	SE	Est	SE	Est	SE	Est	SE
	Constant	**-0.322**	**0.127**	0.061	0.118	**0.653**	**0.122**	**-0.608**	**0.118**	**-0.196**	**0.092**
Practice area	Family	-0.092	0.164	-0.116	0.153	-0.074	0.158	0.111	0.152	0.086	0.119
	Civil	0.030	0.124	-0.112	0.116	**-0.237**	**0.120**	-0.121	0.116	0.064	0.090
	Criminal	0.224	0.136	0.029	0.127	-0.165	0.131	-0.163	0.126	-0.045	0.099
	In house	0.046	0.152	-0.141	0.142	**-0.380**	**0.146**	**-0.286**	**0.141**	**0.241**	**0.111**
Practice type	Barrister	0.000	-	0.000	-	0.000	-	0.000	-	0.000	-
	Solicitor	0.017	0.129	-0.006	0.121	-0.162	0.124	**-0.256**	**0.120**	0.101	0.094

Table 4. Respondent level variance/covariance matrix for the model in table 3, as well as correlations between value measures

Value measure	Conformity			Tradition			Benevolence			Universalism			Self-direction		
	Cov.	SE	*Corr.*	Cov.	SE	*Corr.*	Cov.	SE	*Corr.*	Cov.	SE	*Corr.*	Cov.	SE	*Corr.*
Conformity	0.67	0.05	*1*												
Tradition	0.23	0.04	*0.36*	0.64	0.05	*1*									
Benevolence	-0.05	0.03	*-0.10*	-0.01	0.03	*-0.02*	0.36	0.03	*1*						

|															
Universalism	-0.09	0.03	*-0.19*	-0.05	0.03	*-0.11*	0.13	0.02	*0.36*	0.37	0.03	*1*			
Self-direction	-0.16	0.03	*-0.34*	-0.10	0.03	*-0.22*	-0.03	0.02	*-0.10*	0.01	0.02	*0.03*	0.31	0.02	*1*
Stimulation	-0.42	0.05	*-0.55*	-0.18	0.04	*-0.25*	0.03	0.03	*0.05*	0.03	0.03	*0.06*	0.11	0.03	*0.21*
Hedonism	-0.27	0.04	*-0.38*	-0.23	0.04	*-0.33*	-0.02	0.03	*-0.04*	-0.08	0.03	*-0.16*	-0.05	0.03	*-0.10*
Achievement	-0.17	0.04	*-0.24*	-0.29	0.04	*-0.40*	-0.18	0.03	*-0.33*	-0.21	0.03	*-0.40*	0.02	0.03	*0.04*
Power	-0.13	0.04	*-0.18*	-0.18	0.04	*-0.26*	-0.23	0.03	*-0.44*	-0.22	0.03	*-0.42*	0.03	0.03	*0.07*
Security	0.18	0.03	*0.32*	0.03	0.03	*0.06*	-0.10	0.02	*-0.25*	-0.11	0.02	*-0.27*	-0.11	0.02	*-0.29*
	Stimulation			Hedonism			Achievement			Power			Security		
Stimulation	0.85	0.07	*1*												
Hedonism	0.22	0.05	*0.28*	0.74	0.06	*1*									
Achievement	-0.05	0.05	*-0.06*	0.04	0.04	*0.05*	0.79	0.06	*1*						
Power	-0.04	0.04	*-0.05*	0.04	0.04	*0.06*	0.37	0.05	*0.49*	0.73	0.06	*1*			
Security	-0.25	0.04	*-0.41*	-0.09	0.03	*-0.15*	-0.09	0.03	*-0.16*	-0.06	0.03	*-0.11*	0.45	0.04	*1*
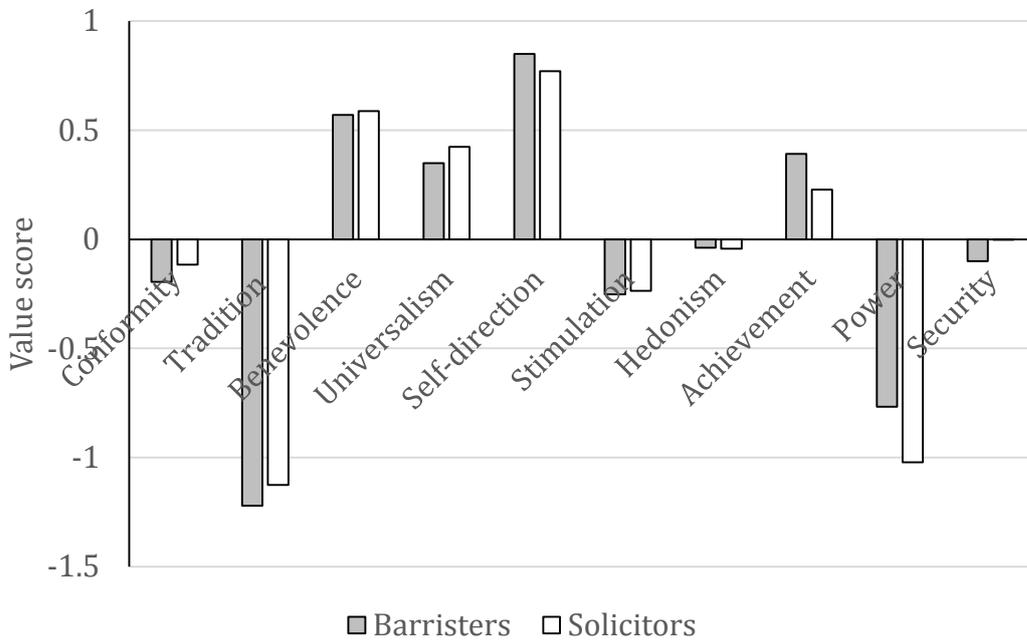
Figure 3. Value scores for solicitors and barristers on all ten value measures, simulated from the statistical model and controlling for other variables
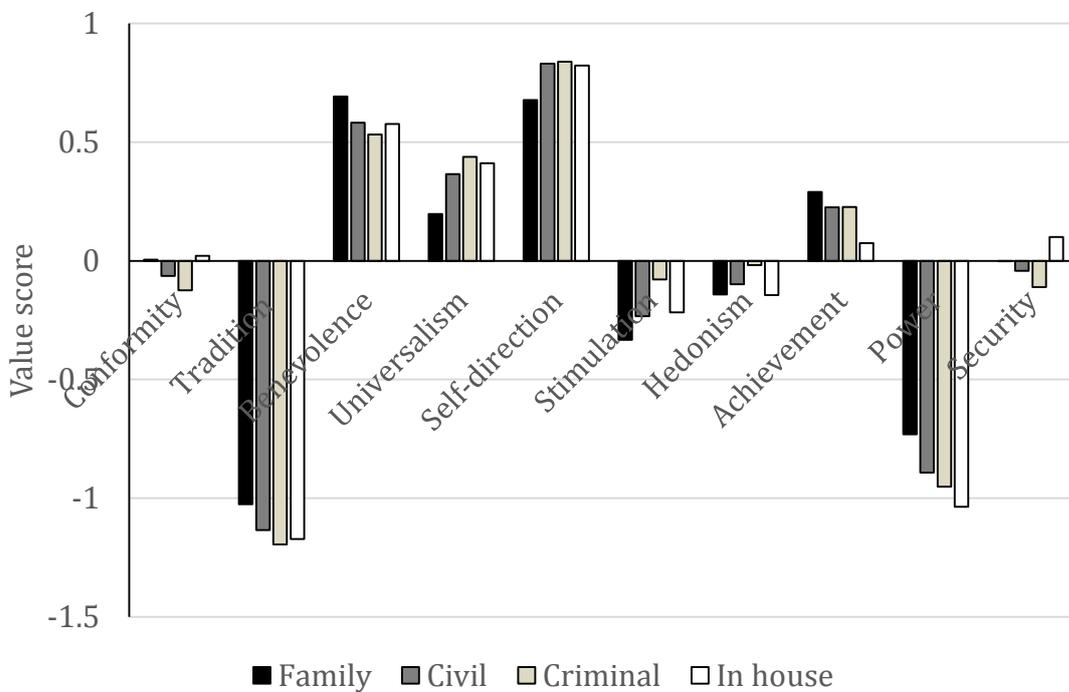

