The Productive Status of Canadian French *Liaison:* Variation across Words and Grammar

Background There are competing views in theoretical morphophonology about how to represent phonologically-motivated processes that are pervasive and frequent, yet lexically sensitive (e.g., Zuraw, 2000; Moore-Cantwell, 2016; Pater, Staubs, Jesney & Smith, 2012). To what extent can – or should – a process that applies idiosyncratically to different morphemes, words and even phrases, be represented in a way that generalizes to novel forms? This paper examines this question by looking at pre-nominal *liaison* as it is currently produced in Canadian French. We report the results of an online production study that compared application of liaison to real vs. nonce nouns. We interpret our results as evidence that these patterns are derived jointly by lexical representations and the abstract phonological grammar, and that the balance of responsibility can be quite different across speakers in the same population.

Liaison Liaison involves a rich set of consonantal alternations at the juncture between e.g., a noun and a preceding functional morpheme. These alternations occur largely, but not exclusively, to resolve vowel hiatus, and they are sufficiently unpredictable as to cause considerable controversy about their representations (compare Côté, 2011; Tranel 1995; Smith, 2015). The data in (1) illustrates: (1a) shows that the W(ord)1s *les* and *petit* are vowel-final before consonant-initial W(ord)2s; (1b) shows that they trigger [**z**] and [**t**] respectively before most vowel-initial W2s; and (1c) shows that they fail to trigger liaison before exceptional 'h-aspiré' vowel-initial W2s.

(1) Word1: plural definite determiner *les*   Word1: masculine adjective *petit*
   a) *les nuages* [le.ny.ˈaʒ] 'the clouds'   *petit nuage* [pœ.tˢi.ny.ˈaʒ] 'little cloud'
   b) *les amis*   [le.**z**a.ˈmi] 'the friends'   *petit ami*   [pœ.tˢi.**t**a.ˈmi] 'little friend (lit.)'
   c) *les hiboux* [le.i.ˈbu]   'the owls'   *petit hibou* [pœ.tˢi.i.ˈbu]   'little owl'

Pre-nominal liaison is variable in multiple ways (see esp. Zuraw & Hayes, 2017). Variability of W1s is both word-specific and morphosyntactic: each W1 triggers a unique liaison consonant (if any), and W1 <u>determiners</u> such as *les* and *un* ('a') cause obligatory liaison while <u>adjectives</u> like *petit* are optional triggers. The lexicon of W2 nouns that resist liaison are almost all spelled with an initial, silent <h>, and among this sublexicon there are several phonological predictors. For instance, dictionary data shows that one- and two-syllable words resist liaison significantly more often than longer words, and [u]-initial words spelled with <h> *never* undergo liaison.

Representing Liaison and Nonce Words One contemporary account of liaison that is highly lexically-driven is that of Smolensky & Goldrick (2016). Their analysis assigns liaison consonants to both the end of W1s like *les* <u>and</u> the beginning of W2s like *ami* – and these are *gradiently* represented in the input, only surfacing when specified on both W1 and W2. The most straightforward consequence of such an account is that liaison should <u>not</u> extend to novel W2 nouns, unless the learner is given overt evidence of a liaison consonant. This prediction runs afoul of native speaker intuitions, but to our knowledge no previous study has assessed this directly.

The Experiment 34 adult L1 Canadian French speakers completed a web-based study. Each trial had two parts. First, a French sentence appeared on the screen with a target word missing, e.g. (translated) "*Here is a pretty _____*". At the same time participants heard the sentence pronounced with the target filled in, e.g. "*Here is a pretty **elephant***". Then a new sentence appeared, again with a missing word, and participants read the new sentence aloud, filling in the blank with the previous target – e.g., seeing "*He's an _____ from the zoo*" and saying: "*He's an **elephant** from the zoo.*" Participants' recordings were uploaded to a secure server. None of the W1s that first introduced the target W2s was a liaison trigger; W1s that participants read aloud before the targets

were *les, un* and *petit.* In the first block of trials, the target W2s were 16 real V-initial nouns, including 8 purported h-aspiré words like *hibou.* In the second block the target W2s were 19 nonce nouns, each one or three syllables long and with one of five initial vowels [a, i, u, e/ɛ, o/ɔ]. Participants never saw the spelling of the target words.

