SUBJECTIVE FREQUENCY RATINGS FOR 277 URUGUAYAN SIGN LANGUAGE (LSU) SIGNS

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Mente, Acción y Lenguaje

What are the usage frequencies of certain Uruguayan Sign Language (LSU) signs on a scale from 1 to 7 according to people's estimates based on their knowledge? Various studies show that lexical frequency affects linguistic processing[1], and when not controlled, it can confuse the results of a psycholinguistic experiment. Given its importance for psycholinguistic research and the lack of solid data for sign languages, this study aims to generate a foundation for the future development of psycholinguistic research on LSU. After gathering subjective frequency ratings for 277 signs, we conclude that LSU correlates significantly with most sign languages for which such data is available. Further studies are needed to explore correlations at lower frequencies.

Participants

→ A total of 80 adults volunteered for the study. Twenty-nine volunteers were discarded because they reported a LSU fluency of 4 or less in a 7-point self-evaluation scale or didn't use the frequency rating scale properly (rated most stimuli with almost the same score).

→ The remaining 51 participants (32 female; M age = 40 years, SD = 11 years; age range 20-60 years) were grouped by language preference. Twenty-four participants reported using LSU as their preferred language and twenty-seven participants reported preferring Rioplatense Spanish or chose not to answer.

→ The 24 participants (10 female: M age = 40 years, SD = 12 years; age range 20-58 years) who preferred LSU were then grouped by Age of Acquisition into 13 *Early* learners who acquired the language before 6 years old and 11 *Late* learners who acquired it afterwards; and by Education into 10 with *Low* education who didn't finish high school and 14 with *High* education who did finish it.

Materials

277 signs were selected from the LSU lexicon in a way that the frequency of their Rioplatense Spanish (a variant spoken in Uruguay and Argentina) translation counterpart was also known[2]. Some signs were also selected because their subjective frequency rating was available for other sign languages: British Sign Language (BSL)[3], American Sign Language (ASL)[4], Israeli Sign Language (ISL)[5], German Sign Language (DSL)[6] and French Sign Language (LSF)[7].

In order to capture depth, three aligned cameras recorded a deaf native signer from different angles while producing all LSU stimulus signs. They were then edited into a series of individual video clips. Only the front-facing video clip was used in the task.

Procedure

Data was collected both on-site in Montevideo and online. The experimental procedure for both groups of participants was conducted via a website accessible on either a mobile device or a computer. The primary difference was that the projected duration of the experiment was longer for on-site participants. The website's source code is publicly available and can be used by other researchers to collect subjective frequency ratings in LSU or other sign languages.

Participants were informed that they would view a series of LSU signs and were instructed to either tap (if using a touch screen) or click a button on a 7-point Likert scale based on how frequently they encountered each sign: 1 meaning *I never saw this sign* and 7 meaning *I see this sign almost every day*. For those completing the task online, 90 stimulus signs were randomly assigned, whereas those completing it offline in the lab were assigned 180 stimulus signs. The testing duration was approximately 10 minutes for the online task and 20 minutes for the offline task.


