Supplemental Information

Context dependent preferences in prestige bias learning about vaccination in rural Namibian pastoralists

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Descriptives

Table S1: Count and percent by ethnic group and location

Ethnic group	Rural	Peri-urban	Urban
Himba	89/60.1%	52/35.1%	7/4.7%
Herero	0/0%	6/14%	37/86%
Other	0/0%	1/14.3%	6/85.7%

Table S2: Average and marginal rank frequencies for each item in the ranking task

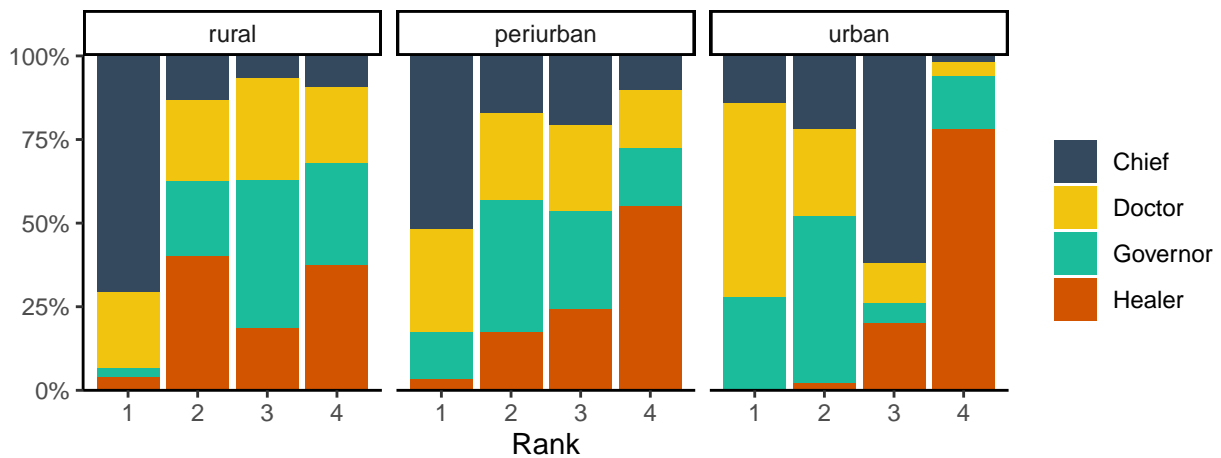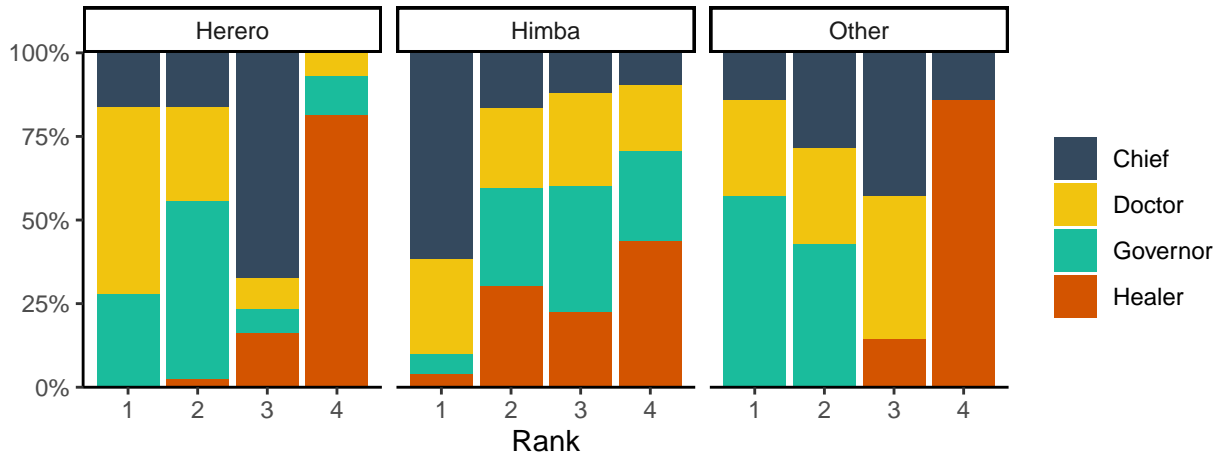| type	Mean rank	1	2	3	4
Chief	1.9	90	31	48	14
Healer	3.3	5	41	38	99
Doctor	2.2	64	46	44	29
Governor	2.6	24	65	53	41

