The question of whether loanword adaptations are based on phonological or on phonetic proximity has been widely debated (for a review, see Kang (in press)). This talk focuses on the adaptation of English vowels in French, which in previous work has variously been argued to be phonetic (Vendelin & Peperkamp 2006) and phonological (LaCharité & Paradis 2005).

Vendelin & Peperkamp (2006) carried out an experiment in which French-English bilinguals inserted English non-words in French sentences. When the presentation of the stimuli was auditory, they obtained a fair amount of variability in the way the English vowels were adapted. Consequently, they argued that the adaptations reflected the phonetic heterogeneity of the stimuli and were based on perceived phonetic proximity. This conclusion contrasts with that of LaCharité & Paradis (2005): Focusing on the adaptation of /ɛ/ and /œ/ in established loanwords as /i/ and /u/, respectively, they argued that phonetic proximity cannot be at stake since English /ɛ/ and /œ/ are acoustically closest to French /e/ and /o/. Instead, they proposed a phonological analysis according to which the feature [high] takes precedence over the feature [ATR]; preserving the [+ high] specification of /ɛ/ and /œ/ is thus more important than preserving [- ATR].

I will report on a perception experiment that provides direct evidence that the way in which French speakers adapt English vowels closely corresponds to how naïve French listeners (with no knowledge of English phonology) perceive these vowels. This experiment also speaks to the question as to how a phonetic proximity account is to be reconciled with the observation that among the French vowels, /i/ and /u/ are not acoustically closest to English /ɛ/ and /œ/.

French listeners with only limited exposure to English performed a forced-choice identification task on eight English monophthongs, the response choices being the ten oral vowels of French. In one condition, the stimuli were the same tokens of CVC non-words as those in Vendelin & Peperkamp (2006), produced by four speakers of American English; in another one, the vowels had been excised out of the syllables and were presented in isolation. Hence, whereas in both conditions the vowels were subject to consonantal coarticulation, the source of coarticulation was present in only one of them. The distribution of the responses in each condition and to each English vowel were compared to those obtained with the on-line adaptation task by means of χ² (Figure 1). The results showed a large amount of distributional overlap between perception and on-line adaptation, but only when in the perception experiment the consonantal context was present.

These data thus reinforce the hypothesis that the adaptations of English vowels in French are based on perceived phonetic proximity. They also show that this proximity is context-dependent, and hence, that - contrary to what was done in the acoustic measurements cited by LaCharité & Paradis (2005) - consonantal context should be controlled for in cross-linguistic vowel comparisons. In the discussion, I will consider more generally the problem of defining a phonetic distance metric for cross-linguistic speech perception; such a metric would allow us to further test the hypothesis that loanword adaptations are based on perceived phonetic proximity by complementing perception experiments with acoustic measurements. In particular, building on work by Strange et al. (2007) I will argue that the standard method of comparing mean values of formants and duration is inadequate and should be replaced by one that compares the distribution of these values.
References

Figure 1: \( \chi^2 \) values for comparisons of the distributions of on-line adaptations in Vendelin & Peperkamp (2006) on the one hand and responses in a forced-choice vowel identification task on the other hand, as a function of input vowel and condition in the identification task (excised vowel vs. complete syllable). The lower the value of \( \chi^2 \), the higher the distributional overlap. Asterisks indicate statistical significance according to Fisher’s exact test.