The Science Behind the Magic? The Relation of the Harry Potter "Sorting Hat Quiz" to Personality and Human Values

Lea Jakob[1], Eduardo Garcia-Garzon[2], Hannes Jarke[3], & Fabian Dablander[4]

[1] Assessment Systems International, Prague, Czech Republic
[2] Universidad Autónoma de Madrid, Madrid, Spain
[3] RAND Europe, Cambridge, UK
[4] Department of Psychological Methods, University of Amsterdam, The Netherlands

Author note

Correspondence concerning this article should be addressed to Lea Jakob, E-mail: lea.jakob.psy@gmail.com

Appendix 1

Helmert Contrasts Might Mislead

We provide an example where the classical Helmert contrasts leads to the ‘wrong conclusion’ for the hypothesis that, say, Gryffindor scores highest on Extraversion, while the Bayesian order-constrained inference arrives to the ‘correct’ conclusion. Note the quotation marks; the classical Helmert contrast tests a different hypothesis, namely whether Gryffindor scores higher than the mean of the other Houses on extraversion—a result which can be perfectly in line with Gryffindor not scoring highest. The example below is included simply to make this point.

Simulated Example

We assume that the true population mean on a particular dependent variable of people sorted into Gryffindor is 40, while the population means for Hufflepuff, Ravenclaw, and Slytherin is 30, 40, and 45, respectively; population standard deviation is 5 for all groups. We simulate N = 100 observations from this model. As Figure A1 shows, Gryffindor does not have the highest mean—Ravenclaw scores equally high, and Slytherin scores one standard deviation higher. However, only looking at Helmert contrasts, which test a particular group against the mean of all others, would not make this apparent. It would show that the mean of Gryffindor (which is 40) is higher than the mean of all other Houses combined (which is 38.33). Using Bayesian order-constrained inference, the model predicting that Gryffindor scores highest, and the model assuming equal means receive no credence—the posterior model probability equals one for the model which assumes unequal means.

Sensitivity Analysis

Figure A2 shows that almost all results are very robust against different prior widths. This is less the case for Extraversion. Here, with increased prior width the null model outperforms others models. This is because the effect for Extraversion is rather small such that a model with large prior width makes predictions that get penalized heavily, favouring the simpler model. Note that a prior width of 1.0 corresponds to a prior for which half of the mass lies outside of the (-1, 1) range; we think that such a prior already misrepresents the state of affairs in psychology where effect sizes are mostly small. Thus, we expect that the null model outperforms with increased prior width. It is quite telling for the robustness of the rank-ordered hypotheses that in the majority of cases it does not.

Figure A3 shows similarly robust results, except again for Hedonism and Security.