300ms · ~3800ms · ∞
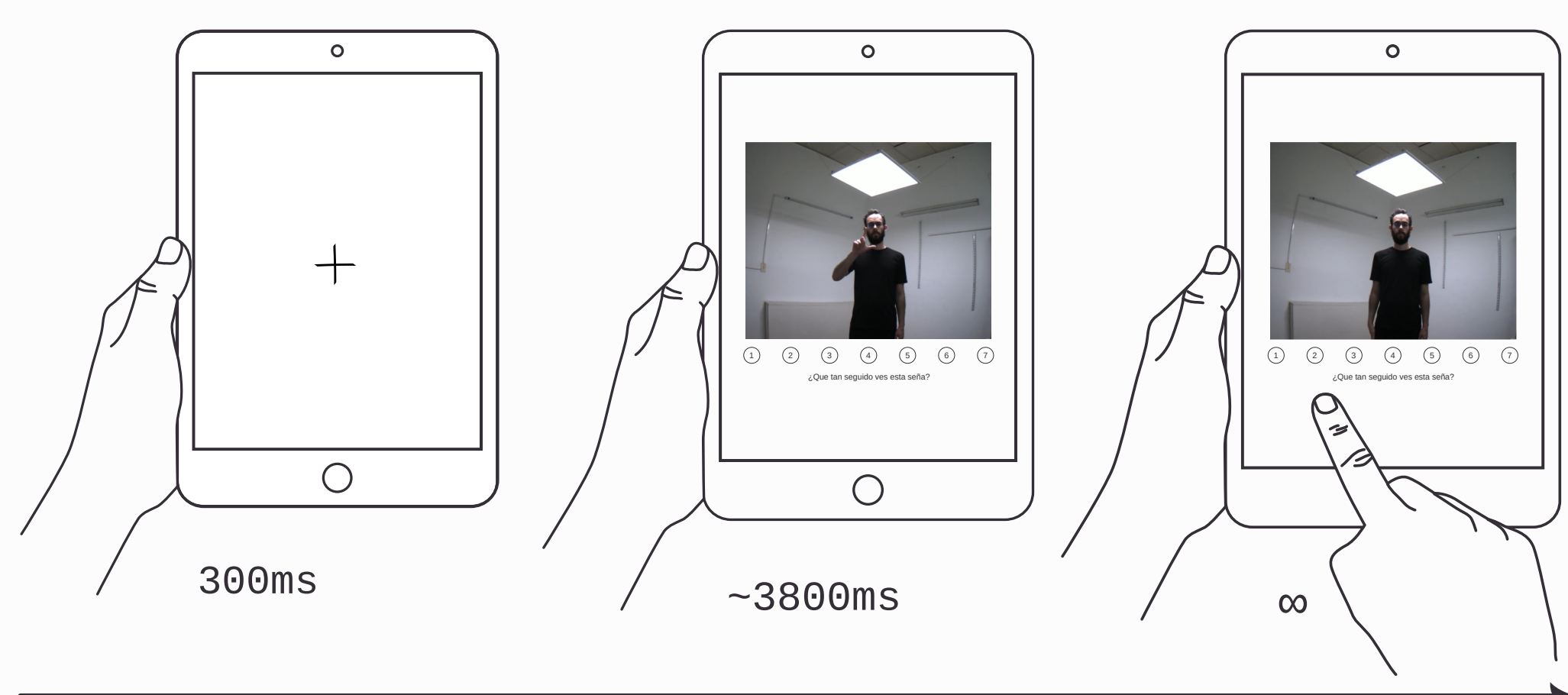
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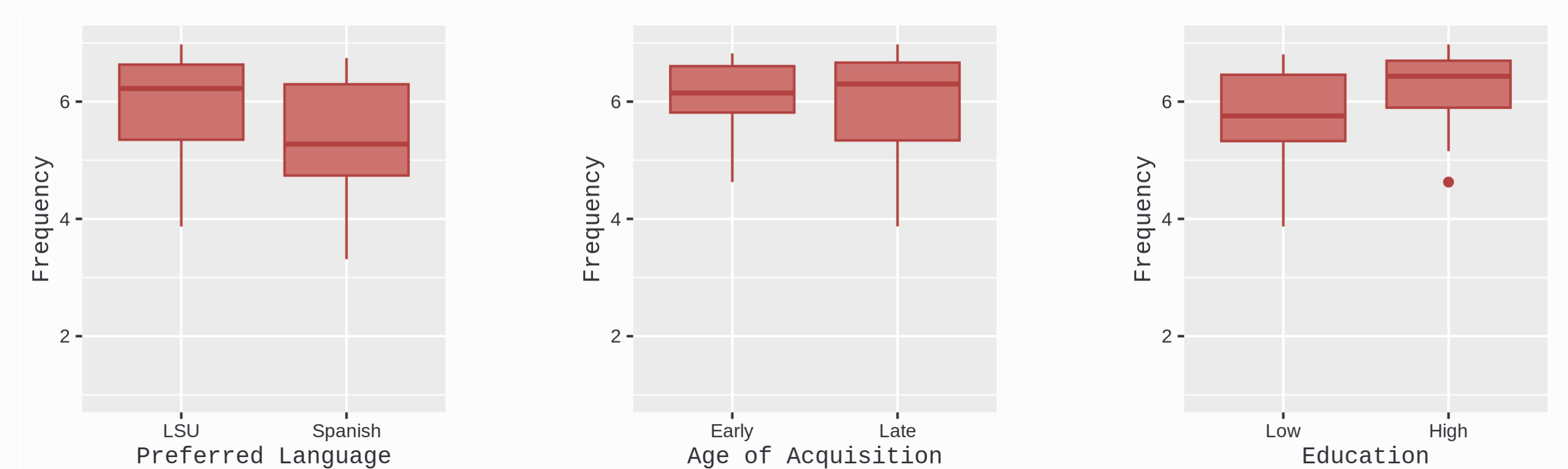
(A) **Average frequency by groups**

