Across-word assimilation changes the shape of word-forms, and hence listeners must 'undo' assimilation for the purposes of word recognition. For instance, English listeners must compensate for the effect of place assimilation in order to recognize "clean" in "clea[m] picture", and likewise, French listeners must compensate for the effect of voice assimilation in order to recognize "bus" in "bu[z] vert" 'green bus'. I will address two aspects of compensation for assimilation. First, based on EEG recordings, I will show that French adults compensate for voice assimilation at a very early, pre-attentive, perception stage. This process cannot be subsumed under a universal mechanism of compensation for co-articulation; rather, it shows that abstract knowledge about the native grammar has an early impact on speech perception. Second, based on behavioral data, I will show that French and English toddlers have acquired the assimilation rule that applies in their native language. That is, French toddlers compensate for voice but not for place assimilation, and the reverse holds for English toddlers. I will discuss possible mechanisms underlying this early acquisition of assimilation.