Figure S1: Rank data by location

Figure S2: Rank data by ethnic group

Plackett-Luce models and trees

Plackett-Luce models were used to assess ranked data via the *PlackettLuce* package in R. Figure S3 below shows worth estimates (mean and standard error) for each item, using mean worth as the reference. Figures S4 to Figures S7 show Plackett-Luce trees, which use the the *pltree* function to generate plots showing model-based partitioning that illustrate covariates that impact ranking estimates. For these models, node minimum sample size was set to 10% of the overall sample, and tree depth was constrained to be no larger than 3 nodes. See Turner et al., (2022) and Finch (2022) for more details and descriptions on these methods.
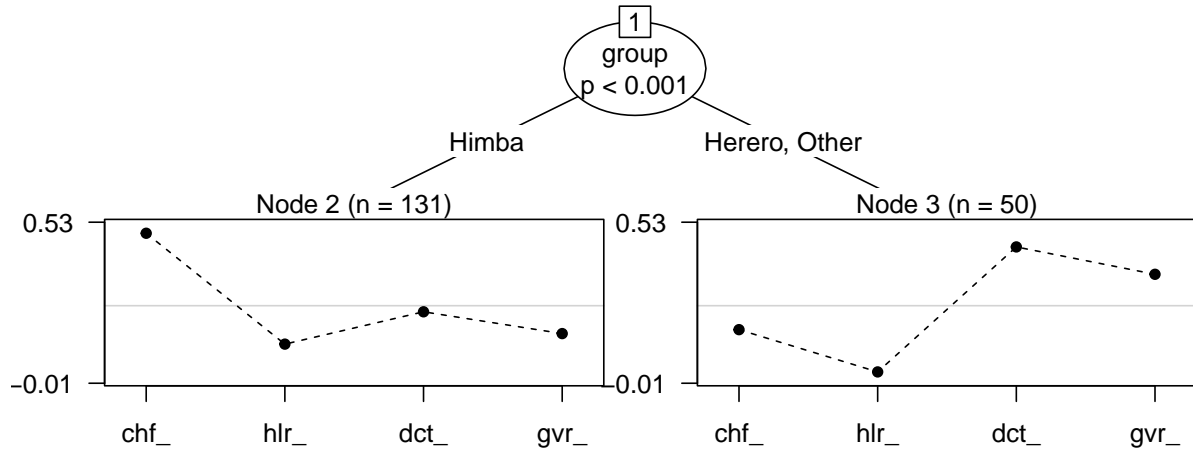
Figure S3: Placket-Luce model coefficients
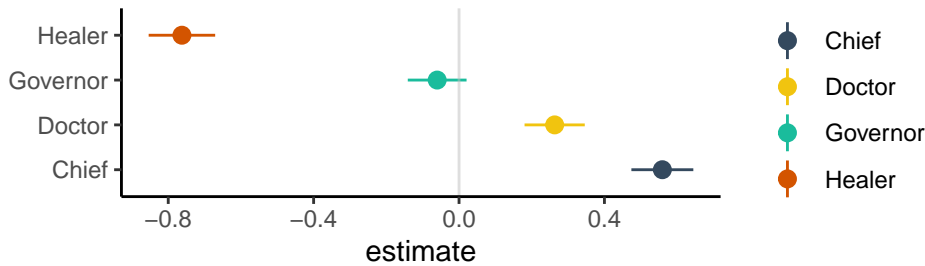
Figure S4: Plackett-Luce Tree #1 with individual level predictors only Individual level predictors include age, sex, and the medical mistrust index score.
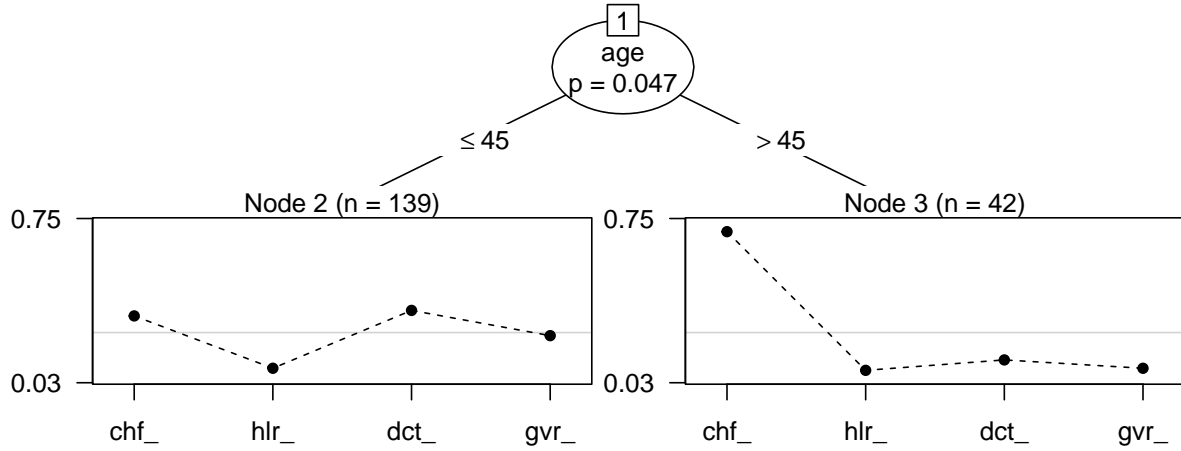
Figure S5: Plackett-Luce Tree #2 with ethnic group and location

