

# The phonological properties of Catalan and Spanish (ir)reversible binomials. Evidence from real data corpora and judgment tests

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**1. Introduction.** The focus of this talk are the phonological properties of binomials in Spanish and Catalan, a type of coordinated constructions that Malkiel, in his conspicuous essay of 1959, defined as «the sequence of two words pertaining to the same form-class, placed on an identical level of syntactic hierarchy, and ordinarily connected by some kind of lexical link», namely, structures of the type *fame or fortune*, (*without rhyme or reason*, *trick or treat*, etc. The potential role of weight in the order the binomial's constituents adopt has extensively been explored in English (e.g. the precursor work by Malkiel 1959, in which many other languages are also considered, Bolinger 1962, Cooper & Ross 1975, Pinker & Birdsong 1979, or the more recent ones of Benor & Levy 2006, Molin 2013, Ryan 2019), and also in French (Pinker & Birdsong 1979) or in German (Müller 1997). Most of these studies conclude that, once semantic factors are controlled, weight (expressed through a larger number of syllables, V with more sonority, longer V, presence of margins, complex onsets and codas, less sonorous onsets and more sonorous codas) “decides” which order the components of the binomial adopt: the component that contains heavier elements tends to occur in second position (see, esp., Ryan 2019). Despite of their obvious phonological relevance, binomials in Spanish have only been addressed from the perspective of lexicology and semantics (García-Page 1998; Almela 2006) and translation (Andrades 2014, Rodríguez 2014); there are no studies focusing on their phonological properties, nor studies devoted to these type of constructions in Catalan.

**2. Purpose.** On the basis of the analysis of the *a) irreversible* (frozen) binomials collected in Espinal (2004, 2006) (n=492) and in Almela (2016) (n=350), this talk reviews the main metrical, rhythmic, and phonotactic properties that characterize binomials in Catalan and Spanish, and tries to determine which factors are more decisive in the order they adopt. In order to control the prevalence of all the factors that can eventually be undermined by the interaction with more robust factors (such as the number of syllables or semantic factors), this talk also presents the results of a judgment test in which 33 speakers with Catalan as L1 had to pick between two sentences containing both *b) reversible binomials* with coordinated real adjectival components differing either just in syllable number or just in basic syllable structure (presence / absence of margins; complexity of the margins) (n = 90 sentences x 2 possible combinations), and *c) reversible binomials* made up of coordinated nonce adjectival components, all monosyllabic and differing by only one of the following properties: *i) onset complexity; ii) onset sonority; iii) coda sonority; iv) vowel sonority* (n=41 sentences x 2 possible combinations).

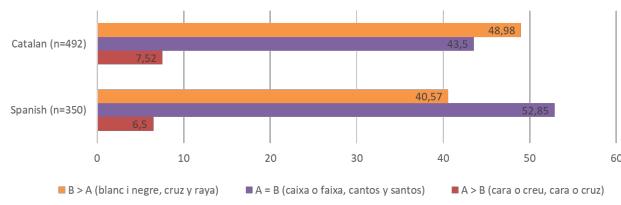
**3. Basic methodology and results.** All Catalan binomials contained in the online Catalan idiom dictionary of Espinal (2014, 2016) and all Spanish binomials contained in Almela (2016), a paper devoted to their semantic features, were categorized according to the number of syllables of each component; binomials with an equal number of syllables per component were classified depending on the sonority of the stressed vowels, the presence or absence of word-initial onsets, the complexity of word-initial onsets, and the relative sonority of word-initial consonants; afterwards, the percentage for each circumstance was calculated. Here we only present the main findings. The most decisive factor in the order the binomials adopt is the number of syllables, as can be seen in FIG. 1, with very low percentages of A > B in both languages, and a clear preference for B > A followed by A = B in Cat., and for A = B followed by B > A in Spa. These results are in accordance with the higher frequency of monosyllabic words in Catalan and the higher frequency of bisyllabic words in Spa. The productivity of B > A is supported by many cases in which a syllable or a prefix is added to the base of the first component to construct the second one (*a les dures i a les madures*, *a ciencia y conciencia*). Moreover, in most cases in which A > B or in which A = B, the second component has a word-final heavy syllable (*cara o creu*, *cara o cruz*), so weight is balanced. Vowel sonority, which has proven to be quite relevant for English and French (Pinker & Birdsong 1979), is only apparent in binomials which combine deictic or onomatopoeic elements (*ni fu ni fa*; *que si patatín, que si*

