

Full Permutation Summaries

1 Mean language entropy compared to between-language permutation

Test	filename	meanPerm	p	z
All segments	AllLangs_allSegments.csv	0.65	< 0.0001	-59.02
Consonants	AllLangs_Consonants_allSegments.csv	0.69	< 0.0001	-53.28
Vowels	AllLangs_Vowels_allSegments.csv	0.47	< 0.0001	-27.49
Permute within families	AllLangs_allSegments_byFamily.csv	0.61	< 0.0001	-28.84
Permute within areas	AllLangs_allSegments_byArea.csv	0.64	< 0.0001	-47.14
Permute within families and areas	AllLangs_allSegments_byAreaAndFamily.csv	0.60	< 0.0001	-24.07
Unanalysable words	AllLangs_unanalyzable_allSegments.csv	0.75	< 0.0001	-10.65
Unanalysable words, permute within families	AllLangs_unanalyzable_allSegments_byFamily.csv	0.70	< 0.0001	-4.99
Unanalysable words, permute within areas	AllLangs_unanalyzable_allSegments_byArea.csv	0.70	< 0.0001	-4.86
Unanalysable words, permute within families and areas	AllLangs_unanalyzable_allSegments_byAreaAndFamily.csv	0.69	0.0004	-3.39

Table 1: Results for wh words, all segments From results folder ../Results/SimplifiedPhonology/PermutationResults/

Test	filename	meanPerm	p	z
All segments	AllLangs_firstSegments.csv	0.78	< 0.0001	-64.49
Consonants	AllLangs_Consonants_firstSegments.csv	0.80	< 0.0001	-55.08
Vowels	AllLangs_Vowels_firstSegments.csv	0.60	< 0.0001	-30.36
Permute within families	AllLangs_firstSegment_byFamily.csv	0.57	< 0.0001	-31.29
Permute within areas	AllLangs_firstSegment_byArea.csv	0.71	< 0.0001	-52.93
Permute within families and areas	AllLangs_firstSegment_byAreaAndFamily.csv	0.54	< 0.0001	-26.65
Unanalysable words	AllLangs_unanalyzable_firstSegments.csv	0.85	< 0.0001	-15.90
Unanalysable words, permute within families	AllLangs_unanalyzable_firstSegment_byFamily.csv	0.61	< 0.0001	-4.92
Unanalysable words, permute within areas	AllLangs_unanalyzable_firstSegment_byArea.csv	0.66	< 0.0001	-7.37
Unanalysable words, permute within families and areas	AllLangs_unanalyzable_firstSegment_byAreaAndFamily.csv	0.60	< 0.0001	-5.01

Table 2: Results for wh words, first segments From results folder ../Results/SimplifiedPhonology/PermutationResults/

Test	filename	meanPerm	p	z
All segments	AllLangs_allSegments_ActionDomain.csv	0.65	< 0.0001	-37.81
First segments	AllLangs_firstSegments_ActionDomain.csv	0.83	< 0.0001	-25.63
All segments, permute within families and areas	AllLangs_allSegments_BasicActionsDomain_byFamilyAndArea.csv	0.62	< 0.0001	-14.54
First segments, permute within families and areas	AllLangs_firstSegments_BasicActionsDomain_byFamilyAndArea.csv	0.75	< 0.0001	-11.28

Table 3: Results for basic action words From results folder ../Results/SimplifiedPhonology/PermutationResults/

Test	filename	meanPerm	p	z
All segments	AllLangs_allSegments_BodyDomain.csv	0.69	< 0.0001	-37.11
First segments	AllLangs_firstSegments_BodyDomain.csv	0.85	< 0.0001	-33.08
All segments, permute within families and areas	AllLangs_allSegments_BodyDomain_byFamilyAndArea.csv	0.65	< 0.0001	-17.08
First segments, permute within families and areas	AllLangs_firstSegments_BodyDomain_byFamilyAndArea.csv	0.72	< 0.0001	-12.39

Table 4: Results for body words From results folder ../Results/SimplifiedPhonology/PermutationResults/

Test	filename	meanPerm	p	z
All segments	AllLangs_allSegments_Pronouns.csv	0.70	< 0.0001	-31.72
First segments	AllLangs_firstSegments_Pronouns.csv	0.81	< 0.0001	-24.91
All segments, permute within families and areas	AllLangs_allSegments_PronounDomain_byFamilyAndArea.csv	0.65	< 0.0001	-15.61
First segments, permute within families and areas	AllLangs_allSegments_PronounDomain_byFamilyAndArea.csv	0.65	< 0.0001	-15.61

Table 5: Results for pronouns From results folder ../Results/SimplifiedPhonology/PermutationResults/

Test	filename	meanPerm	p	z
All segments	Permutation_allSegments*	0.67	< 0.0001	-4.69
First segments	Permutation_firstSegments*	0.84	< 0.0001	-7.42
Same domain, permute within family, all segments	Permutation_Domain_byFamily_allSegments*	0.64	0.056	-1.39
Same domain, permute within family, all segments	Permutation_Domain_byFamily_allSegments*	0.64	0.056	-1.39
Same domain, permute within family, first segments	Permutation_Domain_byFamily_firstSegments*	0.79	0.015	-2.52
Same domain, permute within family, all segments	Permutation_Domain_byFamily_and_Area_allSegments*	0.64	0.14	-1.06
Same domain, permute within area, first segments	Permutation_Domain_byFamily_and_Area_firstSegments*	0.78	0.043	-1.88
Same domain, permute within family, all segments	Permutation_Domain_byFamily_and_Area_allSegments*	0.64	0.14	-1.06
Same domain, permute within area, first segments	Permutation_Domain_byFamily_and_Area_firstSegments*	0.78	0.043	-1.88

