**Supplemental Materials**

**The Whorfian Time Warp: Representing Duration Through the Language Hourglass**

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**GROUPS’ OVERALL PERFORMANCE ACROSS EXPERIMENTS**

**Experiment 1**

Displacement estimates were analysed with respect to accuracy (slope between estimated stimulus displacement and actual stimulus displacement) and cross-dimensional interference (slope between estimated stimulus displacement and actual stimulus duration).

***Accuracy***

*Duration reproductions*

Spanish and Swedish native speakers were generally accurate in their duration reproductions (see Table S1). No significant differences were found between slopes, *F* (3, 66) = 1.88, *p* = .14

Table S1. Duration reproduction accuracy in Experiment 1.

Lines Containers

Spanish Swedish Spanish Swedish

*r*2 .99 .99 .99 .99

Slope .81 .76 .84 .81

Note: Perfect performance is slope = 1

*Displacement estimations*

Spanish and Swedish native speakers were generally accurate in their displacement reproductions (see Table S2). A significant difference was found between slopes according to condition, *F* (3, 66) = 20.15, *p* < .001, such that participants in the container condition were more accurate than participants in the lines condition (see Table S3). This was presumably so because participants in the containers condition could rely on the “empty” container frame as a reference for spatial reproductions. Crucially, however, differences did not vary as a function of language group.

Table S2. Displacement reproduction accuracy in Experiment 1.

Lines Containers

Spanish Swedish Spanish Swedish

*r*2 .99 .99 .99 .99

Slope .72 .74 .90 .93

Note: Perfect performance is slope = 1

Table S3. P value matrix for Bonferroni posthoc comparisons of displacement accuracy in Experiment 1.

Swedish Swedish Spanish

containers lines lines

Spanish containers .79 .00 .00

Swedish containers .00 .00

Swedish lines .96

***Cross-dimensional interference***

*Effects of stimulus displacement on duration reproductions*

Spanish and Swedish native speakers were equally affected by spatial interference when this measure was calculated across all stimuli, *F* (3, 66) = .30, *p* = .82

Table S4. Spatial interference in Experiment 1.

Lines Containers

Spanish Swedish Spanish Swedish

*r*2 .82 .81 .91 .81

Slope .59 .60 .75 .65

*Effects of stimulus duration on displacement reproductions*

Spanish and Swedish native speakers were equally affected by temporal interference when estimating stimulus displacement, *F* (3, 66) = 1.34, *p* = .27

Table S5. Temporal interference in Experiment 1.

Lines Containers

Spanish Swedish Spanish Swedish

*r*2 .04 .71 .14 .17

Slope .01 .01 .00 .00

**Experiment 2**

Accuracy and cross-dimensional interference were calculated in the same way as in Experiment 1.

***Accuracy***

*Duration reproductions*

Spanish and Swedish native speakers were generally accurate in their duration reproductions (see Table S6). No significant differences were found between groups, *F* (3, 68) = 1.44, *p* = .24

Table S6. Duration reproduction accuracy in Experiment 2.

Lines Containers

Spanish Swedish Spanish Swedish

*r*2 .99 .99 .99 .99

Slope .81 .76 .79 .83

Note: Perfect performance is slope = 1

*Displacement estimations*

Spanish and Swedish native speakers were generally accurate in their displacement reproductions (see Table S7). A significant difference was again found between slopes according to condition, *F* (3, 68) = 14.82, *p* < .001, such that participants in the container condition were more accurate than participants in the lines condition. Crucially, however, differences did not vary as a function of language group (see Table S8).

Table S7. Displacement reproduction accuracy in Experiment 2.

Lines Containers

Spanish Swedish Spanish Swedish

*r*2 .99 .99 .99 .99

Slope .67 .71 .89 .90

Note: Perfect performance is slope = 1

Table S8. P value matrix for Bonferroni posthoc comparisons of displacement accuracy in Experiment 2.

Swedish Swedish Spanish

containers lines lines

Spanish containers 1.00 .00 .00

Swedish containers .00 .00

Swedish lines 1.00

***Cross-dimensional interference***

*Effects of stimulus displacement on duration reproductions*

Spanish and Swedish native speakers were equally affected by spatial interference when this measure was calculated across all stimuli, *F* (3, 68) = 1.07, *p* = .37

Table S9. Spatial interference in Experiment 2.

Lines Containers

Spanish Swedish Spanish Swedish

*r*2 .89 .93 .75 .93

Slope .76 .77 .57 .55

*Effects of stimulus duration on displacement reproductions*

Spanish and Swedish native speakers were equally affected by temporal interference when estimating stimulus displacement, *F* (3, 68) = 1.43, *p* = .24

Table S10. Temporal interference in Experiment 2.

Lines Containers

Spanish Swedish Spanish Swedish

*r*2 .05 .01 .47 .04

Slope .00 .00 .00 .00

**Experiment 3**

***Accuracy***

Accuracy was calculated in the same way as in Experiments 1 and 2. Since Experiment 3 only required participants to perform duration calculations, no measures on displacement accuracy were generated. A 2 (language context: Spanish vs. Swedish) x 2 (group: containers vs. lines) mixed Anova yielded no significant main effects or interaction, suggesting that the groups were equally accurate across groups and language contexts in reproducing time (*p*s > .1).

Table S11. Duration reproduction accuracy in Experiment 3.

Containers Lines

Language Swedish context Spanish context Swedish context Spanish context

*r*2 .99 .99 .99 .99

Slope .79 .78 .78 .75

Note: Perfect performance is slope = 1

***Cross-dimensional interference***

Since Experiment 3 only required participants to perform duration calculations, only data on spatial interference was generated. A 2 (language context: Spanish vs. Swedish) x 2 (group: containers vs. lines) mixed Anova yielded no significant main effects or interaction, suggesting that when all stimuli were analysed, spatial interference was equal across groups and language contexts (*p*s > .1).

Table S12. Spatial interference in Experiment 3.

Containers Lines

Language Swedish context Spanish context Swedish context Spanish context

*r*2 .92 .94 .99 .92

Slope .91 .96 1.02 .86

**ADDITIONAL INFORMATION ON BILINGUAL PARTICIPANTS (EXPERIMENT 3)**

The bilingual participants were native speakers of Swedish who had learnt Spanish as a second language in the upper teens (Containers group: 18 years; Lines group: 16 years). They used this language on a regular basis (Containers group: 67h/w; Lines group: 58h/w) (*p*s>.2). Based on the assessment of the test administrators, the participants’ Spanish language proficiency was characterised as B2-C1 (independent and proficient users) in the Common European Framework of Reference.

**POST HOC POWER ANALYSES**

Experiment 1, container condition: Power (1-β err prob) = .999 (2 (language: Spanish vs. Swedish) x (stimulus type: extreme vs. medium) mixed Anova)

Experiment 1, line condition: Power (1-β err prob) = .999 (2 (language: Spanish vs. Swedish) x (stimulus type: extreme vs. medium) mixed Anova)

Experiment 3, container condition: Power (1-β err prob) = .997 (2 (prompt language: Spanish vs. Swedish) x (stimulus type: extreme vs. medium) mixed Anova)

Experiment 3, line condition: Power (1-β err prob) = .929 (2 (prompt language: Spanish vs. Swedish) x (stimulus type: extreme vs. medium) mixed Anova)