*patatán*). The tendency in both languages, in fact, is to have stressed vowels with the same sonority (in about the 60% of the cases), although sonority reversals are more frequent than expected (about a 20% of the cases in both languages). Parallelism is also the tendency found for the rest of the factors: in a 83,17% of the cases, in Cat., and in a 81,6%, in Spa., both components have the same word-initial onset configuration ( $\emptyset$ - +  $\emptyset$ -; C- + C-; CC- + CC); the same tendencies apply for onset complexity. Onset sonority, though, shows an unexpected behavior, with high percentages for word-initial C of the second component with higher sonority (39,1% in Cat.; 39,4% in Spa. cf. 38,3% and 46,7 with equal onset sonority for Spa and Cat., respectively). Although not illustrated bellow, rhythmic aspects, such as the percentages of adjacent unstressed syllables (0, 1, 2, 3, etc.), were also considered, with these tendencies: 1 (49,7%) > 2 (30,2%) > 3 (13,6%) > 0 (2,8%) > 4 (2,4%) (the exact percentages correspond to Cat., here, but the hierarchy is applicable to both languages).

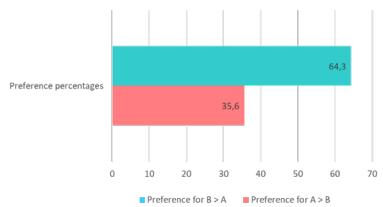
The results of the judgment test on real and nonce binomials in Catalan reproduce and, in some cases, “magnify” these tendencies (see FIG. 2 - FIG. 6), and reveal the crucial character of some additional factors, such as the preference to avoid syllabic transitions with hiatus (see FIG. 3 and FIG. 4) or the tendency to prefer second components with back vowels (see similar findings in Cooper & Ross 1975). Due to space reasons, we only expose, in the figures below, the results for some of the factors and conditions considered (see § 2, for a complete overview of all the metrical factors taken into consideration).

Overall, this line of research is relevant not only because of the lack of literature focused on this topic in Catalan and Spanish, but also because the structural distributions detected in the binomials are a window into the role of each of the factors adduced as “weight bearers” in the phonology of Catalan and Spanish, a window that would otherwise remain (at least) half closed.

**FIG. 1.** Irreversible binomials (corpora). Factor: syllable number

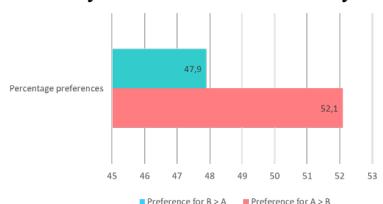


**FIG. 2.** Reversible binomials with real components (experiment). Factor: syllable number



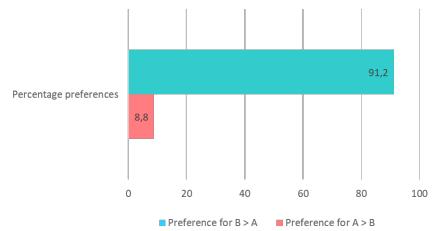
(n= 50: En Joan és just i modest vs. En Joan és modest i just;  
Includes all syllabic combinations: 1+2; 1+3; 1+4; 2+3, 2+4...)

**FIG. 3.** Reversible binomials with real components (experiment). Factor: syllable number inhibited by \*HIATUS



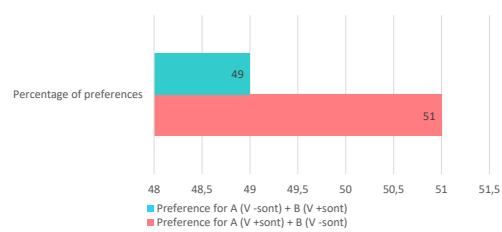
(n= 13: En Joan és fort i àgil vs. En Joan és àgil i fort)

**FIG. 4.** Reversible binomials with real components (experiment). Factor: syllable number magnified by \*HIATUS



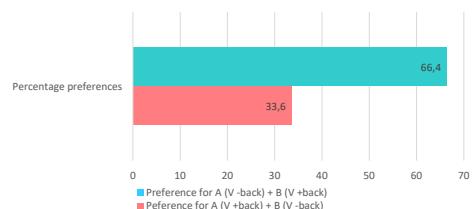
(n= 1: En Joan és alt i morè vs. En Joan és morè i alt)

**FIG. 5.** Reversible binomials with nonce components. Factor: vowel sonority (→ reversal behavior)



(n= 18: El sofà és pric i prac vs. El sofà és prac i pric)

**FIG. 6.** Reversible binomials with nonce components. Factor: +/- back character of the vowel



(n= 15: El sofà és pric i pruc vs. El sofà és pruc i pric)