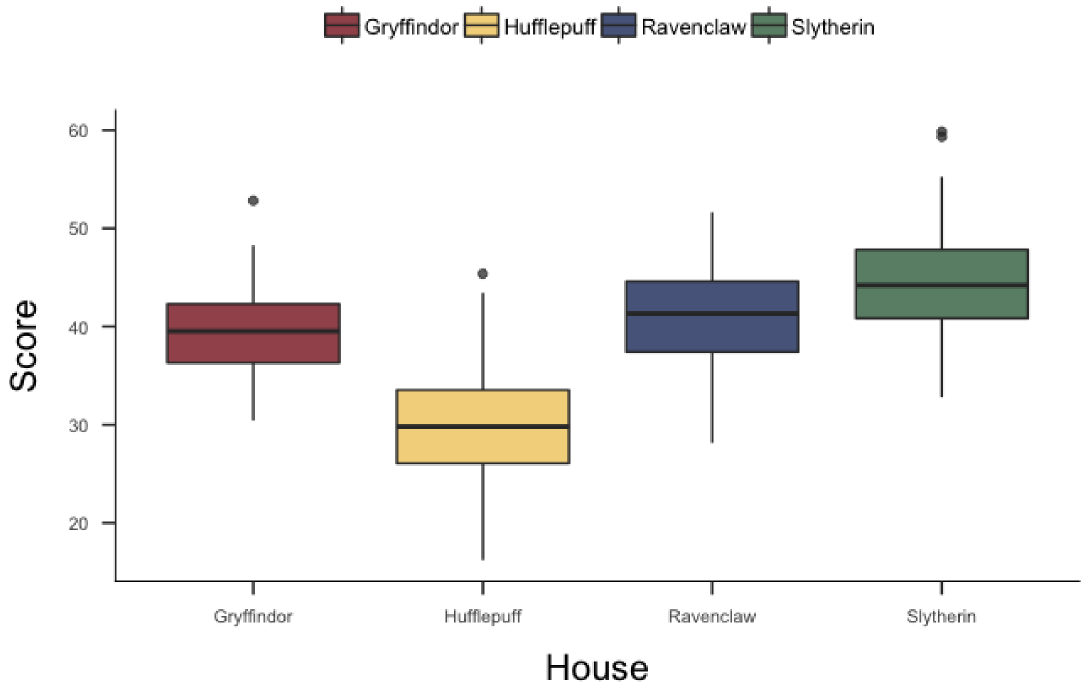

Figure A1. Visual illustration of how classical Helmert contrasts may come to a different conclusion than Bayesian order constrained hypothesis testing. (As described in the main text, this is no surprise—the two methods test different hypotheses.)