Figure S6: Plackett-Luce Tree #3 with individual level predictors and location
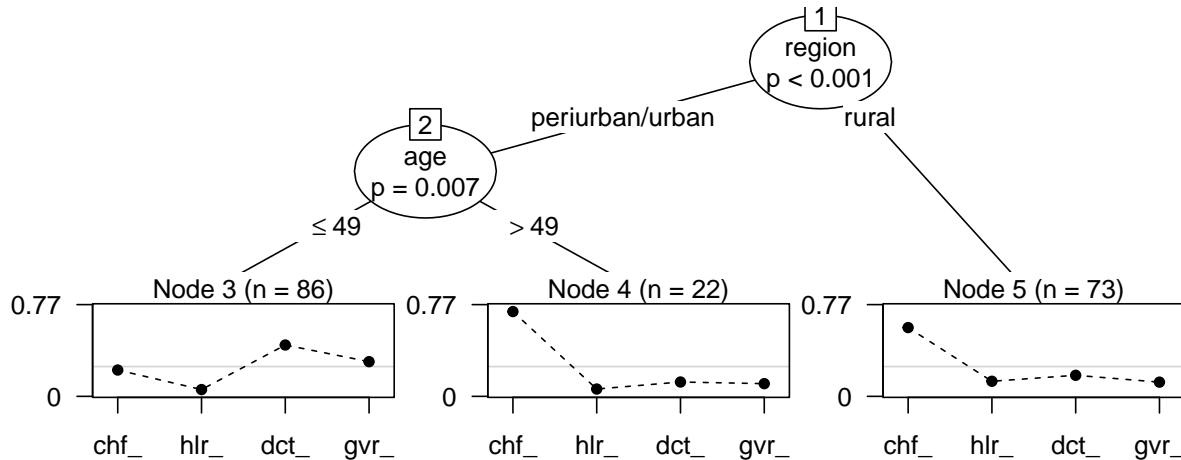
Figure S7: Plackett-Luce Tree #4 with individual level predictors and ethnic group
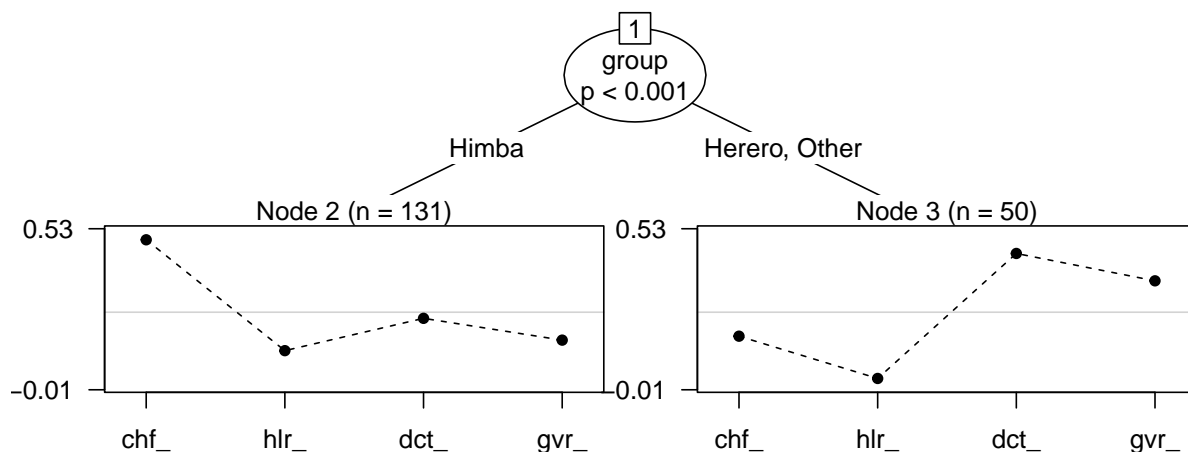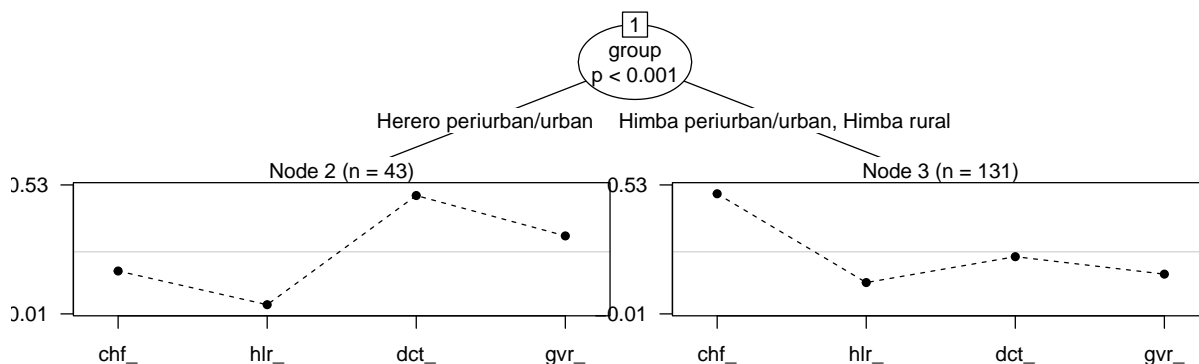