One-way ANOVA tests revealed that participants who preferred LSU differed in the average ratings with those who preferred Spanish ($F[2,43]= 6.273$; $p<0.05$). Just considering the LSU group, those who acquired the language before 6 years old did not difer in the average ratings with those who acquired it later ($F[2,22]= .152$; $p= .700$) and those who completed high school did not difer in the average ratings with those who did not complete it ($F[2,22]= 1.944$; $p= .177$).
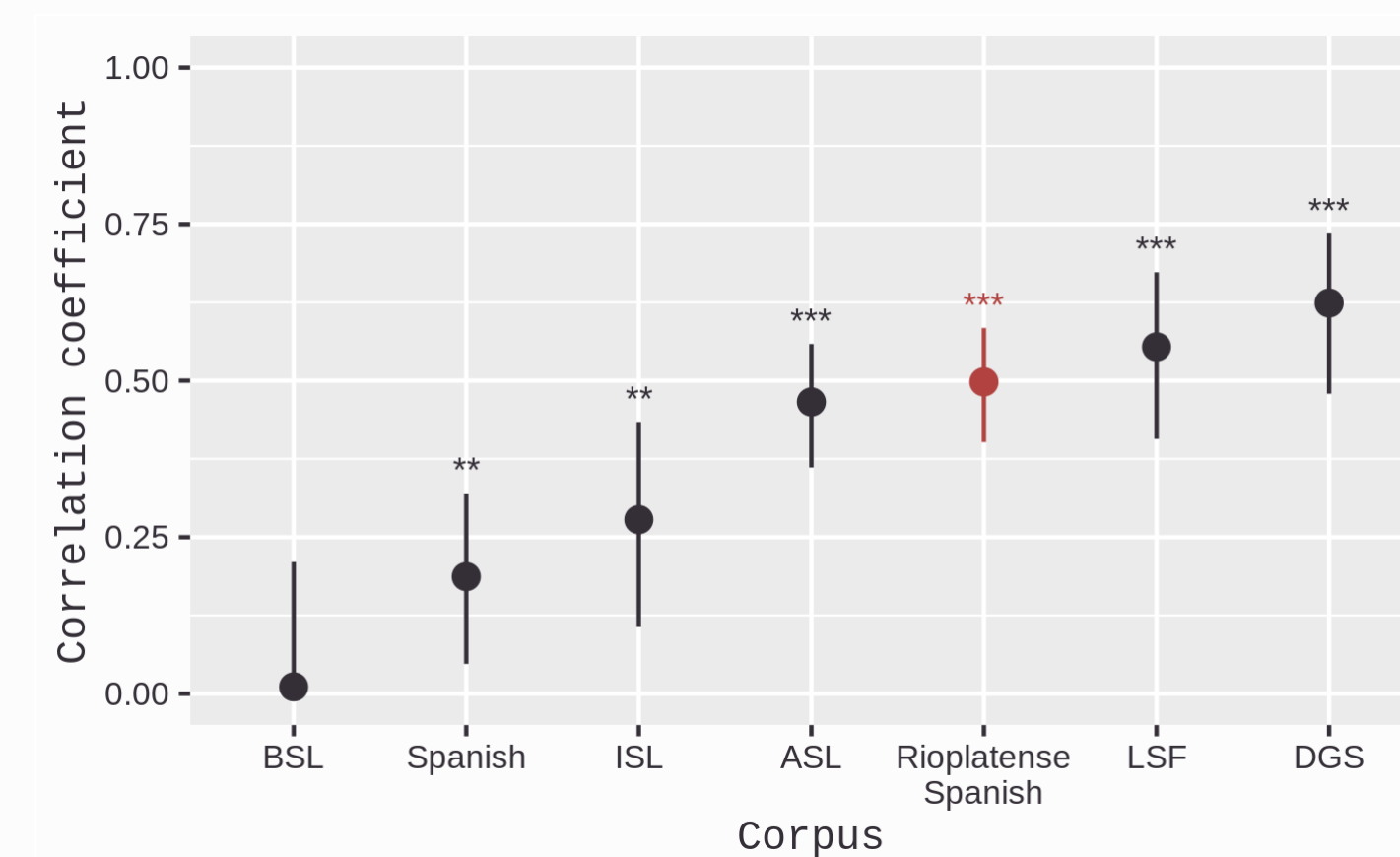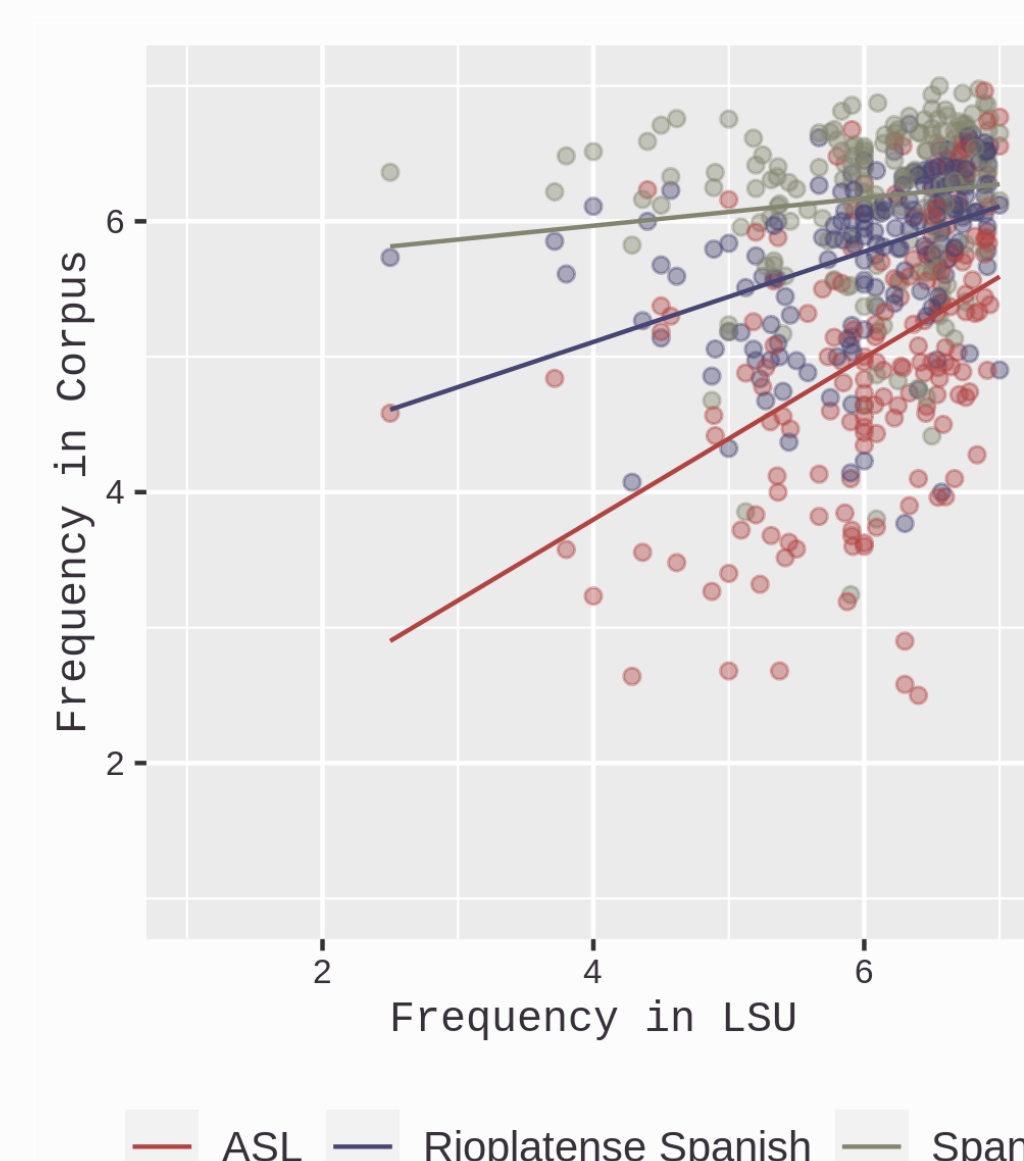

