Supplementary materials for:

**Rhythmic grouping biases in simultaneous bilinguals**

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This document provides a) a table presenting participants' background information (Supplement S1, Table S1), b) the results of a Principal Component Analysis over the participants' rhythmic grouping data (Supplement 2, Table S2), and c) the results of Principal Component Analyses over participants' experience factors (Supplement 3, Tables S3a-S3d).

## Supplement S1

Table S1. *Participants experience with German/French based on language background questionnaire.*

| Participant Information | | | | |
|---|---|---|---|---|
| **Language context** | | | | |
| Pronunciation | German-sounding | | French-sounding | |
| Instructions | German | French | German | French |
| **Number of participants** | 8 | 6 | 7 | 9 |
| **Education (in years, range in brackets)** | 19.6 (15-25) | 16.5 (12-20) | 18 (13-26) | 17.8 (15-21) |
| **Educational level (in N)** | | | | |
| GCSE | 0 | 0 | 1 | 0 |
| University-entrance diploma | 2 | 3 | 1 | 2 |
| University degree (BA, MA) | 5 | 4 | 4 | 6 |
| PhD degree | 1 | 0 | 2 | 1 |
| Other | 2 | 0 | 0 | 0 |

| | | | | |
|---|---|---|---|---|
| **Age (mean, range in brackets)** | 31.5 (22-40) | 28.3 (18-33) | 30.1 (19-40) | 29.8 (21-40) |
| **Amount of Exposure (in %, range in brackets)** | | | | |
| age 0-1 | 34.5% (3-60) | 57.5% (20-95) | 37.9% (5-90) | 54.4% (10-90) |
| age 1-2 | 35.4% (3-70) | 56.7% (20-90) | 39.29% (5-80) | 52.2% (10-90) |
| age 2-4 | 41.6% (3-60) | 45.8% (20-75) | 42.1% (5-100) | 57.2% (25-80) |
| age 4-10 | 46.9% (20-80) | 31.7% (20-50) | 36.9% (8-60) | 49.4% (10-90) |
| age 10-18 | 53.1% (20-80) | 37.5% (10-60) | 35.4% (8-60) | 42.8% (10-90) |
| past 5 years | 46.9% (5-80) | 31.2% (15-55) | 43.6% (15-70) | 32.2% (10-80) |
| past 5 months | 50.6% (5-80) | 39.2% (5-80) | 57.5% (15-95) | 40.9% (5-80) |
| past 5 weeks | 56.3% (5-90) | 50.8% (5-80) | 45.7% (30-80) | 39.9% (1-80) |
| **Place of test / residence (in N)** | | | | |
| Germany | 7 | 4 | 7 | 4 |
| France | 1 | 2 | 1 | 5 |
| **Official language of country of birth (in N)** | | | | |
| German | 5 | 1 | 1 | 4 |
| French | 3 | 5 | 5 | 5 |
| Other | 0 | 0 | 0 | 0 |
| **Mother's language of communication (in N)** | | | | |
| German | 0 | 1 | 3 | 3 |
| French | 7 | 4 | 2 | 2 |

| | | | | |
|---|---|---|---|---|
| Both | 0 | 0 | 1 | 4 |
| No answer | 1 | 1 | 1 | 0 |
| **Father's language of communication (in N)** | | | | |
| German | 4 | 3 | 2 | 4 |
| French | 3 | 2 | 3 | 4 |
| Both | 0 | 1 | 1 | 1 |
| No answer | 1 | 0 | 1 | 0 |
| **Language to keep (in N)** | | | | |
| German | 1 | 1 | 0 | 4 |
| French | 6 | 4 | 6 | 4 |
| No answer | 1 | 1 | 1 | 1 |

**Supplement S2**

Principal Component Analysis (PCA) was used to generate a single composite score to reflect participants' rhythmic grouping preferences. To do so, we transformed responses of the experimental task from proportions of trochaic responses into responses as predicted by the ITL (i.e., in the intensity and control condition, trochaic responses were predicted, and, hence, unchanged; in the duration condition, we reversed the scale ((0.50 − proportion * 2 ) + proportion)). Next, a PCA was conducted over the three variables Intensity, Duration, and Control (see Table A.1). The first Principal Component was used as a factor in the model-based clustering analyses.

