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Brief Report

The consonant bias in word learning is not determined by position within the word: Evidence from vowel-initial words



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ABSTRACT

The current study used an object manipulation task to explore whether infants rely more on consonant information than on vowel information when learning new words even when the words start with a vowel. Canadian French-learning 20-month-olds, who were taught pairs of new vowel-initial words contrasted either on their initial vowel (*opsi/eupsi*) or following consonant (*oupsa/outsa*), were found to have learned the words only in the consonant condition and performed significantly better in the consonant condition than in the vowel condition. These results extend to Canadian French-learning infants the consonant bias in word learning previously found in French-learning infants from France and, crucially, shows that vocalic information has less weight than consonant information in new word learning even when it is the initial sound of the target words, confirming the consonant bias at the lexical level postulated by Nespor et al. (2003). The current findings also suggest that French-learning infants are able to segment vowel-initial words as early as 20 months of age.

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Introduction

The question of the phonetic specificity of early lexical processing has been a focus of interest for decades, showing that from the moment infants start encoding words or word forms, these word forms are at least partly specified (Bortfeld, Morgan, Golinkoff, & Rathbun, 2005; Bouchon, Floccia, Fux, Adda-Decker, & Nazzi, 2015; Hallé & de Boysson-Bardies, 1996; Jusczyk & Aslin, 1995; Stager & Werker, 1997). More recently, based on various phonological considerations (e.g., consonant inventories tending to be larger than vocalic ones across languages, consonants being perceived more categorically than vowels, consonants tending to disharmonize within words while many languages instantiate vowel harmony at the lexical level), Nespor, Peña, and Mehler (2003) have proposed that consonants are more important than vowels for lexical processing. This has led to an increase in studies directly comparing the use of consonant and vowel information in early lexical processing. The evidence supporting Nespor et al.'s (2003) view comes in particular from studies looking at the acquisition of pairs of words differing by one phoneme/phonetic feature showing that the trajectory of acquisition of the consonant bias varies cross-linguistically (for a review, see Nazzi, Poltrock, & Von Holzen, 2016). However, in all studies so far, vowels were tested in word-medial position but never in word-initial position, a particularly salient processing position according to some models of lexical access (e.g., Cohort, Marslen-Wilson, & Welsh, 1978). Importantly, prior work also suggests that vowel-initial words are more difficult to process than consonant-initial words (English: Mattys & Jusczyk, 2001; Nazzi, Dilley, Jusczyk, Shattuck-Hunagel, & Jusczyk, 2005; French: Babineau & Shi, 2014). The current study compared French-learning 20-month-olds' acquisition of vowel-initial words having a vowel-consonant VC, CV structure and differing in either their initial vowel or the following consonant. To our knowledge, this is the first study to explore on-line acquisition of vowel-initial words in French.

Consonants and vowels have different acoustic properties. Compared with consonants, vowels usually correspond to more stable spectral information than consonants and are processed less categorically. Nespor et al. (2003) proposed that these processing differences result in consonants and vowels having different functions in language processing, which might facilitate language acquisition. More specifically, vowels play a more important role than consonants in marking prosodic and (morpho) syntactic regularities, whereas consonants play a more important role in lexically related processes. This proposal is supported by adult data from lexical reconstruction tasks in which participants need to change a pseudoword into a word (English and Spanish: Cutler, Sebastián-Gallés, Soler-Vilageliu, & van Ooiken, 2000; Dutch: van Ooijen, 1996) as well as lexical priming tasks (French: Delle Luche et al., 2014; New, Araújo, & Nazzi, 2008; New & Nazzi, 2014; Spanish: Carreiras, Dunabeitia, & Molinaro, 2009; English: Delle Luche et al., 2014) and artificial language segmentation tasks (French: Bonatti, Peña, Nespor, & Mehler, 2005; Italian: Toro, Nespor, Mehler, & Bonatti, 2008).

Taken together, the above studies support the existence of a consonantal bias in both oral and written adult lexical processing in several languages (Dutch, English, French, Italian, and Spanish). These results raise the issue of the emergence of this bias during development since Nespor et al. (2003) proposed that this functional asymmetry would help language acquisition. This issue has been explored in many studies investigating the existence of a consonant bias in lexical acquisition in French-learning infants. The current study further contributes to this line of research.

In these word-learning studies, infants are taught a pair of words that differ by only a consonant or vowel and then are asked to select one of the two objects at test (e.g., by requesting the object by its name). First, exploring French-learning infants using this object manipulation task, many studies found an asymmetry in processing to the advantage of consonants between 16 months and 3 years of age. Both 16- and 20-month-olds can simultaneously learn two new words contrasting by a consonantal feature (place: e.g., /gul/-/dul/; voicing: e.g., /paʃ/-/baʃ/) but fail when the words contrast by a vocalic feature (place: e.g., /ʃyl/-/ʃul/; height: e.g., /pœs/-/pos/) (Havy & Nazzi, 2009; Nazzi, 2005). Infants' use of minimal vocalic contrasts in this kind of task is found starting at 30 months of age (Nazzi, Floccia, Moquet, & Butler, 2009). However in spite of this improvement in vowel processing, the consonant/vowel asymmetry remains present from 16 months all the way to adulthood (Havy,

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