(B) **Correlation of frequencies with different languages**

LSU correlates strongly with most subjective frequency studies conducted in other languages —data for Rioplatense Spanish collected by Dutra & Aguirre (article in preparation)— with BSL being the exception ($r= .011$; $p= .912$).
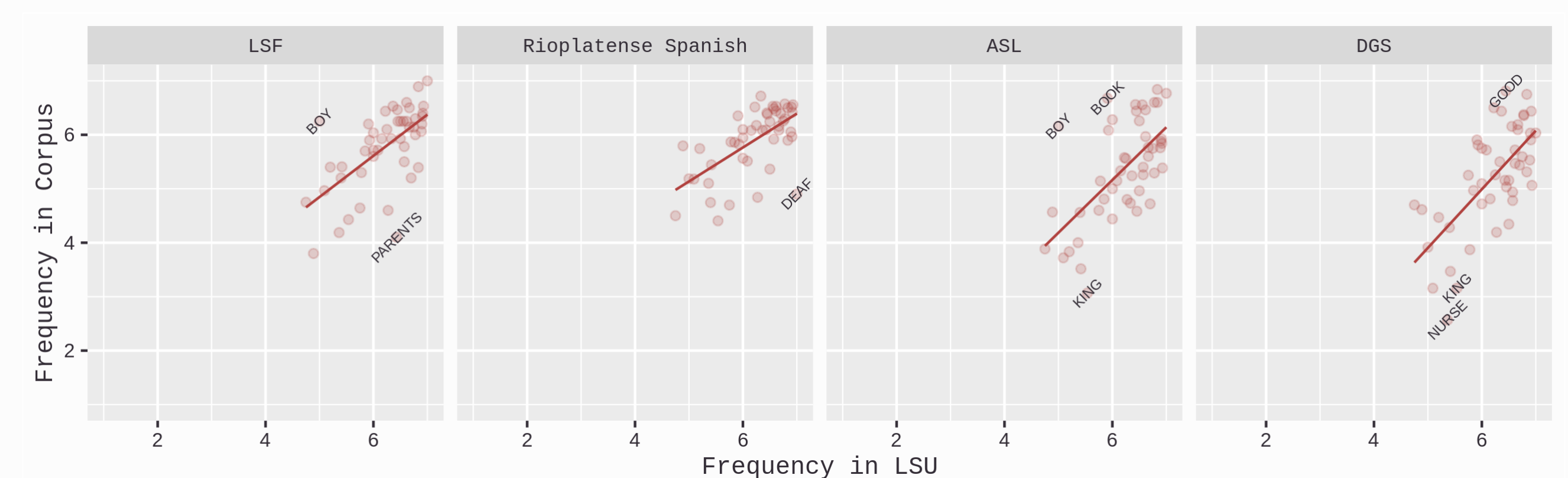
(C) **Scatterplot of frequencies vs. frecuencies in other languages**

Pearson correlations with the four most correlated languages when using 48 words common to all datasets (text identifies outliers, more than two standard deviations away) reveals a different order, from highest to lowest correlated: DGS ($r= .673$; $p<.001$), ASL ($r= .632$; $p<.001$), Rioplatense Spanish ($r= .626$; $p<.001$) and LSF ($r= .625$; $p<.001$).

— ASL — Rioplatense Spanish — Spanish

(D) **Linear correlations of frequency with data from other languages**

The frequencies observed in LSU show stronger correlation with a language that shares the same modality (ASL: $r= .450$; $p<.001$) compared to a language in close contact but with different modality (Rioplatense Spanish: $r= .416$; $p<.001$), as well as compared to a language with neither shared modality nor close contact (Spanish[8]: $r= .122$; $p= .101$) when using 182 words common to all datasets.

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