Table S2. *Results of a PCA over the rhythmic grouping data.*

| **PC Rhythmic grouping** | **Comp.1** | **Comp.2** | **Comp.3** |
|---|---|---|---|
| Importance of components | | | |
| Standard Deviation | 1.38 | 0.87 | 0.59 |
| Proportion of Variance | 0.63 | 0.25 | 0.16 |
| Loadings | | | |
| Intensity | 0.65 | | 0.76 |
| Control | 0.57 | 0.59 | -0.57 |
| Duration | 0.50 | -0.80 | -0.33 |

**Supplement S3**

Principal Component Analysis (PCA) was used to generate composite scores to reflect the degree of exposure to German on the basis of questions from the questionnaire. In the analyses, we used the first Principal Component as a factor to reflect language experience. Only the last (Table S3d) improved the model fit.

Table S3a. *Results of a PCA over the data of the simultaneous bilinguals' amount of exposure between 0 – 4 years of age (which, in the questionnaire, were 3 questions on the amount of German exposure in % at the ages 0-1, 1-2 and 2-4 years).*

| **PC Amount of exposure to German 0-4 years** | **Comp.1** | **Comp.2** | **Comp.3** |
|---|---|---|---|
| Importance of components | | | |
| Standard Deviation | 1.54 | 0.78 | 0.13 |
| Proportion of Variance | 0.79 | 0.20 | 0.01 |
| Loadings | | | |
| 0-1 years | 0.62 | 0.34 | 0.70 |
| 1-2 years | 0.63 | 0.33 | -0.71 |
| 2-4 years | 0.47 | -0.88 | |

Table S3b. *Results of a PCA over the data of the simultaneous bilinguals' place of residence at three age periods (0-1, 1-2, and 2-4 years, also based on 3 questions from the questionnaire).*

| **PC Residence at 0-4 years** | **Comp.1** | **Comp.2** | **Comp.3** |
|---|---|---|---|
| Importance of components | | | |
| Standard Deviation | 1.48 | 0.89 | < 0.001 |
| Proportion of Variance | 0.73 | 0.27 | < 0.001 |
| Loadings | | | |
| 0-1 years | 0.38 | 0.93 | |
| 1-2 years | 0.65 | -0.27 | -0.71 |
| 2-4 years | 0.65 | -0.27 | -0.71 |

Table S3c. *Results of a PCA over the data of the simultaneous bilinguals' amount of exposure between 4 - 18 years of age (2 questions on the amount of German exposure in % at the ages 4-10 and 10-18 years from the questionnaire).*

| **PC Amount of exposure to German 4-18 years** | **Comp.1** | **Comp.2** |
|---|---|---|
| Importance of components | | |
| Standard Deviation | 1.24 | 0.70 |
| Proportion of Variance | 0.77 | 0.23 |
| Loadings | | |
| 4-10 years | 0.71 | 0.71 |
| 10-18 years | 0.71 | -0.71 |

Table S3d. *Results of a PCA over the data of the simultaneous bilinguals' degree of current exposure to German (which combined 3 questions on the amount of German exposure in % at during the past five weeks, five months and the past 5 years and added the place of participants' current residence).*

| **PC Current exposure to German** | **Comp.1** | **Comp.2** | **Comp.3** | **Comp.4** |
|---|---|---|---|---|
| Importance of components | | | | |
| Standard Deviation | 1.71 | 0.82 | 0.53 | 0.36 |
| Proportion of Variance | 0.73 | 0.17 | 0.07 | 0.03 |
| Loadings | | | | |
| Place of Test | 0.52 | 0.17 | 0.79 | 0.27 |
| past 5 weeks | 0.53 | 0.37 | -0.18 | -0.74 |
| past 5 months | 0.54 | 0.13 | -0.58 | 0.59 |
| past 5 years | 0.39 | -0.91 | -0.16 | |