Figure S8: Plackett-Luce Tree #5 with individual level predictors and Himba/Herero by location subsample

Multilevel model description

To examine differences between domain-specific vs domain-general, and in-group vs out-group items in the ranking task, we pretend that these data are ordinal and fit to a multilevel cumulative ordered logit model using the *brms* package (Bürker 2017). Varying intercepts for in-group vs outgroup (α_{group}) and domain-specific vs domain-general (α_{type}) are included. Ethnic group is used as a varying effect for each multi-level intercept. Ethnic groups recorded as "other" are excluded from this analysis, as it conflicts with ingroup/outgroup comparisons. As a result only Himba and Herero are included as a dummy predictor β_{EG}. Since all participants in this study ranked all 4 items, we don't include varying intercepts by participant. To correct for the influence of individual items, a varying intercept for each item type (chief/doctor/governor/healer) was also included (α_{item}). Regularizing priors were used in this model, including Gaussian(0,2) for intercepts, and exponential(1) for variance parameters. The model was run on three chains of 4000 iterations per chain (half warm-up), $\hat{R}$ values used to assess convergence. The rest of the priors were left at default. Model description is below:

$$Rating \sim OrderedLogit(\theta, \kappa)$$
$$\theta = \alpha + \alpha_{group} + \beta_{EG[group]} * EG + \alpha_{type} + \beta_{EG[type]} * EG + \alpha_{item}$$