Fig1: Nonce by W1

Fig2: Nonce by W2 length

Fig3: Real word %liaison
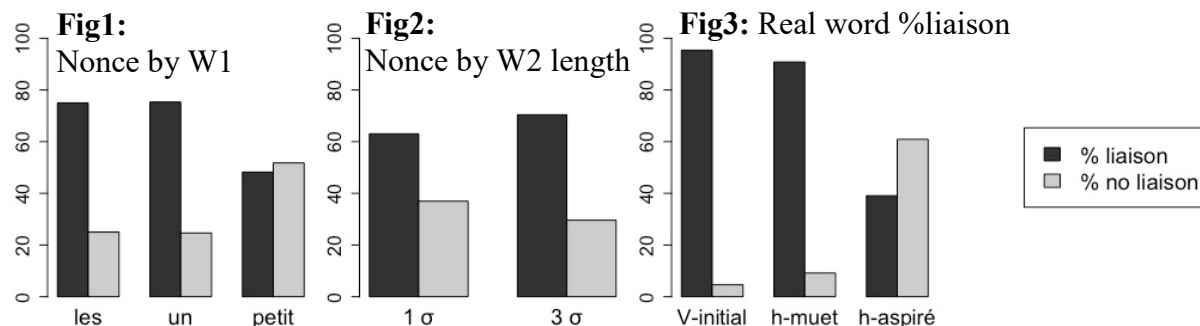
- ■ % liaison
- ▢ % no liaison

Nonce Word Results   On average, participants produced liaison in 66.6% of nonce items (~12/19 trials) – but productivity across individuals was truly variable, ranging from between 3/19 and 19/19 trials. The graphs above, and our statistical model, both show that nonce words generally aligned with real word patterns. A mixed logit model with participants as random factor confirmed that the adjective *petit* triggered less liaison than the determiners ($\beta = -1.69$, $p < 0.001$), and that trisyllabic W2s triggered more liaison than monosyllabic W2s ($\beta = 0.62$, $p = 0.007$). It also confirmed skews among W2-initial vowels, with [u]-initial W2s triggering the least liaison (in only 57% of tokens vs. 68% of tokens across the other four vowels).

Real Word Results   The large between-speaker variation in nonce word liaison suggests that our participants differ in their grammatical commitment to liaison as an automatic phonological process. For participants who applied liaison to all 19 nonce tokens, we argue that their grammar is highly driven to resolve vowel hiatus, and will therefore apply liaison given any compatible W1. This also predicts a drive to regularize the exceptional W2s in the existing French lexicon, i.e., h-aspiré words. As shown in Figure 3, our participants produced real-word liaison almost categorically with vowel-initial W2s (including those spelled with a 'mute-h') – but with the h-aspiré words we again found a wide range of liaison resistance. There is a correlation between rates of liaison in nonce and h-aspiré words across our participants ($r = 0.32$) – and in particular, those speakers who most consistently regularized h-aspiré words also produced consistently high rates of liaison in nonce words.

Implications   In our talk, we discuss the kind of morpho-phonological framework necessary to capture the apparent state of flux in current Canadian French liaison. Some speakers must have internalized the pattern as almost purely grammatical (e.g. driven by Oɴsᴇᴛ), with little weight (or faithfulness) given to lexical idiosyncrasies; this runs counter to analyses such as Smolensky & Goldrick (2016). Other speakers must balance both grammaticalized pressures and lexical conditioning more equally when assessing liaison, allowing them to generalize the W2 size and [u]-initial patterns from the (rather small) h-aspiré lexicon, after only one nonce word exposure.

Selected References Côté, M.-H. 2011. French liaison. In M. van Oostendorp et al. (eds.), *The Blackwell Companion to Phonology*. Wiley-Blackwell, Malden, MA. 2685–2710 • Smolensky, P. & M. Goldrick. 2016. *Gradient Symbolic Representations in Grammar: The case of French Liaison*. ROA-1552. • Tranel, B. 1995. Current issues in French phonology: liaison and position theories. In *The Handbook of Phonological Theory*, Cambridge, MA: Blackwell. 798–816. • Zuraw, K. & B. Hayes. 2017. Intersecting constraint families: An argument for Harmonic Grammar. *Language* 93(3): 497-548.