The role of cognateness in native spoken word recognition*

A Preprint

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1 Appendix 1: Model diagnostics

One way to diagnose the behaviour of Hamiltonian Monte Carlot (HMC, the algorithm used by Stan to explore the posterior distribution of a model) is to check whether the MCMC chains have converged. Figure 1 shows the values sampled by the MCMC chains of each of the fixed coefficients of each model reported in the manuscript. Evidence of chain convergence is provided by the same region of values being sampled across the final interations of the chain, as it is the case for the three models depicted.

2 Appendix 2: Pooled analyses of Experiments 1 and 3

Across Experiments 1 and 3, we found strong evidence that participants efficiently exploited phonological similarity to provide accurate translations for words in an unfamiliar language, provided that few phonological neighbours of higher lexical frequency were present. Figure 2 summarizes the posterior distribution of the regression coefficients of the models in Experiments 1 to 3.

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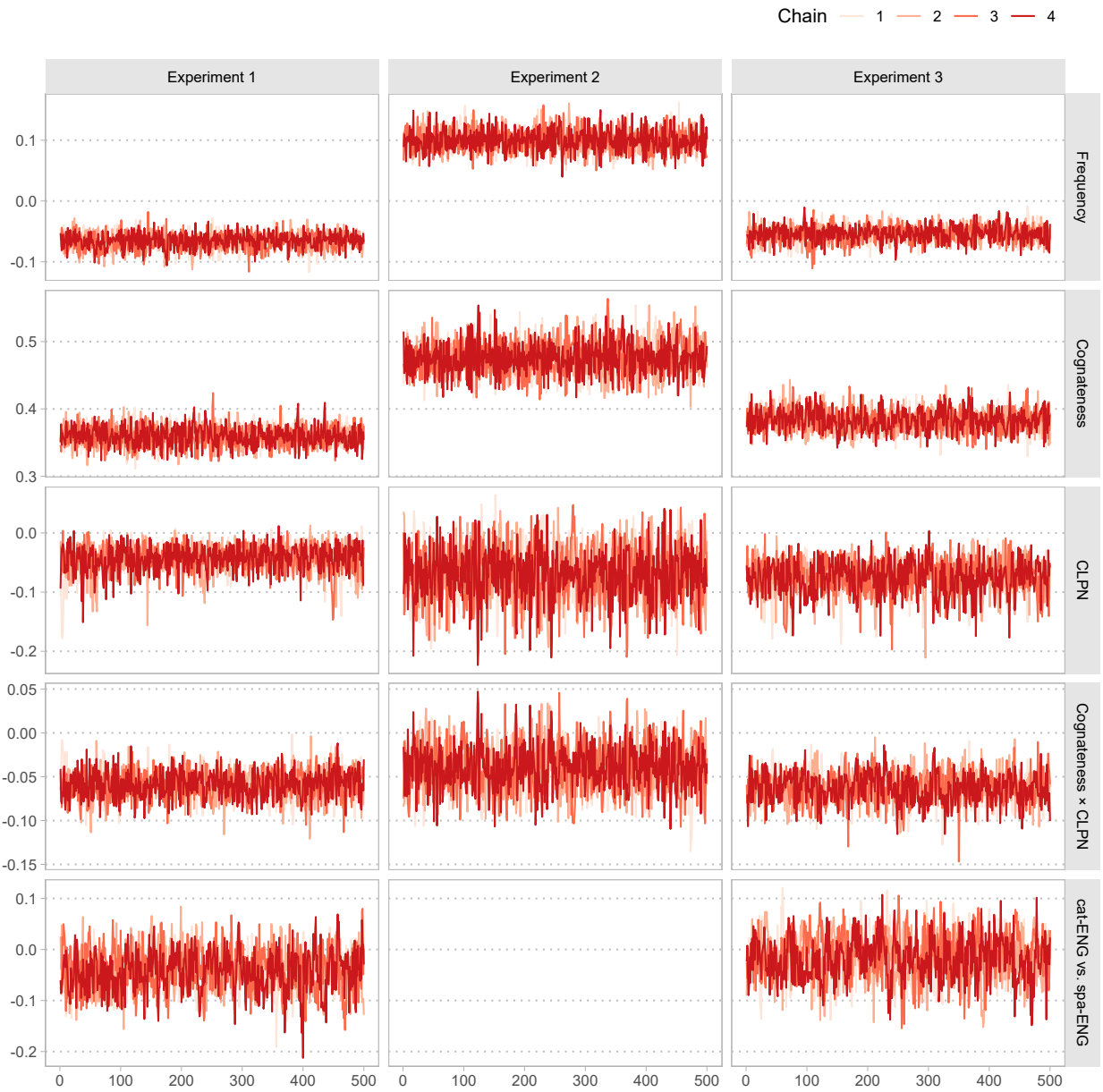
Chain 1 2 3 4
Experiment 1
Experiment 2
Experiment 3
Frequency
Cognateness
CLPN
Cognateness × CLPN
cat-ENG vs. spa-ENG
0.1
0.0
-0.1
0.5
0.4
0.3
-0.2
0.05
0.00
-0.05
-0.10
-0.15
0
100
200
300
400
500

