

SENSITIVITIES OF CHILD-REARING VALUES ON HAPPINESS OF INDIVIDUALS

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I want to attempt to understand the effects of the child-rearing values Q7-Q17 on Happiness (Q49).

1. MAPPINGS TO SIMPLEX $S_n \subset \mathbf{R}^n$

For Q49, we will have $n = 10$. The simplex S_{10} will be defined as

$$S_{10} = \{(x_1, \dots, x_{10}) : 0 \leq x_r \leq 1, \sum_{r=1}^{10} x_r = 1.0\}$$

This simplex is a manifold without boundary. Now data from WVS is giving us $p_0 \in S_{10}$, a probability vector. We are interested in the sensitivity of p_0 to variations in (Q_7, \dots, Q_{17}) .

2. LINEAR DEPENDENCE

I calculate the sensitivity of each variable as the difference between the success versus failure state for each of the 11 variables; I multiply them by 1000 to obtain figures that are in a reasonable scale. The 11 rows of the following matrix result. The important observation is that the rank of this matrix is 9. This is a remarkable result. This tells us that the various child moral values has a spanning effect for all 10 levels of happiness.

	1	2	3	4	5	6	7	8	9	10
1	10.65	3.68	0.72	0.06	0.88	-21.34	-12.46	-26.95	-8.88	53.63
2	-0.19	-2.67	-2.22	4.09	10.53	2.32	10.88	3.76	-7.05	-19.47
3	18.37	8.40	11.12	12.12	26.27	13.72	-1.95	-5.96	-20.18	-61.92
4	-13.70	-3.30	-5.02	-11.06	-10.28	-2.20	16.20	16.75	1.44	11.17
5	-11.73	-2.30	2.78	5.42	9.37	21.00	35.36	5.61	-14.59	-50.92
6	3.03	-3.40	-2.62	-6.57	-11.43	-7.73	4.69	7.13	9.14	7.76
7	-8.15	-1.99	2.74	3.32	16.10	14.88	9.50	-0.65	-6.26	-29.50
8	-9.25	2.03	-3.25	7.55	13.46	23.64	26.50	10.93	-2.44	-69.18
9	10.87	2.72	-0.21	-0.75	-2.83	-20.82	-34.94	-21.29	9.27	57.98
10	-3.36	-0.43	7.17	8.23	-1.20	-5.51	-27.87	0.50	16.23	6.25
11	12.91	1.62	4.89	6.99	6.78	-17.17	-51.54	-32.51	-5.19	73.22

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3. THE HAPPIEST COMBINATION OF CHILD-REARING VALUES

I am not going to solve a realistic problem here. Instead, I will pretend that fractional values are possible for (Q_7, \dots, Q_{17}) . Then I want to find the nearest solution to

$$B\alpha = (1, 0, \dots, 0) - p_0$$

Here p_0 will be the happiness distribution of the world and vector $(1, 0, \dots, 0)$ is the distribution of all people being happiest.

```
alpha<-solve(B %*% t(B) + 0.01*I) %*% B %*% ( c(1,rep(9,0))-nrm(table(polv[, "Q49"])))
```

```
> alpha
      [,1]
[1,] 0.04968583
[2,] -0.01633079
[3,] 0.60380135
[4,] -0.40973663
[5,] 0.01465029
[6,] -0.13418065
[7,] 0.05145027
[8,] 0.12786788
[9,] 0.07979219
[10,] 0.15644850
[11,] 0.17824637
```

This is the combination of child-rearing values that would be consistent with all people being happiest.

I think it is worth thinking about more seriously. At the moment, this is not sensible yet but I think there is substance here.