Table 6: Similarity of randomly selected concepts within a language, compared to between languages. From results folder ../Results/SimplifiedPhonology/PermutationResults/RandomConcepts/RandomConceptPermutationTest/

2 Compare entropy of wh words to other sets of words

Test	filename	meanPerm	p	z
All segments	Comparison_WH_Random_allSegments.csv	0.63	< 0.0001	-7.03
First segments	Comparison_WH_Random_firstSegments.csv	0.78	< 0.0001	-28.10
From same semantic domain, all segments	Comparison_WH_Domain_allSegments_concept*	0.62	< 0.0001	-4.29
From same semantic domain, first segments	Comparison_WH_Domain_firstSegments_concept*	0.75	< 0.0001	-17.97
Unanalysable words, all segments	Comparison_WH_Random_unanalyzable_allSegments.csv	0.72	0.0037	-2.60
Unanalysable words, first segments	Comparison_WH_Random_unanalyzable_firstSegments.csv	0.84	< 0.0001	-10.43
Initial languages only, all segments	Comparison_Initial_WH_Random_All_allSegments.csv	0.63	< 0.0001	-6.74
Initial languages only, first segments	Comparison_Initial_WH_Random_All_firstSegments.csv	0.78	< 0.0001	-22.21
Non-Initial languages only, all segments	Comparison_NonInitial_WH_Random_All_allSegments.csv	0.62	< 0.0001	-4.49
Non-Initial languages only, first segments	Comparison_NonInitial_WH_Random_All_firstSegments.csv	0.79	< 0.0001	-20.32

Table 7: Comparing the mean entropy of wh words to a randomly selected set of words.

From results folder ../Results/SimplifiedPhonology/PermutationResults/RandomConcepts/

3 Random independent samples tests

Test	filename	meanPerm	p	z
Unanalyzable wh words, permuting within families, all segments	RIS_WH_Unanalyzable_Family_allSegments.csv	0.04	0.83	-0.94
Unanalyzable wh words, permuting within families, first segments	RIS_WH_Unanalyzable_Family_firstSegments.csv	-0.28	0.00	2.93
Unanalyzable wh words, permuting within areas, all segments	RIS_WH_Unanalyzable_Area_allSegments.csv	0.04	0.82	-0.93
Unanalyzable wh words, permuting within areas, first segments	RIS_WH_Unanalyzable_Area_firstSegments.csv	-0.28	0.00	2.83
Body concepts, permuting within family, all segments	RIS_BodyConcepts_allSegments_Family.csv	-0.01	0.16	0.99
Body concepts, permuting within family, first segments	RIS_BodyConcepts_firstSegments_Family.csv	-0.12	0.01	2.22
Body concepts, permuting within area, all segments	RIS_BodyConcepts_allSegments_Area.csv	-0.01	0.38	0.30
Body concepts, permuting within area, first segments	RIS_BodyConcepts_firstSegments_Area.csv	-0.09	0.10	1.28
Action concepts, permuting within family, all segments	RIS_BasicActionsConcepts_allSegments_Family.csv	-0.01	0.25	0.70
Action concepts, permuting within family, first segments	RIS_BasicActionsConcepts_firstSegments_Family.csv	-0.03	0.30	0.55
Action concepts, permuting within area, all segments	RIS_BasicActionsConcepts_allSegments_Area.csv	-0.00	0.48	0.06
Action concepts, permuting within area, first segments	RIS_BasicActionsConcepts_firstSegments_Area.csv	-0.03	0.36	0.39
Pronouns, permuting within family, all segments	RIS_PronounConcepts_allSegments_Family.csv	-0.03	0.12	1.16
Pronouns concepts, permuting within family, first segments	RIS_PronounConcepts_firstSegments_Family.csv	0.02	0.69	-0.48
Pronouns concepts, permuting within area, all segments	RIS_PronounConcepts_allSegments_Area.csv	-0.03	0.17	0.95
Pronouns concepts, permuting within area, first segments	RIS_PronounConcepts_firstSegments_Area.csv	-0.02	0.37	0.33
Random concepts, all segments	RIS_RandomConcepts_allSegments*	-0.00	0.48	0.07
Random concepts, first segments	RIS_RandomConcepts_firstSegments*	-0.01	0.39	0.27
Random concepts within the same domain, all segments	RIS_RandomConcepts_Domain_allSegments*	0.00	0.56	-0.15
Random concepts within the same domain, first segments	RIS_RandomConcepts_Domain_firstSegments*	-0.02	0.35	0.39

Table 8: Random independent samples tests, comparing initial interrogative languages and non-initial interrogative languages. From results folder ../Results/SimplifiedPhonology/PermutationResults/RandomIndependentSamples/

Test	filename	meanPerm	p	z
Wh words, all consonants	ConsonantsInitial_3_allSegments_RandomIndependentSample.csv	-0.03	0.07	1.48
Wh words, first consonant	ConsonantsInitial_3_firstSegments_RandomIndependentSample.csv	-0.15	0.01	2.37
Wh words, all vowels	VowelsInitial_3_allSegments_RandomIndependentSample.csv	-0.02	0.21	0.82
Wh words, first vowel	VowelsInitial_3_firstSegments_RandomIndependentSample.csv	-0.07	0.05	1.67

Table 9: Random independent samples tests, comparing wh words by consonants or vowels separately. From results folder ../Results/SimplifiedPhonology/PermutationResults/RandomIndependentSamples/