Figure 1

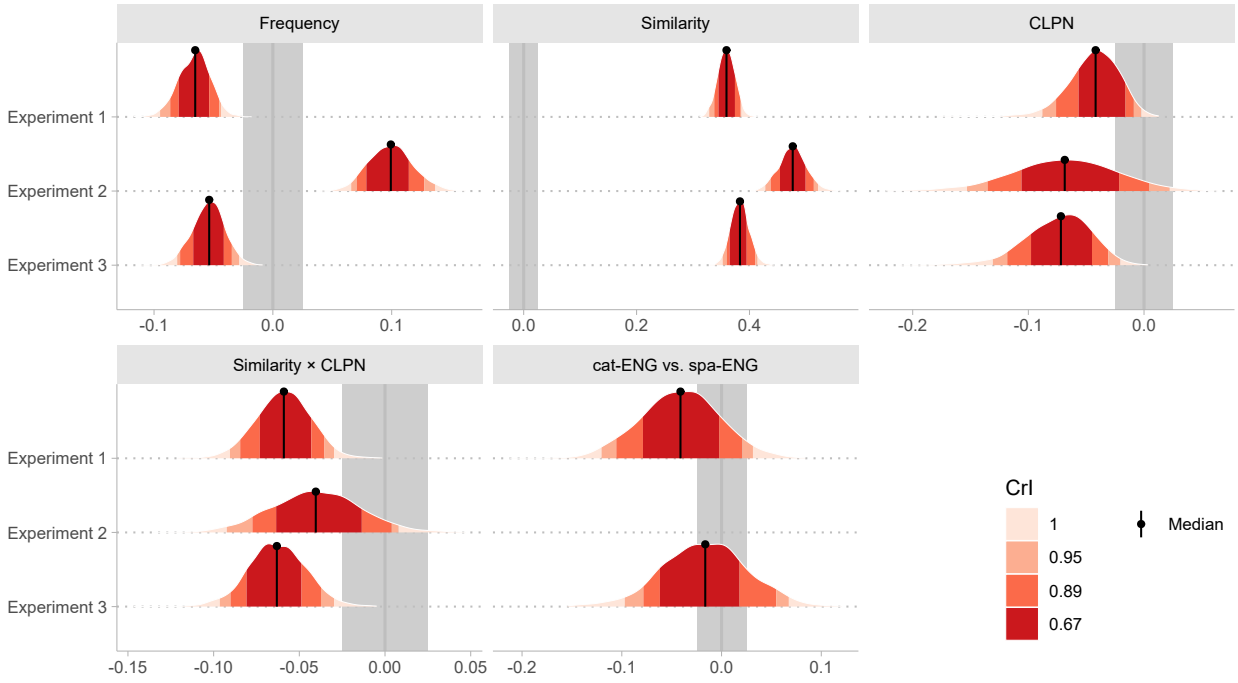
Frequency
Similarity
CLPN
Similarity × CLPN
cat-ENG vs. spa-ENG
Experiment 1
Experiment 2
Experiment 3
-0.1
0.0
0.1
0.0
0.2
0.4
-0.2
-0.1
0.0
-0.15
-0.10
-0.05
0.00
0.05
-0.2
-0.1
0.0
0.1
CrI
1
0.95
0.89
0.67
Median

Figure 2