Figure 4. Value scores for each practice area on all ten value measures, simulated from the statistical model and controlling for other variables

There were some differences in conformity scores by practice are (see Figure 4), with criminal practitioners scoring slightly lower than other groups. However, differences between individual practice types was non-significant. Similarly, there was little difference in conformity scores between barristers and solicitors.

There was no evidence of significant differences in tradition or benevolence scores by practice area or practice type. However, there were some differences in universalism score by practice area (as shown in Figure 4), with particularly low scores for family practice.[8] Differences in universalism score by practice type were clearly non-significant. While family practice was associated with somewhat lower self-direction scores, differences were again short of significance, and there was no evidence of variations by practice type.

While there appeared to be some variation in stimulation score by practice area (e.g. with particularly high scores for criminal practice), overall differences between practice areas were non-significant, and again, there were no differences between solicitors and barristers. Likewise, differences in hedonism score by practice type and practice area were all clearly non-significant.

There were significant differences in achievement scores by practice area (as can be seen in Figure 4), with lowest scores for civil and in house practice and highest scores for family practice.[9] While solicitors scored somewhat lower than barristers in their achievement scores, the difference was not significant. There were also differences by practice type in power scores, and again, the highest scores were for family and the lowest scores were for in house practice.[10] Power was also the only individual value score with a significant difference between solicitors and barristers (see Figure 3), with significantly lower scores for solicitors when compared to barristers.[11]

There were some differences in security scores by practice area, with the highest scores (and significantly higher scores) associated with in house practice (as shown in Figure 4).[12] There was no evidence of differences in security scores by practice type.

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[8] For example, when contrasted with criminal practice; $\chi^2_1 = 5.51$, p = 0.019.

[9] Both the civil and in house model terms were statistically significant; $\chi^2_1 = 3.93$, p = 0.047. and $\chi^2_1 = 6.73$, p = 0.009 respectively

[10] As indicated by the significant in house term; $\chi^2_1 = 4.10$, p = 0.043 and significant difference when directly contrasting in house and family practice; $\chi^2_1 = 5.28$, p = 0.022.

[11] $\chi^2_1 = 4.54$, p = 0.033.

[12] Testing the in house term; $\chi^2_1 = 4.77$, p = 0.029.

Finally, referring to the variance/covariance matrix in Table 4, there was least variation in value scores for the self-direction, universalism and benevolence value measures, especially when contrasted with power, achievement, hedonism and stimulation measures, which were far more variable. Looking at the relationship between individual value measures, there were strong negative relationships between stimulation and security, conformity and stimulation, tradition and achievement, power and benevolence, universalism and achievement and universalism and power. Conversely, the strongest positive relationships were between tradition and conformity, hedonism and stimulation, power and achievement and conformity and security.

References

Rasbash, J., Charlton, C., Browne, W.J., Healy, M. and Cameron, B. (2009) *MLwiN Version 2.1*. Centre for Multilevel Modelling, University of Bristol.

Rasbash, J., Steele, F., Browne, W.J. and Goldstein, H. (2014) *A User's Guide to MLwiN, v2.31*. Centre for Multilevel Modelling, University of Bristol.