Phonotactic constraints and preferences are domain specific:
A cognitive proposal

A commonly held belief in phonology is that cluster-rich languages such as Polish are excessively permissive. In Polish, phonological processes and syllabification strategies have served as the main source of information on permissible and outlawed strings of consonants, and on the importance of sonority (Bethin 1992; Cyran & Gussmann 1999; Rubach & Booij 1990; Szpyra-Kozłowska 2000, Cetnarowska & Żygis 2007). However, recent processing data have revealed that the role of sonority in Polish is not as straightforward as originally assumed. For instance, a preferred sonority slope facilitates the learnability of new items in Wiese et al. (2016), but does not reduce cognitive effort in Orzechowska (2019). These conflicting conclusions can be attributed to different experimental tasks. Therefore, this paper argues for *domain-specific phonotactic preferences*. Here, emphasis is placed on preferences rather than constraints (Vennemann 1988; Dziubalska-Kołaczyk 2001) which hold at the cognitive level and which are derived from psycholinguistic data. The new preferences are expressed in terms of *phonological features* (e.g. labial, dorsal, sonorant, obstruent, continuant), and then compared to feature-based constraints identified for other language domains (Orzechowska 2019).

Four experiments (Exp1-4) explore the role of four constraints in the processing of CC clusters: (1) *existence* (existent vs. non-existent), (2) *well-formedness* (sonority-obeying vs. sonority-violating), (3) *place distances,* and (4) *manner distances*. Exp1-2 investigate the role of place distances in initial and final sequences, respectively. Distances are calculated along the scale: bilabial–labio-dental–dental–alveolar–alveolo-palatal–palatal–velar. For example, dist=0 holds between consonants sharing the place features (dental+dental /dl ts/), while dist=6 specifies consonants representing the most extreme places of articulation (velar+bilabial /gm kp/). Exp3-4 focus on the sonority differential in initial and final CCs, respectively, along the hierarchy: vowels–glides–liquids–nasals–fricatives–affricates–plosives. Dist=1 holds between consonants adjacent to each other on the scale (nasal+liquid /nl mr/). The largest distance defines consonants with extreme manners of articulation (plosive+glide /pj tw/). Test clusters were embedded in nonce monosyllables CCVC (initial context) and CVCC (final context). 252 stimuli in Exp1-2 and 198 stimuli in Exp3-4 were presented auditorily to native speakers of Polish. Subjects were requested to indicate whether the words they heard sounded as if they could exist in Polish by pressing a 'yes' or 'no' keyboard button. The RT and behavioural data were recorded with the *E-Prime* software.

The statistical analysis involved running GAMs and quantile regression. First, we demonstrate that <u>response latencies</u> are mainly affected by large place and manner distances. Larger distances entail shorter RTs. That is, greater contrast (e.g. labial+dorsal) is the least costly at the cognitive level. In turn, clusters with medial place and manner distances are accessed with greater difficulty. Although existence and sonority did not contribute to the best statistical models for latencies, they play a role in <u>accuracy rates</u>. In other words, sonority and existence are consulted when intuitive judgements are made. These findings confronted with the existing data on production and lexical statistics in Polish support the argument that there exists a clear-cut division between lexical, articulatory and processing preferences.

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