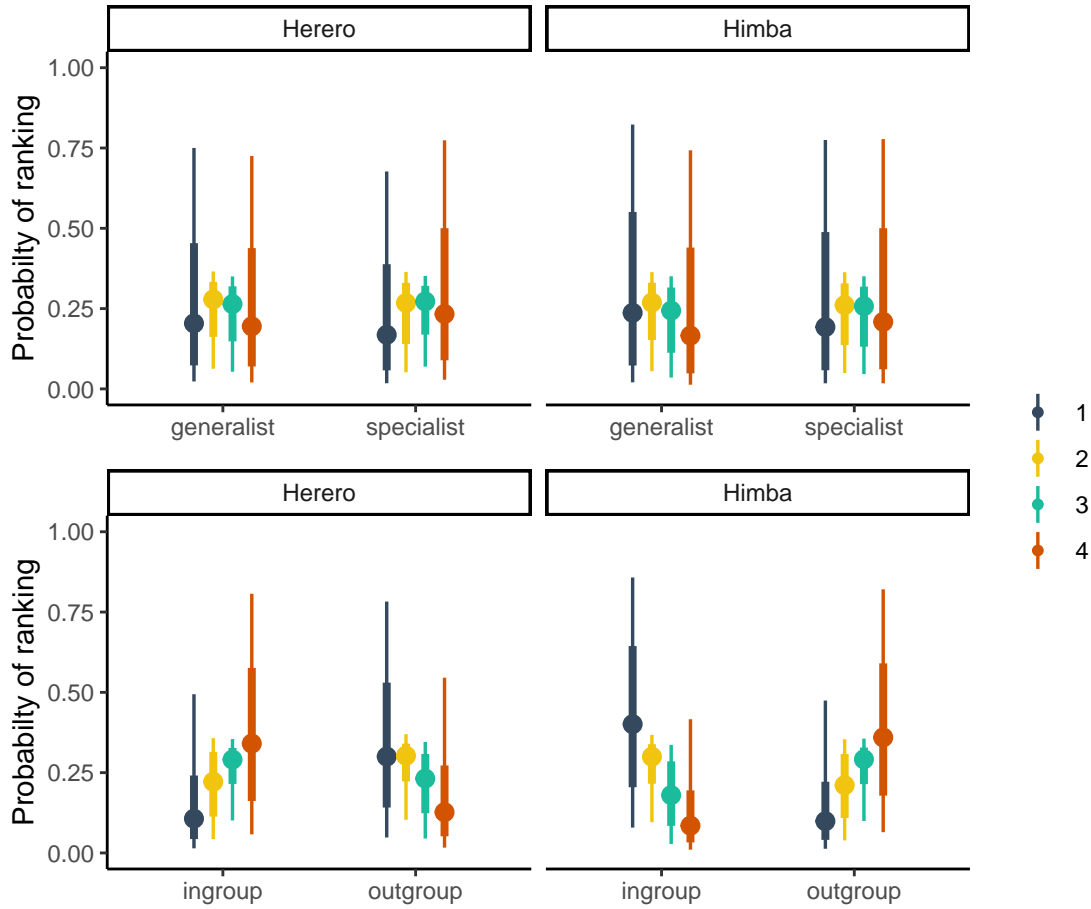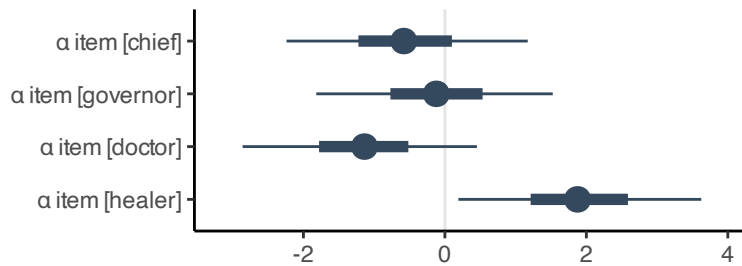**Figure S9: Posterior predictions for the multilevel model by ethnic group of individual, group, and type**

Figure S10: Caterpillar plot of varying intercepts by item

References

Bürkner, Paul-Christian. "Brms: An R Package for Bayesian Multilevel Models Using Stan." Journal of Statistical Software 80, no. 1 (2017): 1–28. https://doi.org/10.18637/jss.v080.i01.

Finch, Holmes. "An Introduction to the Analysis of Ranked Response Data." Practical Assessment, Research, and Evaluation 27, no. 7 (2022). https://scholarworks.umass.edu/pare/vol27/iss1/7/.

Turner, Heather L., Jacob Van Etten, David Firth, and Ioannis Kosmidis. "Modelling Rankings in R: The PlackettLuce Package." Computational Statistics 35, no. 3 (2020): 1027–57. https://doi.org/10.1007/s00180-020-00959-3.