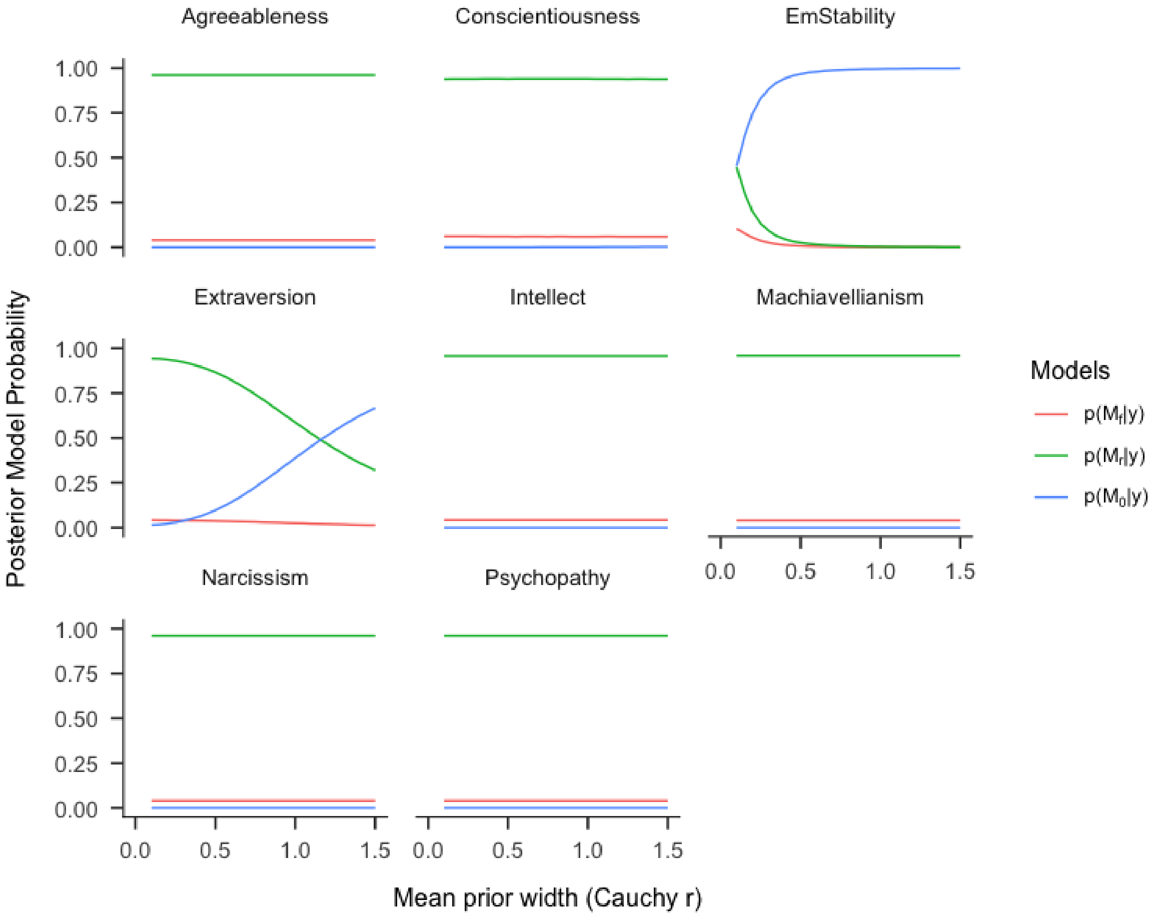

Figure A2. Sensitivity analysis for Cauchy r between 0.1 and 1.5 for the Big Five and Dark Triad.

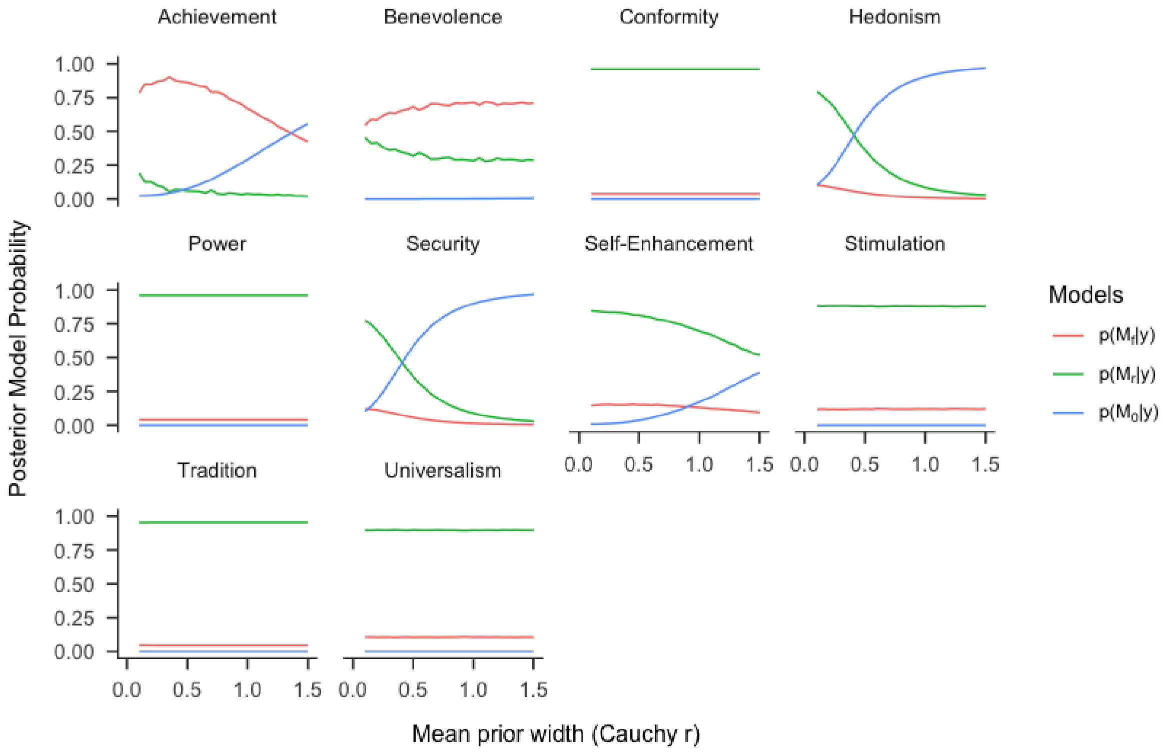

Figure A3. Sensitivity analysis for Cauchy r between 0.1 and 1.5 for the Human Values.