1. Introduction

- Language and music share a number of characteristics (e.g., Besson and Schön 2001; Maess et al. 2001, Patel 2003, Patel 2008, Koelsch 2005, Koelsch 2009).

**How similar are they?**
- **Language & music have shared representations** (Evidence from neuro-imaging and syntactic unexpectedness violations, Koelsch 2000, Patel 2003, Patel 2008)
- **Language & music have different representations** (Musical deficits and amusics, Peretz and Colheart 2003, Peretz 2006)
- If music and language have shared representations, we expect priming from music to language.
- **Menon & Kaiser (2013)**: Can dependencies in musical primes influence participants’ production of relative clauses (RCs) with low attachment (LA) vs. high attachment (HA)?
- We found priming from music to language:
  - Overall LA bias weakens significantly after a musical high attachment prime.
  - See van de Cavey & Hartsuiker (2011) for work on Dutch

2. Research Questions

(a) Does primability of a language depend on attachment bias?
(b) Does potential priming effects interact with the singular/plural distinction on nouns? (cf. Fernández and Sainz, 2004 for Spanish)

- Menon and Kaiser (2013) tested RC attachment in English, which has a default Low Attachment bias.
- Researchers disagree on whether Spanish RCs have default high or low attachment (e.g. Carreiras et al 2001, Cuetos and Mitchell 1988).

**Effect of number?** Fernández & Sainz 2004 suggest that whether nouns are singular or plural influences attachment patterns:
- Bob saw the cousins of the boy who... [Plural+Sing] => LA
- Bob saw the cousin of the boys who... [Sing+Plural] => unclear?

3. Our Study

- Participants (n= 20) listened to and rated a musical prime or filler (music task, how melodious?) and completed an ambiguous relative clause fragment in Spanish (language task)

**Targets**: 30 ambiguous RC fragments, nouns differed in number
**Primes**: 30 musical primes in 5 conditions.
**Fillers**: 60 language fillers and 60 musical fillers.
- Bob saludó al líder de los activistas que...
- ‘Bob greeted the leader of the activists who...’ (N1Sing+N2Plural)
- Tina conocía a los jardineros del millonario que...
- ‘Tina knew the gardeners of the millionaire who...’ (N1Plural+N2Sing)
- Does continuation modify the complex NP (e.g. leader of the activists; HA) or the lower NP (e.g. activists; LA)?

4. Prime conditions

- Musical primes use the Circle of Fifths. Sequences of 8 notes created using a piano on Mac’s Garage Band.

**CONDITION** | **EXAMPLE**
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High Attachment (HA) | GGBF#EGC
Low Attachment (LA) | DADCBF#CHF#
High Attachment + pause (HA+P) |  GGBFBE (pause) FC
Low Attachment + pause (LA+P) | ADAC#G# (pause) C#G#
Baseline (Base) | FCFCFFCC

5. Results

Significant effect of target type, Plural+Sing vs. Singular+Plural (p<.05) on participants’ attachment choices.

Plural+Sing:
- Overall LA bias in baseline condition; fits with Fernández & Sainz (2004)
- No significant priming (no effect of attachment height or pause, no interaction) => perhaps due to a ceiling effect: All conditions have more LA than HA completions

Sing+Plural:
- No clear attachment biases in baseline condition, similar to Fernández & Sainz 2004
- Priming from music: The rate of HA continuations is significantly greater after high-attachment primes than low-attachment primes (p<.05). No effect of pause and no interaction.

6. Discussion

- Our baseline results support Fernández & Sainz (2004)’s finding that the singular/plural distinction influences RC attachment.
- Our results in the priming conditions suggest that explicitly musical stimuli can activate abstract representations that overlap with the syntactic representations of language, but that cross-domain priming effects are modulated by the singular/plural status of the nouns and the associated RC attachment biases.
- A pause after the second noun does not significantly boost the HA bias after HA primes (cf. Fodor’98), suggesting that rhythmic cues may not be needed for priming => what matters is the structure of the harmonic domains. (Hints of numerical effects of pause with LA primes?)


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